INFORMATION TO USERS

This was produced from a copy of a document sent to us for microfilming. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help you understand markings or notations which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure you of complete continuity.

2. When an image on the film is obliterated with a round black mark it is an indication that the film inspector noticed either blurred copy because of movement during exposure, or duplicate copy. Unless we meant to delete copyrighted materials that should not have been filmed, you will find a good image of the page in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed the photographer has followed a definite method in "sectioning" the material. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. For any illustrations that cannot be reproduced satisfactorily by xerography, photographic prints can be purchased at additional cost and tipped into your xerographic copy. Requests can be made to our Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases we have filmed the best available copy.

University Microfilms International
300 N. ZEEB ROAD, ANN ARBOR, MI 48106
18 BEDFORD ROW, LONDON WC1R 4EJ, ENGLAND
PAUL, TERRI GOLDBERG
BLASTED HOPES: A THEMATIC SURVEY OF
NINETEENTH-CENTURY BRITISH SCIENCE FICTION.

THE OHIO STATE UNIVERSITY, PH.D., 1979

COPR. 1979 PAUL, TERRI GOLDBERG

ALL RIGHTS RESERVED
PLEASE NOTE:

In all cases this material has been filmed in the best possible way from the available copy. Problems encountered with this document have been identified here with a check mark.

1. Glossy photographs ______
2. Colored illustrations ______
3. Photographs with dark background ______
4. Illustrations are poor copy ______
5. Print shows through as there is text on both sides of page ______
6. Indistinct, broken or small print on several pages ______ throughout ______
7. Tightly bound copy with print lost in spine ______
8. Computer printout pages with indistinct print ______
9. Page(s) ______ lacking when material received, and not available from school or author ______
10. Page(s) ______ seem to be missing in numbering only as text follows ______
11. Poor carbon copy ______
12. Not original copy, several pages with blurred type ______
13. Appendix pages are poor copy ______
14. Original copy with light type ______
15. Curling and wrinkled pages ______
16. Other __________________________________________________________________________
BLASTED HOPES: A THEMATIC SURVEY OF
NINETEENTH-CENTURY BRITISH SCIENCE FICTION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Terri Goldberg Paul, B.A., M.A.

* * * * *

The Ohio State University
1979

Reading Committee:
Christian Zacher
Anthony Libby
Richard Finholt

Approved By

Advisor
Department of English
VITA

March 12, 1945. . . . . . . . Born - Dayton, Ohio
1967. . . . . . . . . . . . . . B.A., Washington University, St. Louis, Missouri
1973. . . . . . . . . . . . . M.A., The Ohio State University, Columbus, Ohio
1974-1978. . . . . . . . Teaching Associate, Department of English, The Ohio State University, Columbus, Ohio

FIELDS OF STUDY

Major Field: Science Fiction

Nineteenth Century British Literature, Professor James Kincaid
Nineteenth Century American Literature, Professor Thomas Woodson
Twentieth Century Literature, Professor Suzanne Ferguson
The Novel, Professor John Muste
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VITA</td>
<td>ii</td>
</tr>
<tr>
<td>I.</td>
<td>THE WORLD CREATED BY SCIENCE</td>
<td>1</td>
</tr>
<tr>
<td>II.</td>
<td>THE DIVINE SPARK: FRANKENSTEIN, OR THE MODERN PROMETHEUS</td>
<td>43</td>
</tr>
<tr>
<td>III.</td>
<td>MAN DIVIDED: THE STRANGE CASE OF DR. JEKYLL AND MR. HYDE</td>
<td>64</td>
</tr>
<tr>
<td>V.</td>
<td>CONCLUSION: SCIENCE CREATING MAN</td>
<td>128</td>
</tr>
<tr>
<td></td>
<td>NOTES</td>
<td>136</td>
</tr>
<tr>
<td></td>
<td>BIBLIOGRAPHY</td>
<td>143</td>
</tr>
</tbody>
</table>
CHAPTER 1: THE WORLD CREATED BY SCIENCE

In England, the nineteenth century was a period of transition from a safe and comfortable past to a new and uncertain future opened up by scientific advances. Science created new worlds through the railroad, telegraph, and growth of industry and technology. According to Walter Houghton, "Perhaps the most important development in nineteenth-century intellectual history was the extension of scientific assumptions and methods from the physical world to the whole life of man." In placing mankind firmly within nature, science also made him the logical result of the operation of natural laws rather than a divine creation. Scientific thought permeated almost all aspects of human activity and governed how man saw himself in relation to the world around him. This preoccupation with science was reflected, of course, in most of the important works of fiction written in the nineteenth century in England, but most especially in science fiction. More than other fiction of the period, nineteenth-century British science fiction is a direct reaction to scientific advances and the scientific frame of mind. It explores the philosophical implications of scientific knowledge and takes as its primary concern ideas drawn from one or several of the sciences. These ideas may be intriguing and marvelous, but they are also terrifying because they threaten the future existence of the human race. In fact, science calls into question all of man's assumptions about himself, and
most writers of science fiction in the nineteenth century are naturally alarmed, as well as fascinated, by what science is doing.

In this dissertation I propose to survey the main themes and concerns of British science fiction of the nineteenth century—that is, themes and concerns which taken together identify science fiction as science fiction and come to characterize it as a genre. These themes are most evident in the novels I shall treat, Shelley's Frankenstein, Stevenson's Dr. Jekyll and Mr. Hyde, and Wells' The Time Machine, The Invisible Man, and The Island of Dr. Moreau. But we shall see that these themes also figure importantly in, for instance, Bulwer-Lytton's The Coming Race, Butler's Erewhon and Erewhon Revisited, Morris' News From Nowhere, Trollope's The Fixed Period, and Wilde's The Picture of Dorian Gray, works I will discuss in this chapter. These novels perhaps more than others examining similar themes, are useful indices to the literary and popular response to revolutions in the sciences.

Shelley, Stevenson, and Wells, as well as, to a lesser extent, Butler, Bulwer-Lytton, Morris, Trollope, and Wilde create works which are direct comments on science and which help to popularize scientific ideas. They deal with the human implications of scientific knowledge, and their tales are shaped by themes derived mainly from biology, psychology, and physics. These works are responses to the theory of evolution (which found its most forceful and radical statement in Darwin's The Origin of Species and The Descent of Man), dynamic theories of the mind (which were synthesized by Freud), and revolutions in physics.

British science fiction of the last century deserves special attention because, perhaps more than American science fiction of the same
period, it is intimately concerned with revolutions in the sciences which can radically alter man's conception of himself and his relationship to the rest of the universe. This intense national preoccupation with science is a result of the fact that the Industrial Revolution was centered primarily in Britain, at least in the early years of the nineteenth century. Science captured the nineteenth-century British imagination in a way that it did not capture the American imagination. As J. D. Bernal observes, "the Industrial Revolution went on its triumphal way as a primarily British movement and the demands of the new industries on science ensured its revival." The British were quicker to feel the effects (both positive and negative) of the Industrial Revolution than were the Americans. They were a people caught up in scientific ideas, amateur or otherwise. It is not surprising, then, that their literature should produce works which bear a close relationship to later science fiction and which should figure as importantly as American literature in the development of science fiction as a genre.

Several valuable books which border on this survey have been written on British science fiction and its related forms. The most general of these is Robert Philmus' *Into the Unknown: The Evolution of Science Fiction* from Francis Godwin to H. G. Wells. Science in science fiction is for Philmus a rhetorical strategy that allows for the shaping of old myths—in particular of Faust and Prometheus—into new forms which reflect a world view absolutely governed by a scientific frame of mind. Philmus traces the various transformations of these myths through such diverse works as Francis Godwin's *The Man in the Moone*, Swift's *Gulliver's Travels*, and Wells' *The Invisible Man*. In tracing these myths, Philmus
attempts to determine the nature of science fiction, and in order to do this, he deals heavily with its themes. But his book is really a prelude to the survey of science fictional themes proposed here. He defines the limits of science fiction within a mythic framework, while my orientation is scientific. My intent is to examine the corollation between current popular scientific ideas and their fictionalized versions in the works I have chosen to discuss and to build a definition of the genre from a survey of its themes.

Herbert L. Sussman's *Victorians and the Machine: The Literary Response to Technology* is, like this dissertation, a thematic study which traces the various ways Victorians, "the first people to live in a culture dominated by technology, expressed their realization that the use of the machine to perform certain physical tasks created profound changes in intellectual and emotional life." He feels that the machine is perhaps the central symbol of the Victorian age and as such "includes the central themes of Victorian culture." He then traces the impact of the machine as symbol on the works of seven writers, including three--Butler, Morris, and Wells--who will be discussed here. But while many of Sussman's ideas are relevant to a survey of science fiction's themes, his intent is to demonstrate how the symbol of the machine shaped the works of some major Victorian writers rather than how fictionalized treatments of certain specific themes are characteristic of science fiction.

Two other critical works also have some bearing on the survey of themes proposed here: I. F. Clarke's *Voices Prophesying War, 1763-1984* and Richard Gerber's *Utopian Fantasy*. Clarke calls his book "a history of imaginative warfare"; it studies the effect of technology on changing
attitudes toward the future, in general, and toward the future conduct of wars, in particular. He traces the development of the tale of the future, especially the tale of future warfare which began with Chesney's *Battle of Dorking* in 1871, and he suggests that much of its popularity derived from the myth of progress fostered by technological advances. Clarke's book deals with a sub-genre of fiction that is closely allied to and frequently overlaps science fiction and not with the content of science fiction. Similarly, Gerber's orientation is toward a fictional form that has much in common with science fiction, utopian fiction. His book considers the various strategies used by utopian writers to discover a "hidden level of reality that could not otherwise be perceived" and attempts to define utopian fiction. Also, although he frequently alludes to nineteenth-century utopias, he is mainly concerned with the ways utopian thought is manifested in twentieth-century literature.

Since this dissertation proposes to discuss what themes separate developing nineteenth-century science fiction from other kinds of fiction, it will be helpful first to define science fiction. Science fiction is a kind of fantasy distinct from others in that its subject matter is science. Science, as it appears in science fiction and particularly in the examples to be discussed here, means many things. Sometimes it simply means actual science like contemporary physics and chemistry. When it does, science is treated in a fairly straightforward manner, as in Shelley's discussion of galvanism and of the early alchemists and scientists who influenced Frankenstein, or as in Moreau's experiments with vivisection. Both Shelley and Wells provide fairly strict accounts of the scientific knowledge of their time, even if these accounts are really fictional re-creations of popular scientific ideas and finally devices for
actualizing the fantasy. Science, to the science fiction writer, can also mean technology, as symbolized by Frankenstein's Monster or the Morlocks. As such, it frequently comes to stand for the terror unleashed by the unwise pursuit of scientific knowledge for its own sake. In a more limited sense, science is simply the equivalent—this is often true for Wells—of the logical method by which a character (and ultimately the reader) arrives at a conclusion from a given set of premises. Through a series of false starts and inductive reasoning the Time Traveller makes discoveries about the world of the future, and this logical, or scientific, method may also help to describe the cumulative effect upon the reader of various narratives to be unravelled in "the strange case" of Dr. Jekyll and his creation, Mr. Hyde. Finally, science can be equated with pseudo-science and pseudo-scientific practices. Thus the reader never finds out exactly how Frankenstein animated his creation, how Jekyll concocted his chemical potion, or how the Time Traveller made his machine. These events, the results of the scientific speculations upon which the works are based, are shrouded in mystery and magic. While Shelley and Stevenson claim to withhold pseudo-scientific information in their novels on moral grounds, Wells sets out deliberately to trick the reader, as Jack Williamson says, "into an unwary concession to some plausible assumption and get on with his story while the illusion holds." 

Science fiction, then, is sometimes called "realistic fantasy" because its scientific content imposes upon it the need to maintain a higher degree of plausibility and inner consistency than found in other fantastic works. Science fiction extrapolates (or postulates) worlds from a given scientific premise—and the premise must be plausible though not necessarily now realizable.
Along with providing the standard of plausibility, science also introduces us to the fantastic. Because science is associated with the rational, scientific theories explain and hence domesticate or familiarize the fantasy. The scientific framework is what distinguishes science fiction from other kinds of fantasy, and science of some sort is the device upon which the fantasy is structured. And the fictional re-creation of science introduces a paradox into the fantasy which seems to have intrigued even the earliest science fiction writers and which is suggested even by the name given to this form: science grounds the fantasy in physical fact and at the same time provides the means for fantastic speculation. Thus, while science gives a sense of coherence and plausibility to an otherwise fantastic world, it also accounts for the various monsters and bizarre machines which are appeals to the popular imagination and which provide convenient symbols for popular scientific ideas.

Shelley, Stevenson, Wells, Bulver-Lytton, Butler, Morris, Trollope, and Wilde deal with science, to a greater or lesser degree, in the fictions they create. In fact, British science fiction of the nineteenth century directly mirrors—and, of course, comments upon—what science itself was doing at the time. For the writer of science fiction, science suggests an interest in physical process and so becomes a metaphor for the exploration of man's relationship to the universe. And since science fiction itself is postulated on process and consequently on change, it too proposes to examine the workings of the universe and, as a corollary, the creative imagination as well. Science, in fiction and in life, comes to stand for where the imagination can take us. But in science fiction, at least, men are destined to be frustrated by science because it promises—or threatens—to take man beyond what he is supposed to know and perhaps
reveal divine secrets like the miracle of creation or the mystery of death. Science, on the one hand, raises moral and ethical dilemmas and, on the other, tantalizes mankind with illusory solutions to the problems of being human.

If science offers possible answers to the basic questions of how and why we are human, scientific (and imaginative) discoveries are apt to revolutionize our perceptions of ourselves and the world and, perhaps, the course of the future. Indeed, one of the major preoccupations of science fiction writers is the confrontation between the past or present and a radically different future. And this confrontation occurs because the discoveries of people like Lyell, Darwin, and Freud made it almost impossible for man to conceive of himself any more as a divinely inspired creation whose supremacy on earth was a permanent state of affairs. British science fiction of the nineteenth century uses scientific themes—especially biological and evolutionary and psychological ones and, to a lesser extent, themes drawn from physics—to explore this changing conception of man and the terrors of his uncertain future.

I. BIOLOGY

Developments in the biological sciences were partly responsible for this changing conception of man and for his uncertainty about his future. Various theories of evolution, which grew largely out of the study of biology, made it impossible for man to rest comfortably with the assurance that he was made in the image of a God who would protect His most favored creation forever. Because of Darwin's discoveries, man was forced to admit that he shares what Darwin called a "community of
descent with all other vertebrate animals. And, he had to concede that he evolved to his present state of being not through divine intervention but through a series of adaptations made according to principles of use and fitness. More than any of the works which preceded them, Darwin's *The Origin of Species* (1859) and *The Descent of Man* (1871) take a radical stand against the assumption based on "natural prejudice, and... arrogance" that man is meant to establish a permanent dominion over the earth because his origins are divine. In fact, mankind's life on earth covers only a small period of geological time, and as novels like *Frankenstein*, *Dr. Jekyll and Mr. Hyde*, and *The Island of Dr. Moreau* suggest, man has the ability to create his successor and evolve himself out of his place in the universe.

Darwin and other scientists like Cuvier, Lyell, and Lamarck view man as the end product of the slow and steady operation of natural processes which expand human perceptions of history and time. Evolution is based upon a changing conception of time. For man to have evolved to his present state, the earth had to be older than the 4004 years decreed in the Bible. Even the proponents of catastrophe theories accepted the notion of an earth of great antiquity. In his studies on comparative anatomy and paleontology published in 1812, Baron Georges Cuvier, for instance, proposed that catastrophes similar to the flood in the Bible destroyed life. New forms of greater complexity arose out of organisms that escaped destruction. However, Charles Lyell's theory of uniformitarianism suggested that the earth is a great deal older than anyone ever imagined. In his *Principles of Geology* (1830-3), he asserted that geological agents operating in the present can also explain the earth's
past history. The past was not different from the present, as catastrophe theories imply. Since the present rate of geological change is slow, the earth must be millions of years old.

Most theories of evolution proposed prior to Darwin were tied to concepts of progress and perfectibility that suggested a purpose in nature which Darwin himself was unwilling to accept. For example, Darwin's grandfather, Erasmus Darwin, in *Zoonomia or the Laws of Organic Life* published in 1794, saw the evolutionary process as guided by a living force that worked toward the satisfaction of needs. Similarly, Jean-Baptiste de Lamarck, in his *Philosophie Zoologique* (1809) and later in the introduction to his *Histoire Naturelle des Animaux Sans Vertébres* (1815), thought evolution was governed by humanistic principles. He saw in the evolution of life forms a tendency to perfection and complexity which accounts for the whole scale of beings, from the simplest organisms at the bottom to man at the top. And Herbert Spencer, in his *First Principles*, written three years after the publication of *The Origin of Species*, conceived of evolution as an integration of matter as it moves from "an indefinite, incoherent homogeneity to a definite coherent heterogeneity." Spencer, like most evolutionists and scientists of his time, thought organic change necessarily meant organic progress, since such change seemed directed toward greater complexity--at least from a human point of view. Darwin stood almost alone in insisting that "Natural selection, or the survival of the fittest, does not necessarily include progressive development--it only takes advantage of such variations as arise and are beneficial to each creature under its complex relations of life." Evolution does not tend toward some abstract ideal of perfection
or insure progress; it only leads to the increased ability of an organism to adapt to its surroundings.

While others tried to explain such natural phenomena as the transformation and mutability of species by theories that at the very least implied some kind of grand design and, of course, a designer, Darwin offered a strictly mechanistic view of natural processes influenced by his reading of Thomas Malthus. Populations increase geometrically. Many more offspring are produced than can possibly survive. Therefore, Darwin observes, "there must in every case be a struggle for existence, either one individual with another of the same species, or with the individuals of distinct species, or with the physical conditions of life. It is the doctrine of Malthus applied with manifold force to the whole animal and vegetable kingdom." He adopted Herbert Spencer's phrase "the survival of the fittest" to describe this struggle in which only those individuals best adapted to their environment—either through strength, guile, intelligence, or numerous other significant traits—survive.

Although Darwinism and evolution are used almost interchangeably, Darwin himself preferred the phrase "descent with modification." While others attributed modifications in species to various causes—human, divine, or otherwise—Darwin's cause was natural selection. Natural selection is a utilitarian concept which proposes that only those traits guaranteeing the survival of a being will be transmitted to its offspring. As Darwin suggests, only those traits which give an individual a slight edge over his competitors will be perpetuated because only "individuals thus characterised will have the best change of being preserved in the struggle for life." Hence, the process of natural selection never harms
an individual but only helps him adapt to a given environment so that he can survive. However, most species become extinct because they fail to adapt to changing conditions in time. And as Stephen Gould notes, "Darwinian evolution decrees that no animal shall actively develop a harmful structure, but offers no guarantee that useful structures will continue to be adaptive in changed circumstances." Man will not develop any physical characteristics that would be actively harmful to the species as a whole. But he may not change rapidly enough to accommodate himself to changes in his environment, changes he may have unknowingly created and been unable to foresee. In other words, according to Darwinian evolution, man like all other species faces possible extinction by forces beyond his control and perhaps of his own making. This eventuality is a major concern of all of the writers considered in this dissertation. All of them envision possible futures in which man's position in the universe is different from the one he occupies at present, and Shelley, Stevenson, Wells, and Bulwer-Lytton, in particular, are interested in examining exactly how this change came about.

Darwin's theory of evolution forced man to see himself as simply the end result, at least temporarily, of an impartial and mechanical process. After Darwin, it was no longer possible to accept as literal truth the Biblical account of creation. In fact, The Origin of Species is a response to the theory of creation. Darwin's observation of the basic continuity in all nature led him to deny the belief that each species was created for a special purpose by a creator with a grand design for the universe. If such a grand design did exist, then, Darwin asked, how it was possible that "all the parts and organs of many independent beings, each supposed to have been separately created for its proper
place in nature, could be so commonly linked together by graduated steps? For Darwin nature is in a constant state of flux owing to the operation of natural selection and the struggle for existence. It is not a static design or the end product of some preordained process.

Darwin's conception of the mechanistic operation of the laws of nature applies not only to man's tenuous position in the universe but also to those traits and habits that separate him from other animals. Civilizations, according to Darwin, arise out of social instincts which are biological in origin and are the results of natural selection or the indirect results of other instincts. Animals naturally seek out the company of other animals and form communities which operate on the "greatest happiness principle," the good of the individual is secondary to the good of the community so that a species can survive. Human communities grew into civilizations when man acquired language—that is, acquired the ability to make his wishes known. And as Wells demonstrates in the projected future of The Time Machine, the decline of civilization directly parallels the decline of language.

Furthermore, for Darwin there is no real separation between the mind and the brain. The mind is simply a product of the brain and so is little more than a fortuitous development of primitive forms of life brought into existence by mechanical processes: survival of the fittest and natural selection. And the concept of spiritual agencies or of a God is only the outgrowth of the development of "imagination, curiosity, and reason" in the mind of man. Darwin suggests that something in the structure of the brain itself drives man to a belief in God. As the brain adapts to changes and grows in complexity, man acquires consciousness
and, with it, a belief in God.  

Darwin's view of the universe as a dynamic and marvelous machine operated by random forces set in motion by competition for resources was unsettling to most serious thinkers and writers of his time. It signified a loss of meaning and promised a possible future in which an indifferent universe would sweep aside human values. Even Darwin's staunchest defender, T. H. Huxley, was deeply disturbed by the implications of Darwin's view. Huxley felt that it was incumbent on man to seize control of the evolutionary process and hence secure his own future. In "Evolution and Ethics," the Romanes lecture for 1893, he calls for restraint and humanity toward other men in place of Darwinian competition and struggle. For Huxley, the universe is forever at war with human ethics, and the only hope for mankind is in "laws and moral precepts which are directed to the end of curbing the cosmic process."  

"Evolution and Ethics" echoes an idea that lies at the heart of most of the novels examined in this dissertation: man must in one way or another gain control of the evolutionary process and restore meaning to the physical universe if he is to survive.

Evolutionary thought is important to a great deal of nineteenth-century British fiction. But the novels I will discuss here reflect more directly than their contemporaries developments in biology and the implications of these developments. Several of these novels portray man's efforts at taking charge of evolution, while others explore his failure to do so. For instance, Frankenstein and The Island of Dr. Moreau each deal with one man's attempt to take over the evolutionary process by usurping the role of a God and with his failure because of
his human limitations. And *The Time Machine* is about an unforeseen outcome of evolution made possible by mankind's complacency and unwillingness actively to guide the course of the future. Similarly, Butler's *Erewhon* (1872) and, to a lesser extent, *Erewhon Revisited* (1901), Bulwer-Lytton's *The Coming Race* (1871), Morris' *News From Nowhere* (1891), and Trollope's *The Fixed Period* (1882) are all responses to the idea of evolution and are attempts to humanize the evolutionary process and hence make possible man's continued survival.

Samuel Butler's *Erewhon* and *Erewhon Revisited* address themselves to Darwin's theories and parody mechanistic thought. Butler's fictional country is really England backwards. The eerie statues which chant in the wind are meant to scare off the unsuspecting traveller and prepare the reader for the strange events he is about to encounter. In *Erewhon*, even familiar objects have a foreign quality to them, and the narrator notes that "all things were generically the same as in Europe, the differences being of species only." 26 Erewhonian names are simply English names spelled backwards; physical illness is illegal and sometimes punishable by death, while immorality is treated as a slight indisposition to be cured by the services of a straightener, the Erewhonian equivalent of a physician. Churches in Erewhon appear as Musical Banks which deal in coins of no monetary value. The worthless coins and the poor attendance at the Musical Banks suggest that they, like the churches in England, are morally and spiritually bankrupt and fail to inspire much interest or trust.

In *Erewhon Revisited*, Erewhon itself is being turned around—and is coming more and more to resemble England. The statues, which seem
smaller and such less formidable, are silent at the narrator's approach. Erewhon is now bordered by Erewhemos--somewhere--and is endeavoring to establish contact with the rest of the world. By the end of the novel, Erewhon is about to be annexed to England--a fact suggested by some of the appalling changes the narrator observes on his second trip. He has introduced England into Erewhon, and the Erewhonians mix his ideas with poorly understood bits of Christian theology as they wind their tortuous way toward becoming another England.

Perhaps the most significant change that takes place in Erewhon between the two novels is the reintroduction of machines into Erewhon. It is through the symbol of the machine that Butler criticizes Darwin's mechanistic theory of the operation of natural processes. Butler is disturbed by Darwin's equation of the machine with organic life and the widespread acceptance of this equation. As Sussman notes,

> with the success of Darwinian theory and with advances in scientific physiology, it seemed to biologists that the modern machine, self-powered, often self-regulating, moving predictably by the complex interaction of springs and levers, provided an ideal theoretical model for organic life itself.

In fact, T. H. Huxley proclaimed the principle of mechanism as "the central hypothesis of modern biology." What seems to bother Butler the most about this new scientific view of organic life is that it equates man with a machine and dehumanizes him. Although machines in Erewhon lie in fragments in a museum, Erewhonians are not above thinking of themselves in mechanical terms, as when they measure a man's merit by his horsepower (p. 75).

In Erewhon, the Erewhonians have destroyed the machines that threaten their pastoral world. The reason for this destruction soon
becomes clear when the magistrate reacts with horror at the sight of the narrator's watch. The magistrate's reaction suggests that "he regarded my watch not as having been designed, but rather as the designer of himself and of the universe" (p. 61). In other words, in the Darwinian scheme of things, the machine--here symbolized by the narrator's watch--threatens to take over the universe; machines are the next step up from man on the evolutionary scale. Man may have created his own successor in the machine, which is more efficient than its creator and able to do things, like create mechanical energy, that a man cannot do.

"The Book of the Machines" provides an elaborate parody of Darwinism and, by suggesting a possible course of evolution from man to machine, satirizes mechanistic modes of thought. Man created machines for his own convenience and has since become dependent upon them. Professor Case, the author of the treatise on machines, suggests that man's relationship to the machine is similar to that of a parasite to man. Since parasites live upon man, who is to say whether his body is more theirs or his? And, furthermore, "may not man himself become a sort of parasite upon machines? An affectionate machine-ticking aphid" (p. 232).

Man will become little more than a servant to his machines, and since machines operate on necessary principles of cause and effect, he will lose his spontaneity and vitality. Every result will have a given set of causes and every question an answer--except, of course, the ultimate question of the existence of a God who created the first bit of matter that set this giant machine of a universe in operation. On this point, "The Book of the Machines," like Darwin himself, remains
silent, and the treatise lapses into incoherence (pp. 250-1).

As a further tribute to the heights of absurdity mechanistic thought can achieve, Butler suggests that machines can reproduce and perpetuate themselves. That the target of Butler's attack on mechanistic thought is Darwin is clear at the beginning of the third chapter of "The Book of the Machines":

Here followed a very long and untranslatable digression about the different races and families of the then existing machines. The writer attempted to support his theory by pointing out the similarities existing between many machines of a widely different character, which served to show descent from a common ancestor. He divided machines into their genera, subgenera, species, varieties, and so forth. He proved the existence of connecting links between machines that seemed to have very little in common, and showed that many more such links had existed, but had now perished. He pointed out tendencies to reversion, and the presence of rudimentary organs which existed in many machines feebly developed and perfectly useless, yet serving to mark descent from an ancestor to whom the function was actually useful. (p. 243).

Machines, then, are beginning to take on a life of their own and to evolve such structures as mouths and stomachs (p. 240). Like man, machines have evolved from a common ancestor and have proven biologically adaptable to their environment. At the heart of Butler's parody of Darwinian thought is his assertion that mechanistic theories ought to be confined to describing machines, or, as Philmus says, that a "theory that regards man as a machine is no less absurd than one that supposes machines to be animate." 29

Butler's dissatisfaction with mechanistic thought as it applies to organic life is most clearly stated in an either-or proposition that appears in "The Book of the Machines." Either actions that are labelled
mechanical must contain some elements of consciousness, or, granting the theory of evolution while denying consciousness to the animal and vegetable kingdoms, "the race of man has descended from things which had no consciousness at all" (p. 228). This supposition of consciousness opposes mechanistic thought and paves the way for the absurd treatises on the rights of animals and vegetables. These treatises parody the notion that all that lies below the surface of human consciousness is less evolved, but conscious nonetheless. Of course, the human desire for comfort finally prevails, and animal and vegetable consciousness is sacrificed to man's will to survive.

Butler's suggestion in both Erewhon and Erewhon Revisited is that despite the absurdities of their culture and society--absurdities which parody the dreamy unreality of utopian schemes--the Erewhonians are infinitely healthier and saner than their English counterparts precisely because they have done away with machines. But the narrator has brought England to Erewhon and, in doing so, has reestablished the domain of the machine and mechanistic thought. Man keeps his machines because he has become dependent on them. One of the most important ways Erewhon has changed in the twenty years between the narrator's first and second visits is that machines are again in use. This is brought about, in part, by the ludicrous and hypocritical cult of Sunchildism. The prospects for maintaining the health and vigor of the original Erewhon are dim as the narrator's son departs to aid his desperate Erewhonian half-brother. Nowhere is very quickly becoming Somewhere.

Like Butler, Bulwer-Lytton creates a vigorous race who exist in a pastoral world. But the Vril-ya are not plagued by the absurdities
that characterize Erewhonian society. Instead, their communities are based on rational principles, and they live in such complete peace and harmony that the narrator is finally bored to tears by their way of life. The Vril-ya, who believe themselves descended from a frog, are more highly evolved than men and, like the machines in Erewhon, threaten the destruction of the human race. In the Darwinian scheme of things, the Vril-ya have bowed to the forces of evolution and their own technology and are adapting more successfully to their environment than are men. Their superior intelligence—the result of this successful adaptation—gives them a fearful competitive edge over mankind. The Vril-ya are representative of what man might become further along the evolutionary scale, totally rational beings whose power and arrogance dwarfs their humanity.

The science and technology of the Vril-ya far surpass man's. They have used their science to create a beautiful world instead of an ugly industrial one. The science of the Vril-ya has enabled them to create automatons that tend vast machines and that—perhaps as a portent of things to come—bear a striking resemblance to human beings. When the narrator asks if individuals are able to distinguish themselves by making scientific discoveries, his host is astonished by the question. The role of science in the underground world is not acquisitive, perhaps because science has given the Vril-ya the ultimate weapon—Vril. Rather, science has been subjected to reason, and "the motive of science is the love of truth apart from all consideration of fame, and science with us too is devoted almost solely to practical uses, essential to our social conservation and the comforts of our daily life."
society and does not threaten to rage out of control as it does in the upper world.

Vril, that weird combination of physical and psychic forces, gives the Vril-ya awesome powers. Vril is controlled by psychic energy and is subject to the will of the individual who possesses the Vril wand. Vril has allowed the Vril-ya to perfect flight and perform hypnosis so powerful that it can extract from the narrator's mind nearly every aspect of his experience. Furthermore, it allows the Vril-ya to influence the weather as well as the minds of all of the animals and vegetables that exist in the underground world.

Vril has terrible destructive properties as well. Zee, the underground woman who eventually falls in love with the narrator, speaks calmly of the liquidation of whole communities of beings who were enemies of the Vril-ya. In estimating the potential destructive powers of vril tubes which conduct the substance, the narrator concludes that at a distance of five hundred to six hundred miles vril could be charged "so as to reduce to ashes within a space of time too short for me to venture to specify it, a capital twice as vast as London" (p. 55). (Thus, his description seems to anticipate both the hydrogen and atom bombs.) Some of the strides made by the Vril-ya are miraculous and wonderful. However, for Bulwer-Lytton the underground men and their Vril are ultimately terrifying in their threat to the human race.

In many ways, vril dictates what direction the society of the Vril-ya will take, and their society operates on Darwin's "greatest happiness principle." Their civilization is successful, at least on its own terms, though certainly not for the narrator, because the will of
the individual is at all times secondary to the will of society. Women, for instance, have achieved an equal status with men because they possess greater power over vril. They have not, however, used their superior power to subjugate the men. Instead, according to Darwinian principles of adaptation and hereditary disuse, "the Gy-ei have lost both the aggressive and the defensive superiority over the Ana which they once possessed" (p. 34). Since the power of vril is absolute, the society that has evolved around it is one based on voluntary submission. Through this submission all of the individual's needs have been met, and the society of the Vril-ya is completely rational. Humanity, with all of its joys and limitations, has practically been bred out of the race. There are no creative arts because there is no discontent or passion. Misfits are eradicated or sent away. The narrator himself barely escapes with his life because his proposed marriage to Zee might adulterate the race.

Because the Vril-ya have evolved to a much higher state of being than man, The Coming Race threatens, in I. F. Clarke's words, "a war to the finish between the races." Even the mythology of the Vril-ya predicts that one day they will emerge to seek revenge on the upper world. One of their legends tells of how they were driven from the upper world in order to achieve perfection through natural selection and the survival of the fittest. Once they achieve perfection, according to this legend, they will return to the upper world "and supplant all the inferior races therein" (p. 52). The narrator is naturally terrified by such a prospect.

A utopian fiction based on evolutionary principles, The Coming Race speaks against progress. Bulwer-Lytton feels that the danger of
scientific progress is that it holds out the threat of transcending human limits. As the Vril-ya demonstrate, this transcendence results in the loss of humanity. The narrator is appalled by the Vril-ya's casual disregard for his life and, by extension, the lives of all men or, in fact, any creature that stands in their way. His perspective, like all men's, is distinctly limited, and he refuses to be taken in by any scheme for transcendence such as that proposed by the Vril-ya. He returns home a disappointed man, unhappy in his domestic arrangements and little sought after because the implications of his vision are too terrifying: the best man can hope for is a postponement of the inevitable catastrophe.

Man's prospects for the future are considerably brighter in Morris' *News From Nowhere* than they are in Bulwer-Lytton's *The Coming Race*. The world in *News From Nowhere* is turned toward a traditional past rather than a mechanized future. In this world, as in the world of the Vril-ya, there is no discontent and hence very little imaginative art. This state of total peace and harmony arises not out of a scientific discovery but out of the rejection of science and commercialism, of which, according to Morris, science is little more than an appendage.

In *News From Nowhere*, reading is considered an idle pastime, and those who do read show a marked taste for fantasy, a kind of literature that Morris believes comes from the child in man. This attitude toward literature is indicative of the spirit that infuses the world Morris creates: one of child-like innocence. The narrator, Guest, catches something of this spirit and feels reborn into a younger version of himself. The inhabitants of this world, like children, live very much in the present. They evince little interest in history since they are
actually living in Morris' special vision of the past.

Morris' world has been revolutionized by the overthrow of capitalism and, with it, the machine and the mechanized sensibility. Man is no longer subservient to the machine but uses it to create things of beauty and liberate his energies for the real business of living, play. For Morris, socialism which will evolve into complete communism is the key to a humane future. In other words, socialism is the way to control the machine and preserve organic life, not Darwinian competition for limited resources. A system of private property, according to Morris, only insures that there will be slaves and slave-holders. Morris imagines a future in which the market system has been destroyed and replaced by a spirit of good will and the machine has been put in its proper place. He creates a world in which the future of mankind in some sense parallels the survival of the word communism itself: "I thought with interest how its name and use had survived from the older imperfect communal period, through the time of confused struggle and tyranny of the rights of property, into the present rest and happiness of complete Communism" (p. 218).

Morris' utopian vision, like Bulwer-Lytton's, makes a statement against progress and science. The lesson to be learned from News From Nowhere is that the key to the future lies in the past. Man can maintain his humanity and continue to survive as a race only by abandoning science and scientific pursuits, except as they are useful in securing the practical comforts of life, and returning to simpler ways of being. Guest himself feels liberated by his experience in this world and becomes a loyal and staunch defender of its ideology. Unlike the narrator in The
Coming Race, Guest returns to the present bolstered by his vision of the future. During his dream, he constantly fears waking up and falling out of the world in which he finds himself. He even runs into a future version of himself in the figure of the great-great grandfather who is much attached to his own past (p. 62) and whose appearance in the novel suggests that the dream may come true. Guest's dream is finally transformed into a vision of a world where man has actively revolted against the operation of mechanical laws of nature and society. This revolt leads man to seek safety and vitality in the return to an idealized past rather than in progress toward a terrifying and dehumanizing future.

Like Morris, Trollope in The Fixed Period offers a rational scheme for the future--but it is a scheme so terrifying that it evokes an immediate and violent response is all of the narrator's contemporaries. The narrator, Neverbend, is a man who has lived his life according to a rational principle. He has founded a colony--Britannula--in which euthanasia is to be practiced. At the age of sixty-seven, all Britannulists will be sent to the "college" where they will be "killed artistically" and painlessly, and their bodies cremated. According to Neverbend, euthanasia as a social doctrine is the ultimate in good sense. In Britannula, old people would depart with the full respect of all their fellow citizens.... During the last years of their lives they were to be saved from any of the horrors of poverty....And to them there would be no degraded feeling that they were recipients of charity. They would be prepared for their departure, for the benefit of their country, surrounded by all the comforts to which, at their time of life, they would be susceptible, in a college maintained at the public expense; and each, as he drew nearer to the happy day, would be treated with still increasing honor. (v. 1, p. 7)
Nevertend is a man possessed by a theory. By proposing the fixed period as the principle on which a society is to be founded, he is, in effect, offering to usurp the role of a God. All of the people around him feel that God and not man should determine when a life should end and hence resist the terrifying future Neverbend's idea seems to offer. Crasweller can agree to the fixed period in principle, but when his own life is at stake, his response is only too human. Although the people around him see the fixed period as a Godless idea, Neverbend clings firmly to it. If life and death are in God's hands, he asks, then why is there war in Europe (v. 2, p. 129)? In fact, Neverbend is every bit the post-Darwinian man. Darwin established the notion that evolution and chance and not divine intelligence created nature. As Julian Jaynes notes, after Darwin it is clear that "there is no authorization from outside. Behold! There is nothing there. What we must do must come from ourselves."36 In considering the catastrophic results of his experiment and answering the objections of the new governor of Britannula, Neverbend echoes this sentiment exactly: "As far as I can read the will of the Almighty, or rather the progress of the ways of human nature, it is for man to endeavor to improve the conditions of mankind" (v. 2, p. 131). For Neverbend, as for most men after Darwin, to invoke the will of God in response to human questions is to skirt the issue.

Neverbend is a comically inept figure who by the end of the novel gets put securely in his place. From his point of view, he discovers that he cannot save men from themselves. His idea is one whose time has not yet arrived. Men, he finds, cling tenaciously to life, even if it means suffering the torments of old age. This is, of course, the human thing
to do. Men are so set in their ways that when Neverbend tries to put his scheme into practise, the resistance he encounters is overwhelming: England sends a battleship with a doomsday machine that is to be used solely on Neverbend, since by now he is the only one who still believes in the fixed period. He succumbs to the doomsday machine—a symbol of the powerful opposition of those around him—and abandons the presidency of Britannula and hence his plan for a rational society. He ends up a broken and discouraged man, exiled aboard a battleship, labelled a cannibal, and held responsible for the downfall of Britannula.

Trollope, like Butler, Bulwer-Lytton, and Morris, creates a fiction which is responsive to the implications of evolutionary theory. All four writers are concerned with what the future holds in store for man, since, because of the discoveries of people like Darwin, the future promises to be very different from the present. Butler, Bulwer-Lytton, and Trollope each present a dim view of man's future prospects. For Butler, the pastoral world of Erewhon cannot be sustained against the onslaught of the machine and the mechanized sensibility that accompanies it. And, as Darwin predicts, the extinction of the human race is a very real threat: man's machines may rob him of his favored position in the universe. Similarly, Bulwer-Lytton is pessimistic about the future of the human race. By the end of The Coming Race, mankind is about to be destroyed by a race so superior that it threatens to turn men into subservient automatons or eradicate human civilization altogether. Trollope too views man's future with a great deal of uncertainty. The world of The Fixed Period is distinctly man-centered, and man, and not God, will determine his own future. Only Morris is positive about mankind's
future. Ironically, Morris's optimism comes from his turning to a familiar and comforting vision of the past. In his utopia, mankind has abandoned science and technological change. *News From Nowhere* is a direct repudiation of the principles of fierce competition and struggle that lie at the heart of Darwin's theories. Unlike Butler, Bulwer-Lytton, and Trollope, Morris affirms a benevolent humanity and asserts a continuity between the present and the future—an assertion belied by most scientific thinkers of the time.

II. PSYCHOLOGY

If evolutionary thought permanently altered man's conception of his place in the universe and his ability to sustain his position, psychologists—and most especially Freud—made it difficult to view the mind as the instrument of divine intelligence. Both biology and psychology demonstrate that man can no longer be set off from the rest of nature, that he is simply a part of it, and, hence, that he and his mind can become objects of scientific study. Darwin saw man as an animal, and one implication of this view is that the human mind does not stand outside of science but can be analyzed in the laboratory. This conception gave rise to an empirical psychology that studied the mind by empirical observation and experimentation. It replaced rational psychology which, according to William Dampier, assumed "some metaphysical system of the Universe—say, for instance, that of the Roman Church or that of the German materialists—and deduced rationally the place of the human mind in that system and its relation thereto." What Freud hoped to do was to transform psychology into a
biological discipline, but he was also influenced by the new discoveries in physics—the science of thermodynamics. The physiological school of school of Hermann von Helmholtz, for example, held the theory, as James Strachey notes, that "neurophysiology, and consequently psychology, was governed by purely chemico-physical laws."39 Behind the thinking of Helmholtz and others lies an even more radical view of man. As Calvin Hall observes, "This is the view that man is an energy system and that he obeys the same physical laws which regulate the soap bubble and the movement of the planets."40 This new conception of man was reflected in the work of Gustav Fechner, who in 1860 coined the term "psycho-physics"41 and who is credited with founding the science of psychology. Fechner was a German scientist and philosopher who demonstrated that the mind could be measured quantitatively; thus psychology was elevated to the status of a natural science.42 And, in his Lectures in Physiology delivered in 1874, Ernest Brucke was one of the first to put forth the revolutionary idea that any living organism is a dynamic system to which the basic laws of chemistry and physics apply. Freud greatly admired Brucke and was influenced by this dynamic new physiology.43

Like those who came before him, Freud applied the laws of dynamics to the mind. Man has a given amount of psychic energy, and what he says and how well he functions are results of the distribution of this energy. Ideally, an individual aims for a stabilized personality, one in which an equilibrium of energy has been achieved. The mind, then, is little more than a piece of neurological machinery.

A rigid determinism lies at the heart of Freud's theories about the mind. According to his biographer Ernest Jones, Freud believed in the
universalit> of natural law and disavowed a belief in the supernatural and the miraculous. For Freud, nothing is accidental; every action has a meaning. The causes of everything an individual says and does can be discovered, even though the individual himself may not be consciously aware of what motivates him. This certainty about the nature of human behavior leads Freud to probe the unconscious, through the analysis of dreams in particular, in order to arrive at a coherent theory about the structure of the mind. In many ways, Freud's insights about the structure of the mind illuminate novels like *Frankenstein*, *Dr. Jekyll and Mr. Hyde*, *The Picture of Dorian Gray*, and *The Island of Dr. Moreau*, which are really about the relationship of the conscious to the unconscious mind and the duality that results from it.

For Freud, the mind is divided into two parts: the conscious and the unconscious. The conscious mind is little more than a biological function that distinguishes man from other animals. The conscious mind possesses the ability to reason, which is usually acquired through experience. The unconscious mind, which is the true interest of psycho-analysis, is really the basis for psychic life. The unconscious includes the conscious mind; everything conscious was at one time unconscious, but everything in the unconscious does not necessarily become conscious. Since no energy ever escapes from the system of the mind, a thought or experience may become part of the unconscious, but it is never entirely lost and may show up in disguised form in a dream. Furthermore, Freud believed that all imaginative art springs largely from the unconscious and that the conscious character of the creative process has been over-
Like art, dreams originate in the unconscious and are ways to fulfill wishes. There are two classes of dreams, those that deal with the future and those that deal with the past and present—but in dreams such time boundaries are meaningless. As Freud says, "By picturing our wishes as fulfilled, dreams are after all leading us into the future. But this future, which the dreamer pictures as the present, has been moulded by his indestructible wish into a perfect likeness of the past." Freud's discussion of dreams helps to describe the quality of the unconscious: it is bizarre and apparently chaotic and fuses seemingly unconnected images; it knows no boundaries of space and time, and it contains man's darkest impulses. Frankenstein's Monster, Mr. Hyde, and Moreau's Beast People spring from the unconscious and are symbols of man's divided nature.

Freud's psychological insight into man's basic duality is also reflected in his theory of the structure of the personality. In many ways the id resembles the unconscious; it is the foundation of the personality and the true psychic reality. The reservoir of psychic energy, the id is the seat of the instincts. It remains the same throughout the passage of time. Only through the development of the ego—the reality principle which is frequently at war with the id, as, for instance, Jekyll is with Hyde—can man function effectively in the external world and learn from his experiences to satisfy his needs systematically rather than in a trial-and-error fashion. (Morality arises from the third aspect of the personality, the superego or the ideal principle.)

Freud's theories of the structure of the mind and the personality
are foreshadowed in a novel like *Frankenstein*. The psychological speculations that are the basis for *Dr. Jekyll and Mr. Hyde* and *The Picture of Dorian Gray* give these works an added dimension of plausibility and depth. *Frankenstein*, *Dr. Jekyll and Mr. Hyde*, *The Island of Dr. Moreau*, and *The Invisible Man* are all examinations of the workings of the mind of a man. That the man is a scientist and hence capable of revolutionizing his world through his knowledge makes the novels all the more terrifying. Duality for Freud, as well as for Shelley, Stevenson, and Wells, is a fact of life. By mapping out the terrain of the mind as carefully as he did and providing such a revealing picture of the quality of the unconscious and its relationship to the conscious mind, Freud restated in scientific terms a popular literary notion: the double. The idea of the double finds its most forceful statement in *Dr. Jekyll and Mr. Hyde*. Jekyll and Hyde have almost become cliches for describing the phenomenon of man's mental duality, and Stevenson seems to have been influenced by his reading of Freud. Freud's work also has a bearing on Wilde's *The Picture of Dorian Gray*. Like Freud, Wilde is very much concerned with how the conscious mind evolves from the unconscious and how a man's life may become twisted by his growth into consciousness. Wilde's sense of the tenuous balance between these two parts of the mind provides the basis for the events that occur in Dorian's life. And, as both Freud and Wilde demonstrate, the unconscious is a force of which we are only dimly aware that lurks at the edges of consciousness and governs our daily lives.

*The Picture of Dorian Gray* is about the development—and over-development—of the conscious mind and, as a corollary, about the war
between id and ego, between body and soul. The pattern for Dorian Gray's life is set when, as a young boy having his portrait painted, he makes an idle wish: his portrait rather than his face should be ravaged by experience. That the wish springs from an unconscious urge is made clear by Dorian's later speculations on how it happened to come true:

Might there not be some curious scientific reason for it all? If thought could exercise its influence upon a living organism, might not thought exercise an influence upon dead and inorganic things? Nay, without thought or conscious desire, might not things external to ourselves vibrate in unison with our moods and passions, atom calling to atom in secret love of strange affinity?

Dorian suggests that the unconscious itself may exercise some strange and unknowable influence on the physical world, making the world amenable to human wishes.

In many ways Dorian resembles the id. He is guided by a desire for pleasure, and, like the id, he never changes, at least in appearance. He is given to excesses and degradations that scandalize the people around him, and he acts upon all of his baser instincts. Like the id, he cannot distinguish between subjective and objective reality. When James Vane appears to avenge his sister's suicide, Dorian is not entirely certain whether what he has seen is real or simply an apparition. In fact, Dorian has spent his entire life avoiding the dictates of experience. He has distanced himself from human emotion through an excessively heightened self-consciousness which in spite of his resemblance to the id suggests an exaggerated ego. Dorian is a character whose id is very quickly taken over by his ego.

For Wilde, man is hopelessly divided, and The Picture of Dorian
Gray is about the development of the conscious mind—a development which becomes a terrible burden. Dorian begins his life in an unconscious state; he has about him an air of tainted innocence. Only after Basil Hallward paints his picture does Dorian begin to be self-aware. Art calls up consciousness, and for the first time Dorian sees his own beauty and becomes vain. The novel charts the inevitable growth of Dorian's consciousness to heights that are too great for him to bear. Finally he admits, "I am too much concentrated on myself. My own personality has become a burden to me" (p. 205). Consciousness is such a terrible burden because it has turned Dorian inward and cut him off from the world around him instead of allowing him a free rein.

Dorian Gray is not the only character in the novel burdened by consciousness. Sibyl Vane, the actress, suffers the same fate as Dorian. Until she meets Dorian, she is a gifted actress who is unconscious of her art. Once Dorian proposes to her and she becomes aware of performing for him and aware of her art, she fails and lapses into banal sentimentality. Dorian has evoked consciousness in her as Basil has in Dorian. Her first contact with real life and her first experience with real feeling prove to be too much for her. She commits suicide.

In The Picture of Dorian Gray, Wilde believes that even though man is essentially a dual being, the body cannot escape the sins of the soul, the id cannot survive without the ego. Dorian succeeds for a little while in living a double life, but he is haunted by his sins and driven by a desire to revoke the wish. Being unconscious, it is, of course, irrevocable and not accessible to human volition. In
destroying the portrait—the vehicle of consciousness—Dorian destroys himself, for to be alive is to suffer the pangs of consciousness.

Perhaps better than any one else in the novel, Henry articulates the difficulty of arriving at an understanding of the unconscious and points up the limitations of scientific reasoning in doing so: "He began to wonder whether we could ever make psychology so absolute a science that each little spring of life would be revealed to us" (p. 64). For Henry, experience will be of little use in coming to terms with the source of consciousness, the unconscious. All experience can do is teach us to associate the past with the future so that "the sin we had done once, and with loathing, we would do many times with joy" (p. 64). For Henry, as for Freud, the root of all behavior lies in the unconscious. It is the unconscious—the realm which neither science nor human experience can explain satisfactorily—that generates those passions that drive a man, and as Henry observes, only "our weakest motives were those of whose nature we were conscious" (p. 65).

Like Dr. Jekyll and Mr. Hyde, The Picture of Dorian Gray confirms Freud's insights about the structure of the mind and the personality. Everything a man does is predetermined; every action has a motive, and frequently the motive is unconscious. Dorian Gray's entire life is set by an idle wish whose source is the unconscious and whose result is the inescapable drive toward consciousness. For Wilde, as for Freud, the unconscious is a force to be reckoned with since it governs every aspect of our lives. It is the source, as Henry notes, of all that is most intensely human about man and is, ironically, barely amenable to human understanding. All the characters in the novel can do is acknowledge
its existence and recognize it as a mysterious force which lies at the heart of human behavior.

III. PHYSICS

New discoveries in physics only supported Darwin's and Freud's views of man. Perhaps more than biology and psychology, physics made it clear that, according to Dampier,

man, subject to the same physical laws and processes as the world around him, cannot be considered separately from the world, and that scientific methods of observation, induction, deduction, and experiment are applicable, not only to the original subject matter of pure science, but to nearly all the many and varied fields of human thought and activity.

Along with biology and psychology, physics placed man firmly in nature rather than setting him off from it. Man like the rest of nature is subject to physical laws whose dictates are absolute.

In the last century one of the most important branches of physics, thermodynamics, came into being, and scientists added the concept of energy (the power of doing work) to the Newtonian concept of mass as one of the constants in the universe. During the nineteenth century, the nature of energy and its relationship to heat and work were studied, and the two laws of thermodynamics were formulated. The first law states that energy is indestructible and able to be transformed through work into heat. (The first law of thermodynamics is frequently called conservation of energy.) The second law, actually formulated before the first law, sets theoretical limits to the amount of usable energy. According to the second law of thermodynamics, certain irreversible
changes take place in an isolated system. Heat energy dissipates, or becomes less available for useful work, and, conversely, entropy increases. When energy is at a minimum and entropy at a maximum, a system can do no further work, and a state of equilibrium is achieved. Scientists found one source of the science of thermodynamics in the study of how the steam engine functioned and produced mechanical power. The second source of the laws of thermodynamics was physiology. Antoine Lavoisier explained that animal heat did not originate from some mysterious entity in the heart but from the combustion by the body of food. Lavoisier's discovery raised two other questions: how is heat created from chemical change, and where does animal power come from? These questions intrigued two medical doctors—J. R. Mayer (who proposed the first law of thermodynamics in 1842) and Helmholtz (who gave the first general account of this law in 1847)—and directed them to the problem of conservation of energy. The third source of the laws of thermodynamics was the study of the phenomena of electricity and magnetism. James Joule experimented with electricity by running it through a conductor and found that no matter how much work was done an amount of heat equal to the energy expended was produced. He concluded that heat was a form of energy. Joule's findings provided the most precise statement of the quantitative relationship between electricity, heat, and mechanical work.

Although the discovery of the principle of conservation of energy was one of the great scientific achievements of the nineteenth century, it had some distressing philosophical implications. Since conservation of energy seemed to operate consistently throughout the natural world, people tended to view matter—and hence the universe—as rigid, eternal,
and indestructible. 57

Along with thermodynamics, a science of electricity came into being in the nineteenth century; it developed out of the study of magnetism and magnetic forces and the work of several eighteenth-century scientists. The telegraph was the first successful application of this new science and the greatest theoretical extension of electricity. Two Italians, Galvani and Volta, and Benjamin Franklin performed some of the first experiments with electricity, which was originally called galvanism.

The work of Volta, Galvani, and Franklin led to some of the great advances in the field of electricity in the nineteenth century, especially by Michael Faraday and J. Clerk Maxwell. Faraday postulated the existence of lines of force in an electromagnetic field to explain the stresses and strains in such a field and to account for the operation of attraction. His discoveries paved the way for the electrical aspect of modern theories of field physics. 58 Using Faraday's ideas, Maxwell proposed an electromagnetic theory of light. According to Maxwell, light is a series of electromagnetic waves emitted by vibrating electric systems. The colors in a spectrum of light are produced by basic elements and not their compounds; therefore, these vibrating systems of electricity must be reflecting off of atoms or parts of atoms. Maxwell's ideas pointed toward an electric theory of matter in which a powerful electro-magnetic field could resolve lines in a spectrum into two or more components. Thus, experimentation in the science of electricity led to atomic theory and the discovery of positive atomic rays and electrons. 59
Advances in physics revolutionized man's view of the world. The science of thermodynamics proposed a universe that was a self-contained system of energy and whose separate parts—including man himself—were also energy systems. The science of electricity led to the conclusion that the world and everything in it is made up of groupings of atoms which are invisible to the naked eye but can themselves be broken into even smaller, electrically charged units. Like biology and psychology, physics asserts that the world makes sense according to scientific principles rather than divine ones. Science rather than God explains man's reason for being.

Although ideas drawn from physics play an important role in Frankenstein and The Time Machine and The Invisible Man, in general they are less central to the works considered here than concepts from biology and psychology. Wells' notion of a fourth dimension in which space and time are one is absolutely essential to the acceptance of the device of time travel. Similarly, Shelley uses galvanism as the catalyst for the events in her novel. But in only one other work discussed here, Bulwer-Lytton's The Coming Race, does the fictionalized treatment of physics appear in a significant way.

Physics in The Coming Race provides at least some explanation of how the mysterious substance "vril" works. In fact, Bulwer-Lytton's description of vril suggests atomic theory which explains finally how matter can exist in solid, liquid, and gaseous states and why it is composed of certain quantities of chemicals in given combinations. Although part of vril's power is derived from psychic energy, the narrator suggests that it operates on a principle similar to Faraday's "atmospheric
magnetism" (p. 23). The narrator, in fact, thinks that vril is synonymous with electricity, except that it also includes magnetism and galvanism. In vril, the Vril-ya feel that they have achieved a unity of all agencies of energy in nature. Faraday himself intimated that such a union is possible, and the narrator quotes one of the scientist's writings in support of the scientific legitimacy of vril: "...the various forms under which the forces of matter are made manifest have one common origin; or, in other words, are so directly related and mutually dependent, that they are convertible, as it were, into one another, and possess equivalents of power in their action" (p. 23). Vril is the basis for the rational society in The Coming Race. If vril can be explained scientifically, then the narrator's vision of the potential threat to the human race is made all the more terrifying and real.

IV. CONCLUSION

In the nineteenth century, science made it impossible for man to turn back to old and comfortable ways of seeing himself. Science and scientific thought touched the lives of nearly everyone. As works important to developing nineteenth-century British science fiction, Erewhon, Erewhon Revisited, The Coming Race, News From Nowhere, The Picture of Dorian Gray, and The Fixed Period are all responses to advances in biology, psychology, and physics. They concern themselves with fundamental human questions: what does the future hold in store for mankind; how does the human mind work; how does the physical universe operate? Science seems to offer some answers to these questions. And what science
discovers is, as Jaynes observes, that "There is no corner in the stars for any god, no crack in this closed universe of matter for any divine influence to seep through, none whatever." The universe (and man within it) is only a system—a machine—made comprehensible by certain physical and biological laws and not divine ones. The works of Butler, Bulwer-Lytton, Wilde, Morris, and Trollope are reactions to this rather startling and humbling discovery. Man occupies his favored position only because of the chance operation of natural law, and his place in the universe is not secure, as the geological record so clearly demonstrates. Writers of science fiction, like all men, are naturally terrified by the prospect of being ground down by natural forces or robbed of their humanity through some careless act of their own, an act made possible by science. That is why the novels I examine are so universally skeptical of science and the worlds it creates. They question and undermine the pronouncements of science (pronouncements that are both marvelous and terrifying). Science tampers with the fabric of the physical world, and man cannot be sure of what the ultimate outcome of this interference with nature will be.

Since the novels of Butler, Bulwer-Lytton, Wilde, Morris, and Trollope draw so heavily from the sciences and use scientific themes to make plausible the fantastic worlds they create, they figure in the history of the development of science fiction. They reflect ideas presented in Frankenstein and, in many ways, anticipate Stevenson and Wells. Because I have discussed these six works in relation to nineteenth-century British science fiction, I will not treat them further in the dissertation. Instead, in the next three chapters I will take
up, in order, Shelley's Frankenstein, Stevenson's Dr. Jekyll and Mr. Hyde, and Wells' The Time Machine, The Invisible Man, and The Island of Dr. Moreau as works which demonstrate even better than those discussed in this chapter how scientific themes are translated into works of science fiction.
Published in 1818 when Mary Shelley was only twenty years old, Frankenstein reflects the impact of science and scientific thought on the popular imagination. Science, as Mary Lund suggests, gives "substance to the novel" and gives a terrifying reality to the fantastic premise that a man can bestow life upon another species. The novel is not so much a strict account of the scientific knowledge of its day (although some current advances in biology and the use of electricity play an important role) as it is an investigation of the psychological implications of a scientific idea and, in general, the scientific way of seeing things. Like all science fiction, Frankenstein is about the radical alteration of the human perspective on the universe and about the future made possible by science. The novel is in great measure, the product of ideas drawn from biology, psychology, and physics and a demonstration of the potentially dangerous effects of such ideas when they are realized by science.

Mary Shelley's interest in biology is evident in Frankenstein, and, in fact, her knowledge of some experiments done in the biological sciences provides the impetus for the novel. She admits to having very much in mind when she began the novel the experiments of Erasmus Darwin, who supposedly animated a piece of vermicelli by using an electrical current, and to having been influenced by the discussions of Byron and
Shelley on "the nature and principle of life, and whether there was any probability of its ever being discovered and communicated." Shelley in Frankenstein, of course, assumes that there is and that biological theories will lead to this fantastic discovery.

The question of the generation of life intrigued even the earliest natural philosophers—those writers like Albertus Magnus, an older contemporary and teacher of Saint Thomas Aquinas, and Paracelsus, a sixteenth-century physician who first applied chemistry to medicine—whose writings first attract Frankenstein. Notions like "the philosopher's stone and the elixir of life" (p. 40) are quickly overthrown by the serious study of anatomy and chemistry proposed for Frankenstein at Ingolstadt. Theories of evolution suggest that man is linked biologically to all other living species and is the end result of the orderly operation of natural processes. Such a suggestion makes possible Frankenstein's fantastic claim that he has created life. The Morster is the physical result of Frankenstein's wild speculations on the nature of life and, as the product of the scientist's diseased imagination, the Devil incarnate.

Frankenstein begins his quest for the spark of life not in the occult or metaphysical but in the charnel house with the decayed physical remains of the human body. Through a chemical and biological understanding of death, Frankenstein proposes to uncover the secret of life and to make life and death "ideal bounds" (p. 54). Frankenstein is an overreacher, a man constrained by the limits of his mortality. He visits graveyards and charnel houses as if pursuing death in order to triumph over it. He is disgusted by what he finds, by what death and decay do
to the "noble form of man" (p. 52) and vows to eradicate all but violent or accidental death. He wants for mankind and, of course, himself the immortality of a god. He confronts the fact of death with a mixture of contempt and scientific objectivity; the human form is only too vulnerable to the physical process of decay. Being a rational man, he claims not to fear the supernatural and to see the graveyard as "merely the receptacle of bodies deprived of life, which, from being the seat of beauty and strength, had become food for the worm" (p. 51).

The novel makes an ironic statement about Frankenstein's audacious drive toward immortality, a drive sparked by the promise held out by his biological discoveries. In the end he is defeated by his own mortality. He has pledged his life to the destruction of the Monster and even tries to enlist Walton's aid. Yet his life is not enough. Having let the Monster loose upon mankind, Frankenstein is unable to destroy it--and to reestablish the natural balance he has upset--precisely because he is only a man and, like all men, must eventually die. And because all men die, no one man can live long enough to bring the Monster back under control again.

Frankenstein's dream of becoming the creator of a new race evaporates. His understanding of the structure of the human body affords him the knowledge to circumvent the normal biological process of reproduction. In contemplating his role as creator of a new species, he observes that "No father could claim the gratitude of his child so completely as I should theirs" (p. 54). He will be both father and mother, since this new race will originate from him and him alone. But nature refuses to cooperate with such an unhealthy scheme. Frankenstein gives
birth to a monster because he cannot duplicate, either artistically or scientifically, the intricacies of the human body. The only way he can approximate the human form is to make the Monster eight feet tall and hideously veined. Frankenstein cannot integrate the individual features of the Monster into an effective and aesthetically pleasing whole because of the limitations of the human imagination and because of the difficulty in manipulating the physical materials he works with. While the physical world may provide food for speculation, it is, as Frankenstein quickly discovers, in many ways intractable.

Because Frankenstein dreams of fathering a new race, it is entirely appropriate that Mary Shelley labels him "the Modern Prometheus." Like his mythic counterpart, Frankenstein is a man who wants to be more than he is and aspires to be a god. Like Prometheus, he fashions a man cut of clay (that is, literally out of parts of the human body). But because he is only a man and because the Monster reflects his own limitations, Frankenstein is horrified by what he has created and runs from it in terror. The gods instigate Prometheus' punishment, and, in a sense, the Monster's revenge upon Frankenstein is the result of some kind of force (divine or otherwise) behind nature. The creation of the Monster represents an assault on nature, and its creation disrupts the balance of the physical universe of which it is a product. It is a symbol of a natural imbalance because it can find no physical equivalent for itself. It resembles nothing else in the physical world. Being the first of its kind, it is totally alienated from its surroundings. Because it cannot establish physical or emotional contact with the world and because it is so alone, it seeks to avenge itself on its creator. Like the vultures in
the myth, the Monster is a daily reminder to Frankenstein of the outrages he has committed through the unwise pursuit of his studies in biology. Although the novel is presented as a cautionary tale and although Frankenstein has been chastened by his experiences, he never gives up his Promethean desires. Like Faust, who comes to hate the "cunning" that caused him to commit blasphemies and through which "for vain pleasure of twenty-four years hath Faustus lost eternal joy and felicity,"5 Frankenstein regrets his life. However, even with his last breath, as he cautions Walton to "seek happiness in tranquility, and avoid ambition, even if it be only the apparently innocent one of distinguishing yourself in science and discoveries," he qualifies himself: "Yet why do I say this? I have myself been blasted in these hopes, yet another may succeed" (pp. 217-18). He dies unrepentant.

Through Frankenstein as Prometheus, the overreacher and usurper, Shelley, like Butler and Bulwer-Lytton, explores the possibility of a future in which mankind has been surpassed by a superior race. Although monstrous, Frankenstein's creation is in many ways superior to man. It can subsist on nuts and berries and withstand extremes of temperature that would kill a normal man. More importantly, the Monster is, as it cautions Frankenstein, "more powerful than thyself; my height is superior to thine; my joints more supple" (p. 100). Since the Monster represents such a threat to mankind, Frankenstein refuses to create a mate for it. In the evolutionary scheme of things, the children of such a union could bring about the extinction of the human race. Through sheer physical superiority alone, the children of the Monster could overpower mankind. Certainly the Monster shows no mercy toward Frankenstein. Frankenstein
knows that what he has created has the potential to enslave and destroy him, and by extension, the rest of his fellow men. This implied threat is part of what makes the Monster so monstrous.

For Mary Shelley, the Monster is definitely here to stay. It is permanent and indestructible because it is the product of scientific rather than simply artistic pursuits. Like art, science in the novel is, as M. K. Joseph suggests, "creative; but whereas the world of art is ideal and speculative, that of science is real and inescapable. It must then take the consequences." The Monster is the imagination given an objective existence by science, and Frankenstein's surrender to it is, according to Christopher Small, representative of man's surrender to something in the spirit of scientific inquiry.

Because the Monster is the result of Frankenstein's diseased imagination and the product of irreversible biological processes, the characters in the novel find it hideous and intolerable and flee from it in terror. But when allowed to speak, the Monster seems a sympathetic being, possessed of a subtle mind and the ability to move those who listen to it. After the Monster tells the story of its awakening, it is difficult to believe that it committed such atrocities against its creator. Frankenstein himself is almost persuaded by the Monster's pleas, and Walton too feels some degree of pity for it. Yet Frankenstein comes to mistrust the Monster's ability to arouse sympathy and warns Walton of it. The Monster initially hopes to ingratiate itself with the deLacey family and by gradual steps to overcome their prejudices against it because of its appearance. Such a hope is, of course, doomed. Even the deLaceys, who out of all mankind would be most likely to have some
fellow feeling for it, are horrified by its presence.

Shelley suggests that the Monster is not as monstrous as Frankenstein and others would have us believe. The first time we see it, it seems almost child-like as it grins at its terrified creator. It is capable of higher emotions: love, pity, altruism. But mankind is singularly blind to these attributes and hopelessly prejudiced against the Monster because its continued existence is a threat to the future of the human race.

The Monster is sometimes confused with its creator, both in popular usage and in the novel itself, as when Walton first spots them on the ice (p. 24) or immediately after the murder of Clerval (p. 175). Yet the Monster remains unnamed; it is simply the Monster. It is given no other name because it is an unknown quantity, the product of science and technology, which have liberated incalculable forces not to be brought back under control. The Monster is a symbol of scientific excess. It always manages to escape Frankenstein's (and our) ability to understand it and bring it within the realm of normal human experience. The Monster and the feelings it evokes go beyond our ability to define them in words. The horror of the Monster is finally unspeakable.

Because the Monster represents some kind of unspeakable horror and, hence, cannot be articulated, understood, and finally controlled, its fate is uncertain at the end of the novel. We never witness its death. It has, up until the death of Frankenstein, clung tenaciously to life under severe hardship and proven singularly indestructible. That Shelley excludes the death of the Monster, and hence leaves the question of its continued existence up in the air, seems a fitting conclusion to
the events of the novel. The Monster will not die. Even as it makes its final vow to do away with itself, we sense that it means to go on living. The Monster determines Frankenstein's (and overreaching mankind's) destiny. There is no escape from the results of tampering with the fabric of nature and from the results of the scientific experiments that made the Monster possible. The Monster is mankind's assault on nature and the natural balance of the physical world. Finally, it is, according to James Rieger, "a botched and dangerous experiment which...discredits the scientific understanding in whose name and image it was made."^8

The Monster took shape from Mary Shelley's fascination with a biological idea—that a piece of vermicelli could be animated and, by extension, that man could create organic life from inorganic materials. Yet *Frankenstein* is very much concerned with psychology as well and the psychological implications of overzealous scientific pursuit. Like Wilde's *The Picture of Dorian Gray*, *Frankenstein* is, as Harold Bloom suggests, about the "disease of excessive consciousness."^9 The novel explores scientific possibilities and the scientific way of seeing things by presenting us with the mind of a scientist. As the narrative unfolds we witness the intricate workings of that mind and the physical realization of its wild imaginings, the Monster. The novel reveals the battle between the conscious and the unconscious.

*Frankenstein* is obsessed with the pursuit of knowledge and the secrets of nature at the expense of human contact. The novel is an examination of his interior universe and the way science enables him to objectify, give a physical reality to, the product of his imagination. *Frankenstein* is a scientist because of the values the novel associates
with science: curiosity, the human drive to know, the creative impulse all lie at the heart of science. As a scientist, Frankenstein ventures into forbidden territory and commits the ultimate blasphemy by bestowing life on the Monster. The structure of the novel reflects upon the nature of Frankenstein's unholy venture. Frankenstein is set up as a triple narrative, and as we move from Walton's narrative to the Monster's, we turn away from the world of everyday experience to the heart of Frankenstein's scientific nightmare, from the conscious to the unconscious.

At the outer edges of the narrative is Walton, who is a milder version of Frankenstein and hence closer to our normal experience. He shares a mysterious sympathy with Frankenstein, and this sympathy is, what makes the framework. In fact, his relationship to Frankenstein is like that of the Wedding Guest to the Ancient Mariner. Upon closer examination, the empathy that develops between the sea captain and the scientist begins to make sense. Walton is ambitious and something of an overreacher. He shares Frankenstein's desire to distinguish himself: he wants to discover the magnetic power which "may regulate a thousand celestial observations, that require only this voyage to render their seeming eccentricities for ever. I shall satiate my ardent curiosity with the sight of the world never before visited and may tread a land never before imprinted by the foot of man" (p. 16). Like Frankenstein, Walton hopes to discover the light. While Frankenstein is searching for the divine spark, Walton looks for the eternal light at the pole. His quest, like Frankenstein's, involves turning away from human contact: he leaves his sister behind, and he defies his father's restriction
against going to sea. And he shares Frankenstein's distaste for physical realities: he is squeamish about the brutalities aboard ship, and when he finds a first mate of fine sensibilities is quick to tell us that the mate's physical appearance belies the nobility of his character.

But there are significant differences between the two men. Walton says right away that even though he is ambitious he has a strong desire for friendship and understanding. He feels his isolation keenly, even at the very beginning of his voyage when he is most enthusiastic about his plans. Frankenstein, on the other hand, forgets about his family and friends as he becomes increasingly involved in his scientific investigations. Only the chance appearance of Henry Clerval after the "birth" of the Monster recalls Frankenstein to his senses and reminds him of his need for human companionship. Like Frankenstein, Walton is a lover of the marvelous, but he is also at heart a practical man. He is more balanced than Frankenstein—he can, for instance, be persuaded by the entreaties of his men to turn back from his quest. But Frankenstein never gives up and even tries to bequeath his monomania to Walton. Walton, then, is a saner version of Frankenstein and a character whose ties to us are made clear from the start. He writes to his sister, who is really a figure of the reader, and in his letters acts as a mediator between the normal world of everyday experience and the terrifying world of a self-conscious mind turned excessively inward.

Walton's letters provide a record of the second of the three narratives: Frankenstein's confession of the creation of the Monster and the destruction of his family, friends, and most importantly, his hopes for the future. Frankenstein is an alienated figure, cut off from
his own humanity as well as that of the people around him. When he visits charnel houses to obtain the raw material to make the Monster, he reacts calmly to the fact of death and does not seem to identify himself with those human bodies he dissects. Scientific study fostered by the drive to know results in such alienation and wild speculations upon the nature of life. An ironically, even though Frankenstein is a scientist and as such is necessarily preoccupied with outward things, he is alienated and his imagination is diseased because he is so turned in upon himself. Frankenstein lives too much in the mind and not enough in the world. He is interested in the physical world only as the laboratory for his mental activities and is obsessed with the idea of his creation until he gives it a physical form. Once he gives substance to his idea, he is terrified by what he has made, because the Monster reveals his flawed artistic as well as scientific vision.

Frankenstein is a character curiously lacking in physical substance and vitality. He is all mind and no body. The novel gives very little indication of what he looks like. Except for the fact that Walton tells us that he has fine, dark eyes and that he is noble in bearing, we have few clues to his physical appearance. Mary Shelley emphasizes Frankenstein's mental rather than his physical being and in doing so presents a criticism of rationalism carried to excess. The Monster is a product of Frankenstein's unconscious and acts out, as Masao Miyoshi observes, "Frankenstein's own suppressed desire to destroy what he loves." Because the Monster is so destructive, it represents "a negative impulse lurking in the depths of rationalism" and as such, is a figure of the Devil. This negative impulse works against the comforts of human
relationships and feelings of unity with the physical world.

Because he lives almost exclusively in the mind, Frankenstein is alienated from nature and, according to M. A. Goldberg, "breaks with the brotherhood of man." By creating the Monster in the first place, Frankenstein is engaged in searching out the secrets of nature. But, paradoxically, as his obsession with the creative act grows, he becomes increasingly oblivious to nature. While he is hard at work in his laboratory, nature offers up a most beautiful spring, but he fails to notice it (p. 55). As if to underscore his alienation, Frankenstein brings forth life during what would seem to be a most incompatible season. "On a dreary night in November" (p. 57), the Monster comes alive, not in the Spring which is usually the time of birth and rebirth. Thus Frankenstein and his creation are out of tune with the natural cycles of the universe; the Monster is the product of the bleak winter of Frankenstein's mind.

Frankenstein is alienated from society and human companionship as well. He paints an idyllic picture of his family and his early years, yet he becomes increasingly withdrawn from those around him and lives more and more in the nightmare world he has created for himself. The pattern of the journeys Frankenstein takes throughout the novel reflects his increasing isolation. He travels northward from Geneva to Ingolstadt to create the Monster and has his first and only prolonged conversation with it on the glacial slope of Mont Blanc. When he agrees to make a mate for the Monster, he sets out from Geneva toward the Orkneys, and again goes northward. After he destroys his handiwork and the Monster avenges itself by killing Henry Clerval, Frankenstein journeys southward to Geneva to marry Elizabeth. When she dies at the hands of the Monster,
his pursuit again leads him northward toward regions unfit for human habitation. Indeed, the terrible hardship of his final journey costs him his life. He has travelled too far away from his fellow man and meaningful human contact ever to return. That is why when Walton discovers Frankenstein, who is nearly at the end of his resources, on the ice floe, the scientist consents to board the ship only after he finds out that it is going North. Frankenstein's journeys illustrate one of the central conflicts which confront him: whether to go South toward the warmth of family, friends, and human ties, or North toward the frigid world of the Monster and the bleak desolation of the mind.

If *Frankenstein* is a cautionary tale about scientific excesses, it is also a warning about the alienation which results from such excesses. Society and normal social intercourse are almost nonexistent in the novel. What limited possibilities that are offered by his friends and family are rejected by Frankenstein in favor of his scientific studies. The desire to study science takes Frankenstein away from his home and the comforts of his family in the first place. And though Frankenstein's scientific pursuits are a sin against nature, they are also a sin against humanity. The overzealous desire for knowledge for its own sake is destructive of human society. As he becomes increasingly involved in the act of creation, Frankenstein turns away from his social and familial obligations. As a warning from his father makes clear, Frankenstein fails not only as a scientist, but also as a social being:

> If the study to which you apply yourself has a tendency to weaken your affections, and destroy your taste for those simple pleasures in which no alloy can possibly mix, then that study is certainly unlawful, that is to say, not befitting the human mind. (p. 56)
And the two failures are related. Frankenstein isolates himself in an attic in Ingolstadt and later in a hovel in the Orkneys to work on the Monster and its mate. It is fitting that what he creates should be a threat to mankind because his alienation in pursuit of his ambitions is itself a betrayal of humanity and the possibilities offered by human relationships.

So, Frankenstein chooses alienation. He feels revulsion toward the Monster partially because of its sheer physicality and because it is "a filthy mass that moved and talked" (p. 147). Because Frankenstein has great difficulty dealing with the world in general and with the grotesque physical realization of his own imagination in particular, he faints or loses consciousness almost every time he comes in contact with the Monster. In fact, not until the Monster's existence is confirmed by Walton at the end of the novel can we be absolutely certain that it is real and not just part of the ravings of a madman. Frankenstein himself comes to doubt its existence at times and refrains from revealing his story at crucial moments for fear of being thought insane (and also for fear of having to accept responsibility for what he has created). Only when he loses consciousness or succumbs to bouts of madness can he bring himself to talk about the Monster—-that is, until he is at the very end of his life and meets up with Walton. Frankenstein abandons the Monster because it is a reminder of his own limitations and failures. The Monster shows him, in the most graphic way imaginable, that he is only a man, so that finally only in his unconscious mind can he identify with it.

At the heart of Frankenstein's confession is the Monster's narrative. The Monster represents in physical form the wild imaginings
and deepest unconscious fears and desires of its creator. It is, in fact, as Miyoshi says, "the scientist's deviant self...and a means by which the creator realizes his secret and abominable desires." As a product of the unconscious, it is a symbol of man's fallen nature and baser instincts.

It is no accident that the Monster is, as William Walling notes, a fusion "of the two central Christian symbols of the loss of divine favor--Satan and Adam." That Mary Shelley had Adam in mind when she conceived of the Monster is amply demonstrated by her choice of an epigraph for the novel. Adam, in Milton's Paradise Lost, after being expelled from paradise, pleas with his creator to grant him mercy in much the same way the Monster attempts to move Frankenstein to sympathy. In fact, after reading Paradise Lost, which as a mere coincidence it discovers in a portmanteau, the Monster begins to see itself as a kind of Adam, but as an Adam expelled from divine grace through no action of its own. It is cast out because of the failure of its creator's vision:

Hateful day when I received life! I exclaimed in agony.
'Accursed creator! Why did you form a monster so hideous that even you turned from me in disgust? God, in pity, made man beautiful and alluring after his own image; but my form is a filthy type of yours, more horrid even from the very resemblance. (p. 130)

Like Adam, it is alienated from every other species of being; but unlike Adam, it is not protected by and conversant with its creator.

Because it has been denied the grace and protection of its creator, its existence has become a terrible burden to it. Everywhere it goes, it meets with disfavor and can find no comfort and no link with the world around it. Consequently it takes "Satan as the fitter emblem of my condition" (p. 129). Because it is miserable and cast out, it becomes
Satanic. Envy and bitterness transform it from a benevolent figure into an evil one. The Monster becomes evil because those around it see it as evil. Like Prometheus who is chained to the rock, the Monster, as a figure of Satan, is chained to an existence that provides it with a daily reminder of its loathsomeness.

The Monster represents the unconscious and by its very existence demonstrates the inescapable duality of man's nature. Frankenstein turns upon some of the basic conflicts that confront its hero: whether to live in the mind or in the body, in the conscious or unconscious mind, in the world of emotion or the world of reason. Part of Frankenstein's problem is that he never successfully reconciles these opposing forces within himself and becomes an integrated man. Frankenstein's failure, in human terms, comes about in part because science gives him the ability to realize his wild fantasies. In the novel, Frankenstein is all mind, having successfully divorced himself from his body through the creation of the Monster who is nothing if not a physical being. (Perhaps its sheer ugliness is also meant to tell us something about how Frankenstein regards his own physical nature.) After he creates the Monster, Frankenstein becomes increasingly reticent with those around him. He seems in no hurry to marry Elizabeth or to consummate the marriage—and, presumably, to procreate the race through natural rather than scientific means. On their wedding night he is reluctant to enter their bedchamber, where ironically the Monster—the projection of Frankenstein's unconscious mind—murders his wife. He never achieves a suitable balance between his conscious and unconscious desires and is at times almost engulfed by his unconscious mind. After
he has destroyed the Monster's mate, he fantasizes that he will be swallowed up by the sea, and later remarks: "The whole series of my life appeared to me as a dream; I sometimes doubted if indeed it were all true, for it never presented itself to my mind with the force of reality" (p. 178).

Frankenstein is increasingly unable to determine the nature of reality because of his conflicting desires. Throughout the novel, Mary Shelley suggests that the Monster is real only as an idea of Frankenstein's. Frankenstein repeatedly fears being thought a madman by Walton. Since Frankenstein's story is in large part an exploration of the unconscious, it is appropriate that his tale is told in "wild and mysterious regions" (p. 30). Cut off from normal human contexts and set against the icy sea, the Monster becomes more real because it is more at home among these trappings of the unconscious.

Because he gives a separate existence to his unconscious mind, Frankenstein is a man hopelessly divided against himself. Science and scientific rationalism only help to promote this internal split by allowing Frankenstein to objectify the unconscious in the form of the Monster. Instead of providing him with answers, scientific pursuit only compounds his problems. He becomes, not the father of a new species of life, but a man victimized by his own creation and scientific speculations. He cannot accept responsibility for the Monster because it represents that part of himself from which he is in flight. Nor can he incorporate the Monster into his life, because to do so would be to reconcile conflicting urges within himself. The Monster is a product of Frankenstein's divided nature and, as such, a fitting emblem of its creator's baser
instincts.

It is, then, Frankenstein's double, the dark side of the scientist's soul, what he calls "my own vampire, my own spirit from the grave" (p. 77). That the two are frequently confused with one another in the popular imagination testifies to how closely linked their identities are. The Monster is part of its creator, being the physical realization of Frankenstein's idea. And the two are mistaken for one another in the novel as well. When he is accused of Clerval's death and taken to see the body, Frankenstein realizes that he is responsible for his friend's death, although he never acknowledges the link between the Monster and his own unconscious desires.

Because Frankenstein cannot reconcile his internal split, he is pursued by what he has created. Although to some degree a rational being, the Monster is Frankenstein's unconscious raging out of control, and the two fight for the dominance of Frankenstein's soul. By gradual degrees, Frankenstein surrenders to the Monster, and his loss of control signifies, according to Martin Tropp, "the gradual surrender of Frankenstein to his dream double, and in a larger sense, the loss of control of science to the technological 'doubles' it creates."14 The Monster is Frankenstein's dream objectified by science and given the strength to overpower its creator. Just as the identities of the creator and his creation blur, so does the distinction between pursuer and pursued. By the end of the book, Frankenstein is pursuing the Monster, who, it turns out, is in control of every aspect of the pursuit and, finally, of Frankenstein's life. It pushes Frankenstein to the very limits of his mortality only to elude his grasp.
The structure of Frankenstein adds depth and plausibility to the psychological truths it arrives at. The triple narrative moves us from our world into the nightmare of the unconscious mind. And the frames in the novel suggest the gap between our world and the world a scientist like Frankenstein threatens to create. We do not hear either Frankenstein's or the Monster's tales first hand, perhaps because they are too alien and terrifying. Instead, we, like the rest of society belong outside the world of the novel; Walton must write us letters at a safe distance to communicate the horror of Frankenstein's vision. Frankenstein does not, like Alice, fall asleep and dream up the Monster; he brings it to life through science. And because science gives it the substance of reality, and not the insubstantiality of a dream, the Monster does not evaporate when Frankenstein--and the rest of mankind--wakes up.

Frankenstein reflects Mary Shelley's interest in biology and psychology. She is preoccupied with biological manipulation and its implications for the future of the human race and with the notion of the double given special force by scientific possibilities. But physics provides her with the impetus for the novel. She was intrigued by the notion of galvanism, and her description of the tree stump blasted by lightning during a storm (p. 41) calls to mind the experiments of Benjamin Franklin. Perhaps Frankenstein may be a play upon Franklin's name. She certainly is thinking of Galvani's work when she introduces the idea of generating the divine spark of life through scientific means.15

Galvanism is the idea that makes possible the Monster. In the introduction to Frankenstein, Mary Shelley speculates on the possibilities
opened up by galvanism and, in doing so, provides the key to the inspiration behind the novel: "Perhaps a corpse would be re-animated; galvanism had given token of such things; perhaps the component parts of a creature might be manufactured, brought together, and endued with vital warmth" (p. 9). Indeed, the "powerful engine" she imagines in her dream, on which "the hideous phantasm of a man" (p. 9) is stretched, is an electrical device. And, significantly, Cornelius Agrippa, Albertus Magnus, and Paracelsus are overthrown by the "man of great research in natural philosophy" (p. 41) who explains the nature of electricity to Frankenstein on the night of the storm. The old ways of seeing things very quickly give way to persuasive new scientific visions.

Frankenstein is the "modern Prometheus," and Frankenstein successfully links the Prometheus myth with current and scientific theories about galvanism and its relationship to the spontaneous generation of life. As science fiction, the novel is concerned with using science to make plausible what was once thought to be miraculous and unknowable. Frankenstein, then, becomes a kind of updating of the myth, a recasting of it in a scientific framework. What was once in myth supernatural—a divine spark—is transformed into a natural phenomenon used in a scientific experiment. And the Titan reemerges as a scientist who is Prometheus in stature because of the magnitude of his aspirations but who is only a rational, scientific man. Like Prometheus who brings fire, Frankenstein liberates technology in the figure of the Monster. But he does not, like Prometheus, instruct his creation in the arts. He does not humanize the Monster by teaching it to read and write or express itself creatively, that most human of endeavors. Instead he
abandons it. For this, perhaps even more than for his audacity in attempting to usurp the role of a god in the first place, he is punished.

In *Frankenstein*, Mary Shelley is preoccupied with ideas derived from biology, psychology, and physics as well as the possibilities these ideas suggest. The novel is not a literal document or factual account of the state of science in the opening years of the last century. Rather, it is an examination of the implications of a scientific idea and an investigation of a potential direction in which science may lead us. Mary Shelley warns us that science offers us a future that is radically different from the present, and because it deals with physical realities, once we have started on the path toward that future there will be no turning back. Finally, by presenting us with such vivid images of the mind of a scientist and the terrifying product of that mind, *Frankenstein* creates a futuristic nightmare whose potential realization threatens the very existence of man.
CHAPTER 3: MAN DIVIDED:
THE STRANGE CASE OF DR. JEKYLL AND MR. HYDE

Like Mary Shelley's *Frankenstein*, Robert Louis Stevenson's *Dr. Jekyll and Mr. Hyde* is an investigation of the implications of a scientific idea. As a result of his blend of science and mysticism, Dr. Jekyll discovers a chemical potion which he thinks will do the seemingly impossible: separate the good from the evil in his own personality and dissociate himself from his own fallen anture. *Dr. Jekyll and Mr. Hyde*, like Mary Shelley's novel, is intimately concerned with the possibilities science opens up, and it too is an examination of scientific excesses. Its hero, Dr. Jekyll, is a scientist who through pseudo-science--his transcendental medicine--is able to give a physical shape to his wild speculations and whose creation, like Frankenstein's Monster, comes back to haunt and ultimately destroy him. Both Frankenstein and Dr. Jekyll create monsters who symbolize man's unconscious desires and who themselves have so captured the popular imagination that they have become important parts of the first myths of the technological age. And, both works are journeys inward toward the sources of the creative imagination and dreams which when brought to life by science turn into nightmares.

Like *Frankenstein*, *Dr. Jekyll and Mr. Hyde* is directly influenced by ideas drawn from science. While the physical as well as physiological properties of galvanism provide the impetus for Shelley's novel, Freud's insights about the structure of the mind and the personality lie at the
heart of Stevenson's work. Dr. Jekyll and Mr. Hyde resembles Frankenstein and, to an even greater extent, Wilde's A Picture of Dorian Gray in that it is an examination of the relationship between the conscious and unconscious mind which is expressed in terms of man's inescapable duality. The novel presents in graphic terms the war between the id and ego and the fragmentation and dissolution of the personality that result from it.

Just as Frankenstein presents in intricate detail the mind of a scientist, Dr. Jekyll and Mr. Hyde explores the interior universe of its hero. The structure of the novel reflects this preoccupation with the life of the mind. Like Frankenstein, Dr. Jekyll and Mr. Hyde is built upon several frames, and the characters who occupy the frames are closer to the reader's experience than are the scientists and their monsters. These peripheral characters help the reader to interpret the fantastic events he encounters. In each work, the frames contribute to the effect of the stripping away of the various levels of identity of the hero until only the nightmare world of the unconscious and the overactive imagination is left.

The structure of the narrative, with its successive narrators, suggests the labyrinth of the mind as well as an elaborate mental puzzle whose pieces we put together as we assemble the facts in "the strange case." We move from Enfield and Utterson, who are relative outsiders, to Lanyon, who has viewed the terrifying metamorphosis of Hyde into Jekyll, to Jekyll himself. The structure of the novel itself supports its treatment of psychological themes, its description of the relationship of the conscious to the unconscious, the id to the ego, in which
they find themselves. The characters in the frames—devices to help the reader make the transition from the everyday to the fantastic—only serve to accentuate the excesses of the heroes and their basic incompatibility with the world around them. Like the narrative of *Frankenstein*, that of *Dr. Jekyll and Mr. Hyde* progresses inward toward the hero's unconscious mind and, as it does so, peels away the outer layers of identity to get at the real truth of his nature. We unravel the mystery along with Utterson and discover more and more of the truth. Finally we arrive at Jekyll's narrative at the heart of the novel. It explains the mechanics, if not the emotional realities which are in part inexplicable, of the mysterious relationship of Jekyll and Hyde.

The events of the novel are filtered through the consciousnesses of various narrators who have different degrees of awareness of the relevance of Jekyll and Hyde's relationship to their own lives. Each of the narrative voices points us toward Jekyll's final narrative and gives us the means to assess what the Doctor has to say and to check his statement against objective reality. The narrative structure provides a balance between the objective and subjective facts of the case which, when fit together, solve the mystery of Jekyll and Hyde and, in the process, give the reader a profound insight into the operation of the human mind.

There are several minor narrative voices in the novel. For instance, the servant girl who looks out the window and witnesses the murder of Sir Danvers Carew is able to give only a partial account of what she sees. She can supply details of the murder but not information about why the old man approached Hyde in the first place and what conversation took place between them that incited Hyde to such apparently
senseless brutality. Her retelling of events demonstrates the limitations of the strictly objective point of view. Mr. Guest, Utterson's clerk, is another minor narrative voice who supplies us with an important piece in the puzzle. He notes that Hyde's signature is the same as Jekyll's and proves himself more open to the truth of that relationship than his employer, who only suspects forgery. Enfield's is the final minor narrative voice we hear from, and he too by his very nature proves himself more receptive to the basic fact of man's duality than his cousin Utterson.

Utterson and Lanyon (besides, of course, Jekyll) are the major narrators of the tale, and each shares a special relationship with Jekyll that prohibits him from seeing the entire truth. Their partial view of things contributes to the patchwork quality of the narrative. Utterson is, in many ways, an opposite of Jekyll, and he supplies us with a strict account of the externals of the tale, while willfully refusing or being unable to see the true nature of Hyde's relationship to Jekyll. While Jekyll is turned so excessively inward that what he creates through science occupies the same body as he does, Utterson is a character turned almost excessively outward. He spends a good deal of his time rationalizing Jekyll and Hyde's relationship and finding plausible explanations for his sometime friend. So divorced from the truth of the situation is he that he can only conceive of it in terms of blackmail and forgery, terms which begin to suggest the truth but only scratch the surface. Robert Philmus notes that Stevenson uses the contrast between the two characters to tell us something about the nature of human perception in general. Philmus says of Utterson that
His preoccupation with what is external to him makes him slow to appreciate the meaning of the fact that Jekyll and Hyde partake of one consciousness; yet by embodying an approach to the mystery of human nature antithetical to Jekyll's, Utterson serves to underscore the point that either approach is possible in arriving at the truth of human nature.4

Because he is a character closer to our experience than either Jekyll or Hyde, Utterson serves as a filter through which the events of the novel are normalized, or brought to the level of reader comprehension. Also, the ordinariness and sobriety of Utterson's character serve to intensify the horror of Dr. Jekyll's existence.5 Utterson is a lawyer and as such is a regulator of social order. It is entirely appropriate that he should seek out Mr. Hyde and insure his destruction so that order can be restored. His sympathy for Jekyll is not, like that of Walton for Frankenstein, based on their similarities, but on their differences. Utterson is an obtuse and unimaginative sort who seems to live vicariously through the men he surrounds himself with. He has intimations of man's basic duality, not through any actions of his own but thorough accounts of the doings of men like Enfield. He seems to play a special role in the lives of men like Enfield and Jekyll: "it was frequently his Utterson's fortune to be the last reputable acquaintance and the last good influence in the lives of down-going men."6 Being unable to acknowledge his own duality and unwilling to recognize his own fallen nature, he chooses to sit back and observe while he lets "my brother go to the devil in his own way" (p. 3).

The other principal narrative voice is that of Dr. Lanyon, who is in some ways a mirror image of Jekyll. Lanyon is representative of the more mundane side of Jekyll's character and, like Jekyll, is, as
69

Masao Myoshi says, a man "shielded from life by an imposing respectability." This sense of respectability and the limits of propriety drives a wedge between Jekyll and Lanyon in the first place, because Lanyon sees no place for Jekyll's wild speculations in scientific research. Yet Lanyon proves himself as amenable to the seductions of curiosity as Jekyll, and his death by what he encounters when he seeks to satisfy that curiosity foreshadows Jekyll's fate. When Hyde appears at Lanyon's house, he proposes a bargain in terms similar to those with which Jekyll himself must have entered the debate. (And, after all, Hyde is Jekyll):

Will you be wise? will you be guided? will you suffer me to take this glass in my hand, and go forth from your house without further parley? or has the greed of curiosity too much command of you? Think before you answer, for it shall be done as you decide. As you decide, you shall be left as you were before, and neither richer nor wiser, unless the sense of service rendered to man in mortal distress may be counted as a kind of riches of the soul. Or, if you shall so prefer to choose, a new province of knowledge and new avenues to fame and power shall be laid open to you, here, in this room, upon the instant; and your sight shall be blasted by a prodigy to stagger the unbelief of Satan. (pp. 46-7)

Like Jekyll, Lanyon cannot resist the temptation that Hyde offers. He agrees to witness the transformation, and what he sees destroys him because he cannot support the vision of man's duality with which he has been confronted. Never before he encounters Hyde had he supposed that one man could be capable of such radical extremes of good and evil. The knowledge of the capability which unbridled scientific speculation gives to man kills him.

All of the narrators look toward the final narrative voice, Dr. Jekyll. It is only in his statement that all of the missing pieces of
the puzzle are finally supplied. His narrative, like that of Frankenstein's Monster, is the last word, and it comes to us only after we know that he is dead. In his statement, he tells the story from within and gives us an intensely personal view of his motivations and aspirations. Like Frankenstein, Dr. Jekyll is a scientist given to wild speculations which alienate him from his professional colleagues. According to Philmus, Jekyll is Faustian in stature in that through science, he, like Faust, seeks "godlike power over the external world, liberates the hellish impulses within him and thus surrenders control of his destiny to the forces of unreason" and the anarchic instincts represented by the figure of Mr. Hyde.

As Jekyll begins his "Full Statement of the Case," he says, "It chanced that the direction of my scientific studies... led wholly towards the mystic and transcendental" (p. 48). He, like Frankenstein, is a dealer in the imagination and a scientist who refuses to be hidebound by the traditional rules and theories that govern the work of his fellow scientists. Consequently, he has long since run afoul of a man like Lanyon. Jekyll is given to intense flights of curiosity, and even though he knows he risks death in the dissociation of his personality through scientific means, finally succumbs to the temptation and, like Faust, seals his pact with the devil.

He is an overreacher who attempts to transcend his humanity. He does not try to defy the limits of his own morality like Frankenstein, but strives to do something equally inhuman: he wants to refine and purify his existence by dividing himself into two unalloyed parts—one totally good, the other totally evil. Such a simple division is,
of course, impossible because he is only human.

The last section of the book, ironically entitled "Henry Jekyll's Full Statement of the Case," shows that Jekyll's understanding of what has happened is just as fragmented as that of the other narrators. He is no more capable of providing us with a "full statement" than they are. After all of the agony he has undergone, he concludes that "man is not truly one, but truly two" (p. 49). But the novel's message is just the opposite, as G. K. Chesterton, in response to many of Stevenson's early critics, so aptly noted:

The real stab of the story is not in the discovery that the one man is two men; but in the discovery that the two men are one man. After all the diverse wandering and warring of those two incompatible beings, there is still one man born and only one man buried....The point of the story is not that a man can cut himself off from his conscience, but that he cannot. The surgical operation is fatal in the story. It is an amputation of which both parts die.9

Jekyll's narrative is literally the story of a man divided and at war with himself. He expresses very well his own view of his experience but can give only fragmentary hints as to what it was like to exist as Edward Hyde. When we hear from Dr. Jekyll, we get at least some sense of the quality of Mr. Hyde's life. Then the story is complete. Having heard about the principals in the case, we now hear from them, and the impact of their insight into man's dual nature will bear no response from the other narrators of the tale.

As the structure of the novel reveals, Dr. Jekyll and Mr. Hyde is about the nature of human perception and the many aspects that make up the human personality. And the relationship between the two main
characters—as well as, to a lesser extent, that between Utterson and Enfield—simply lends support to Freud's theories about the structure of the mind and the personality. Hyde springs from Jekyll's unconscious and comes to symbolize the id. Jekyll's personality begins to become dissociated, and the ego—the executive of the personality and the part responsible for the distribution of psychic energy—loses its grip; the id takes over. Since the id alone cannot insure survival because it is too detached from reality, Jekyll dies.

Man is, according to Stevenson, a permanently and inexplicably dual being. Darwin's theories of evolution and the animal origin of man help to explain one part of man's nature, and civilization and its institutions help to explain the other. But for Stevenson, man's basic duality is still essentially a mystery. For instance, the relationship between the two kinsmen, Enfield and Utterson, defies understanding. Enfield, "the well-known man about town" (p. 3), is the very antithesis of his dry and somber cousin. The ties that bind the two men are a mystery. When they are observed together on their ritual Sunday walks, "they said nothing, looked singularly dull, and would hail with obvious relief the appearance of a friend." But even though the walks are obviously a burden to both men, they "put the greatest store by these excursions, counted them the chief jewel of each week, and not only set aside occasions of pleasure, but even resisted the calls of business, that they might enjoy them uninterrupted" (p. 4). These two opposites are inevitably attracted to one another and bound together. Their relationship reflects in a milder form the mysterious, powerful, and frightening bond that exists between Jekyll and Hyde.
The means by which Edward Hyde is brought to life reinforces Stevenson's notion of the mysterious quality of human identity. Hyde owes his life to a chance chemical impurity in one of the drugs Jekyll uses. And Jekyll senses that he has, perhaps, only scratched the surface of the mystery; he says that he has discovered only two halves of man's psyche, "because the state of my own knowledge does not pass beyond that point...and I hazard the guess that man will be ultimately known for a mere polity of multifarious, incongruous and independent denizens" (p. 49).

Jekyll's view of the nature of human identity and man's inescapable duality suggests that man is forever at war with himself. As time passes, Jekyll's two selves move further and further away from one another until they are finally incompatible; the id overpowers the ego. Jekyll's relationship with Hyde underscores this incompatibility. When Hyde first comes to life, Jekyll's attitude toward him is one of benevolence. But once Jekyll has seen what Hyde is capable of, their relationship escalates into a full scale war.

Jekyll is a fragmented character whose identity is hopelessly divided. Because he dissociates Hyde from himself instead of integrating Hyde into his life, Jekyll is pursued by what he has created. Initially Jekyll relishes in the creation of Hyde and sees himself as having literally given birth to a new being (p. 50). He conceives of himself as the father and Hyde as the son (p. 55). Hyde is shorter and younger than his creator, whose evil nature, he claims, is less well developed than his tendencies toward the good. Jekyll, as an indulgent father, writes a check to help Hyde get clear of the accident with the little
Like an erring son, Hyde scribbles blasphemies in the margins of one of Jekyll's pious works and destroys the portrait of Jekyll's father (p. 40). But early in his narrative Jekyll realizes that he has sealed his pact with the devil, for to that "incongruous compound," the original Henry Jekyll, the Doctor has added a personality which is "wholly evil." He concludes that "the movement was thus wholly toward the worse" (p. 52).

As Jekyll begins to realize the gravity of what he has done and to think consciously of suppressing Hyde, Hyde rages out of control and works at destroying the inner as well as outer barriers that separate him from Jekyll. Hyde is not initially evil incarnate but Jekyll's liberated instincts, his id given a life of its own. Disguised as Edward Hyde, Henry Jekyll finds a new joy in life. But as Jekyll's attitude turns from paternal solicitude to outright disgust at Hyde's depravity, Hyde, in much the same manner as the Monster, changes from a Juggernaut into a Satan and literally pursues Jekyll from his own body. Hyde seems to bring out the worst in the people he comes in contact with, and his indifference toward Jekyll rapidly turns to hatred when he senses that the Doctor has come to detest his own creation. As Jekyll's narrative reaches its close, Hyde has assumed almost complete control. If Jekyll so much as drops off to sleep, Hyde comes roaring to the surface. The metamorphosis from Jekyll to Hyde is no longer voluntary, and when Jekyll cannot go out because he fears detection as Hyde, the molding of their two personalities is complete. The chemical potion becomes virtually ineffective.

Hyde, then, is the id—that powerful center of the instincts—
which in the unbalanced personality of Jekyll, engulfs the egc. As the representative of the baser instincts which drive all men and threaten the social order, Hyde becomes the projection of the evil within every man. He is appropriately named because he is that part of Jekyll's character which he attempts to keep hidden from the rest of the world through the development of this most perfect disguise. Utterson (the man who finally utters or announces the relationship of Jekyll and Hyde to the world) is the first to suggest the sense of Hyde's name. When he hears about this sinister being from Enfield, he decides to search him out and dubs himself "Mr. Seek" (p. 12). Hyde is Jekyll's underground self, whose first appearance is greeted with joy by his creator but whose successive, spontaneous appearances the Doctor comes to dread. Like Frankenstein's Monster, Mr. Hyde is a symbol of his creator's failure of vision, his fallen nature, his human limitations. But while Victor Frankenstein can objectify his vision by creating something outside himself, Henry Jekyll's science only enables him to internalize his vision. What he creates occupies the same body as he does and makes the dissociation he strives for all but impossible, since both share, to some extent, the same consciousness.

The characters in the novel, with the exception of Dr. Jekyll, find Mr. Hyde sinister and terrifying; he seems monstrous to them, but they have difficulty in saying why. Stevenson implies that there is something machine-like about Hyde as he "trampled calmly over the child's body and left her screaming on the ground" (p. 5), when he first appears in the book. Hyde's mechanistic quality suggests the rigidity of the id in its separation from the world of experience. Enfield conceives of him
as "some damned Juggernaut" (p. 5). Hyde is coldly indifferent to the child, even though the crowd that assembles is obviously moved by the accident, and swiftly and unemotionally settles the account afterwards. Hyde is so mechanical because he was created through artificial means and meant to be cut off from the social values that so plague his creator.

Yet if Hyde is monstrous, the characters in the novel have difficulty in pinpointing the nature of his deformity. At times he seems little more than an abstraction. When Utterson tries to get an exact description of Hyde, he finds that "even the master of the servant-maid had only seen him twice; his family could nowhere be traced; he had never been photographed; and the few who could describe him differed widely, as common observers will. Only on one point were they agreed; and that was the haunting sense of unexpressed deformity with which the fugitive impressed his beholders" (p. 21). The fact that Hyde has never been photographed and that the other characters in the novel cannot describe him indicates that Hyde is more a state of mind than a real physical presence. Like Freud, who can only suggest the quality of the unconscious rather than describe it in concrete terms, the characters in the novel, and, indeed, Stevenson himself, can only sense Hyde's sinister nature; they cannot label it directly.

Only Dr. Jekyll can begin to tell us what Mr. Hyde looks like: "Edward Hyde was so much smaller, slighter, and younger than Henry Jekyll" (p. 51). Hyde, like the id, never grows up and remains unaffected by his experiences. Hyde is unchaged by life and, like Dorian Gray, stays forever young. Consequently his creator alone welcomes the appearance of this monster and is not squeamish or uncomfortable (at least
initially) about him. Jekyll offers us the reason why the characters in
the novel have such difficulty conceptualizing Hyde and pinning him down
with symbols and words:

I have observed that when I wore the semblance of Edward
Hyde, none could come near to me at first without a visible
misgiving of the flesh. This, as I take it, was because
all human beings, as we meet them, are commingled out
of good and evil: and Edward Hyde, alone, in the ranks
of mankind was pure evil. (p. 51)

Hyde is inhuman and a threat to the humanity of all of the men who come
in contact with him. He is, as Jekyll suggests, an abstraction— that
which is not humanly possible, a purely evil being. The people who come
in contact with him can merely sense his deformity. They cannot artic­
ulate it.

While Mr. Hyde is abstract and mechanistic, again because he is
a product of science and both is and is not human, he is primitive and
barbaric as well. When Utterson first confronts Hyde, he exclaims that
Hyde hardly seems human and finds "something troglodytic" (p. 13) about
him. Like the id, Hyde is intimately related to man's primitive be­
ginnings and the instincts that man still carries with him from those
beginnings. Utterson and the rest of society expend a great deal of
energy denying that with which Hyde seems to bring them face-to-face. As
Irving Saposnik says of Hyde: "he is a creature of primitive sensi­
bilities loosed upon a world bent on denying him. A reminder of the
barbarism which underlies civilization, he is a necessary component of
human psychology which most would prefer to leave unrealized." But
because Utterson and the rest are in flight from the Hyde within them­selves, they find Hyde repulsive. In fact, there is a social conspiracy
to deny the existence of Hyde, and, ironically, it is this conspiracy which brings him about in the first place.

Hyde provokes the people who come in contact with him, because he is that part of themselves they do not want to see. While he provides Enfield with a chilling tale to pass the time with one of his Sunday walks, he wreaks havoc on the life of the lawyer and destroys Jekyll's colleague Lanyon. Because Jekyll, like the rest of the men around him, has been so busy repressing Hyde—or at least keeping him hidden during the daylight—it is no surprise that Hyde should rage out of control once he is let loose. The very degree of social pressure exerted against him is what makes Hyde so potent. The more Jekyll and the men around him try to control Hyde, the more powerful he becomes. Two months of suppression give Hyde the power to murder Sir Danvers Carew, because once Jekyll releases Hyde his vitality is more than restored by his anger at his imprisonment.

Since there is a social conspiracy against him, Hyde hardly stands a chance of survival. As the novel progresses, he meets with an increasing degree of hostility from those people he comes in contact with. Their hostility, in turn, makes him more vicious; Joseph Egan has noted a relationship between the violence of Hyde's acts and the growth of his "energy of life." Because Hyde represents a clear threat to society or, perhaps more correctly, because society has refused to recognize Hyde and has thus created a threat to its existence, Hyde cannot be allowed to live. Early in the novel, Utterson vows to seek out Hyde and rout him out of Jekyll's life. Through the apparently senseless murder of Sir Danvers Carew, Hyde brings the wrath of society down on him. After the
murder, he begins to appear spontaneously. While Hyde used to appear sometimes only after Jekyll had taken two or three doses of the drug, he now appears whenever Jekyll relaxes his vigilance for an instant. Having whetted his appetite with the murder, he is anxious to take over a greater part of Jekyll's unconsciousness. But in taking over Jekyll's body, he does away with the perfect disguise and insures his own destruction. Hyde, like Frankenstein's Monster, has a great zest for life, a zest matched equally by his fear of the gallows. And he certainly does not give up without a fight. He terrorizes Jekyll's household and frightens the servants into immobility. In spite of the terror that Hyde inspires, the account of his last night is surprisingly pathetic. Stevenson seems to imply that the personalities of Jekyll and Hyde are reintegrating in Hyde's body. Hyde paces Jekyll's laboratory like a caged animal and cries out in pain. He possesses enough of Jekyll's identity to be able to address an apparently commonplace request for chemicals to his druggist, only to end the note with the desperate plea, "For God's sake, find me some of the old" (p. 35). Finally, as Utterson and Poole are breaking down the door to the laboratory, Hyde, who begins to sound more and more like Jekyll, cries out, "Utterson, for God's sake, have mercy" (p. 38). But, of course, Utterson does not. He breaks down the door and insures the destruction of Hyde and of his friend Dr. Jekyll as well.

Frankenstein's Monster remains at large. We never witness its destruction because the novel suggests that it is indestructible. Edward Hyde, on the other hand, is suffocated by the world in which he finds himself. However, that world's insistence on suppressing him and forcing
him to remain underground only insures that he will appear again, unless Utterson and the others learn from the horror of Dr. Jekyll's experience. In other words, our opposition to the scientific excesses of a man like Jekyll may be what makes those excesses so powerful and destructive. Jekyll seems bent upon making this the last such experiment by keeping secret the exact ingredients of his chemical potior, but Hyde's seduction of the stolid Lanyon stands as a testimony to the irresistible attraction of curiosity and the scientific pursuit of knowledge that brought Hyde into existence in the first place.

Jekyll and Hyde remain permanently fixed in the popular imagination as symbols of man's duality, a state of being caused perhaps by the division of the human brain into right and left hemispheres. In The Dragons of Eden: Speculations on the Evolution of Human Intelligence, Carl Sagan describes the two hemispheres of the neocortex of the brain in a way that sheds light on the psychological reality of the relationship between Jekyll and Hyde. Hyde is clearly symbolic of the right hemisphere, that part of the brain connected with man's earliest ancestors and the "primitive animal-like unreasonable state of mind."¹⁶ As the seat of instincts and intuition, the right hemisphere is thought by Sagan to be the origin of myths and dreams, and, in Hyde's case, of nightmares. Since he is a product of the right hemisphere, Hyde is a figure of man's primitive instincts and a regression to an earlier state of being. That is one reason why he is so much more youthful and energetic than Jekyll. On one level, he represents man at an earlier point on the evolutionary scale, before he acquired language and civilization and before the left hemisphere became ascendant. In Darwinian terms, Hyde's reassertion
means that man is a product of his own history and that he cannot escape the primitive origins which threaten to engulf him.

Language and analytical thinking are functions of the left hemisphere, and, according to Sagan, the two hemispheres may have performed the same functions at one time:

The original redundancy, by the way, represents prudent computer design. For example, with no knowledge of the neuroanatomy of the cerebral cortex, the engineers who designed the on-board memory of the Viking lander inserted two identical computers, which are identically programmed. But because of their complexity, differences between the computers soon emerged. Before landing on Mars the computers were given an intelligence test (by a smarter computer back on Earth). The dumber brain was then turned off. Perhaps human evolution has proceeded in a similar manner...

Jekyll is the analytical and verbal partner in the relationship, the only one of the two who is capable of communicating with us. And, he is closely associated with that outgrowth of language and rationality, civilization.

Sagan suggests the possibility that when we are asleep, the left hemisphere is suppressed, while the right hemisphere is given a free rein. However, he notes the repeated appearance of "the watcher" in dreams, a figure who maintains the dreamer's contact with reality and consciousness and who probably arises from the left hemisphere. This is precisely the function Jekyll performs when he assumes the identity of Hyde. In his narrative he describes his transformation from Jekyll into Hyde as the entrance from waking life into a dream. Jekyll passes judgments on Hyde and is aware of himself as a presence in the dream: "Henry Jekyll stood at times aghast before the acts of Edward Hyde; but
the situation was apart from ordinary laws, and insidiously relaxed the grasp of conscience. It was Hyde after all, and Hyde alone, that was guilty. Jekyll was no worse; he woke again to his good qualities seemingly unimpaired" (p. 53). Jekyll monitors Hyde's activities and, as Hyde's only link with reality and the conscious world, attempts to rectify the damage done by his creation once he returns to his original identity.

So, Jekyll and Hyde each suggest the qualities of the separate hemispheres of the brain. Jekyll's experiment in his own duality is so terrifying to the people around him and threatening to society because what he creates is a regression on the evolutionary scale, a return to the primitive and instinctual functions of the right hemisphere. And, as Sagan observes, the two hemispheres are suspicious of one another, if not downright hostile. In fact, the left hemisphere has been carrying on a systematic and determined campaign against the right hemisphere for thousands of generations,19 a campaign very clearly articulated in Dr. Jekyll and Mr. Hyde. Jekyll and Hyde will never reconcile themselves, and, according to Stevenson, the left hemisphere carries the day.

For Stevenson, Victorian society is overly restrictive, and this very restrictiveness brings about Jekyll's fragmentation of identity and his need for duplicity. The setting of the novel, like its structure, strengthens Stevenson's vision of man's duality, as it portrays the existence of two basically incompatible worlds, Jekyll's and Hyde's. Dr. Jekyll and Mr. Hyde, like The Picture of Dorian Gray, is more social and less cosmic than Frankenstein. The icy slopes of Mont Blanc and the austere winter landscapes of Frankenstein are replaced by the closed-off rooms and run-down neighborhoods in the "chocolate fog" (p. 20) of the
city of London. While Frankenstein and the Monster battle in a frigid and barren natural world—a world most inhospitable to human survival—Dr. Jekyll and Mr. Hyde carry out their warfare in a sealed off laboratory in the inner recesses of Jekyll's house or in a dilapidated apartment in Soho. While Frankenstein seems to have an entire world to work with, Jekyll is clearly trapped by a society which refuses to let him be. For Frankenstein the benevolent society of his family and friends (although vulnerable to attack by the Monster) is a remote possibility; for Jekyll society is an inescapable reality and an ever-present danger.

However, as a city London is not much of a real presence in the novel. Most of the story takes place in dark, dingy, hard-to-get to rooms—rooms which suggest the darkest corners of the mind—or is retold by people who look out of or into windows. Jekyll himself is finally trapped inside a room and literally unable to go out of doors to join Enfield and Utterson for a walk because he fears detection as Hyde (pp. 30-1). At the beginning of the novel, Stevenson describes in detail the street Jekyll lives on and his house. The details he uses suggest that the city itself, with its random mixture of social classes and lifestyles, is, at the very least, a conspirator in man's duplicity and his need for a double life. The shopfronts on the street where Jekyll lives are "like rows of smiling saleswomen," and the street is able to veil "its more florid charms" (p. 4). And, as if to underscore the city's complicity in man's doubleness, Stevenson notes that the street fairly gleams with respectability, as its "freshly painted shutters, well-polished brasses, and general cleanliness" demonstrate, and stands in "stark contrast to its dingy neighborhood" (p. 4).
Dr. Jekyll's house, perhaps the central metaphor in the novel, has, of course, two entrances: a front one, attended by the faithful servant Poole and leading to a spacious and richly furnished hallway, and a rear one, fronting on the street of shops. The front entrance is Jekyll's, and the rear entrance, that "sinister block of building... that showed no window, nothing but a door on a lower storey and a blind forehead of discolored wall on the upper; and bore in every feature the marks of prolonged and sordid negligence" (p. 4), is Hyde's. This entranceway is a gathering place for tramps and other members of that species of city life Hyde so easily blends in with and to whom he is so closely akin. Utterson knows that the entrance leads to Jekyll's house and is appalled when he hears of Hyde's connection with it. However, when Enfield tries to guess the truth of Hyde's relationship to Jekyll, he supposes only that Hyde is blackmailing Jekyll. So, he names Hyde's entrance Blackmail House.

In opposition to the seamy vitality of the world that Hyde frequents stands the society in which Jekyll moves. It is a society composed entirely of men who live in a world of bachelor dinners, cigars, and wine and adhere to strict formulas for social intercourse. The only excesses such men allow themselves, or admit to allowing themselves, is too much wine at dinner and a certain frivolity of speech afterwards. Then they require the sobering presence of a man like Utterson, a reader of "dry divinity" (p. 9) and a person of "rich silences" (p. 16). This is the world of sterile rationality, where breaches of conduct, either professional or social, are not lightly tolerated. Even Enfield, who is something of a misfit, requires his habitual Sunday walks with his alter-
ego Utterson to bring him back into line. In such a world, Jekyll (in part because he lacks courage) can find no positive outlet for his mys-
tical and dangerously speculative bent and for his so-called degradations. There is no place for the creative imagination to have a free rein or for the impulses to take over.

In *Dr. Jekyll and Mr. Hyde*, the pastoral vision of the benevolent family which served as a referrent for Victor Frankenstein has faded out of existence. The only hint we get of Henry Jekyll's family life is the portrait of his father which hangs in his laboratory. Jekyll never seems to have considered marriage, perhaps because he senses that he is too hopelessly divided against himself. If Frankenstein had to choose between North and South, between the bleak winter of the mind and the warmth of family and friends, Jekyll is presented with no such alternative. Instead he exists in the barren society of men which seems to demand duplicity from him and whose only alternative is the degraded existence of Hyde. Stevenson's view of society is every bit as bleak and wintry as the slopes of Mont Blanc.

In such a society, Jekyll finds himself an alienated figure because he tries to mix the scientific and the imaginative in a world that demands rigid barriers between such things. He is seen as eccentric by most of the men with whom he associates, and he periodically bars his door to them. He is an irregular guest at dinner parties and erratic in his practice of social amenities. He and Lanyon have had a falling out over the fanciful nature of Jekyll's scientific studies, and the mere mention of this falling out is enough, even after ten years, to turn Lanyon's face purple. Jekyll's engagement in "unscientific balderdash"
(p. 10) is clearly out of place in such a world. In fact, there is no place for mysticism and romance, except of the most sordid kind.

Jekyll is finally trapped by his own zest for the life of the senses. His practice of what he calls transcendental medicine and speculations on the nature of the human personality have provided him with the identity of Hyde, and that identity insures his complete alienation from the world around him. Once he has given life to the evil side of his nature, he is entrapped by it (or, rather, by his own failure to deal with it) and literally confined to his laboratory and the terrors of his unconscious mind. When Utterson and Poole break down the door to Jekyll's laboratory—a symbol of Jekyll's mind—they are startled to find a rather commonplace room with "a good fire glowing and chattering on the hearth, the kettle singing its thin strain, a drawer or two open, papers nearly set forth on the business table, and nearer the fire, the things laid out for tea" (p. 39). The only things that distinguish this room from others like it and the only telltale signs that something is amiss are "the glazed presses full of chemicals" (p. 39) and, of course, in their midst, the body of Edward Hyde. Jekyll's laboratory becomes the symbol of the workings of his mind, and Edward Hyde is at the center of Jekyll's feverish mental activities.

_Dr. Jekyll and Mr. Hyde_ examines man's inescapable duality, a phenomenon that was Freud's primary concern. Like Freud, Stevenson is fascinated by the dynamics of the human mind and personality and the possibilities for the manipulation of identity opened up by advances in psychology. Jekyll is a scientist and a man so divided against himself that he turns his knowledge inward and creates a being who literally
personifies the evil within him. And while "the strange case" of the relationship between Dr. Jekyll and Mr. Hyde is an allegory of the evil in man overpowering the good, it is also the story of one man's pathetic attempt to dissociate himself from a basic part of his nature through scientific and psychological means. The result is that Mr. Hyde—the id—takes over, and Dr. Jekyll—the ego—is destroyed.

Dr. Jekyll's scientific pursuits lead him into the mysterious areas of human psychology suggested by Freud's descriptions of dreams. Jekyll devises for himself an even more perfect disguise than does Dorian Gray. This disguise allows him to lead the double life, to indulge his senses and give free rein to the id. But the id and the unconscious of which it is a product prove to be more powerful than he had anticipated because they are at the core of what makes us human. Once the mysterious chemical potion has allowed Jekyll to liberate the id, he cannot bring it back under control. Only those powerful social forces to which Hyde is such a threat can subdue him. Like Freud, Stevenson takes us on a journey inward. We move from the objective perceptions of outsiders into the nightmare world of Jekyll's mind. In the process, we come to some rather uncomfortable conclusions about it means to be human. These conclusions are all the more frightening because scientific knowledge of the dynamics of the mind gives man the means to work radical alterations on his identity.
Published at the end of the century, Wells' *The Time Machine*, *The Island of Dr. Moreau*, and *The Invisible Man* represent culminations in the treatment of themes and ideas found in earlier works of science fiction. Like Shelley and Stevenson, Wells conveys a sense of a world on the brink of change. Science is intimately bound up with change and is integral to every aspect of Wells' projections about the future. And like Shelley and Stevenson, Wells examines ideas drawn from biology, psychology, and physics and their implications for the future of the human race. But where the Monster and Mr. Hyde merely suggest a terrifying future brought about through biological and psychological manipulation of the human identity, the Eloi and Morlocks and Beast People are projections of that future. In other words, Wells creates worlds only hinted at in Shelley and Stevenson. Frankenstein and Jekyll die with their scientific secrets relatively intact, although their individual experiments have upset forever the natural balance of the universe and begun the inevitable progress toward a technological nightmare. For Wells that nightmare has been realized. So, while Shelley and Stevenson sense the radical alterations promised by science, Wells explores those alterations in greater detail than his predecessors. His characters literally travel to the future and witness the end of the world, create a whole race of beings, and eradicate the physical by making themselves
invisible. And they perform such miracles through science. Wells' world, even more than Shelley's and Stevenson's, is dominated by science and a scientific frame of mind. His works reflect a world in which the scientific forces let loose by Shelley's Monster are gradually coming to fruition.

Biology—and most especially Darwinian evolution—is essential to Wells' view of the future. Like Darwin, Wells refused to see evolution as necessarily progressive and, in fact, saw it not as a random but a destructive force. In an essay entitled "Zoological Retrogression," he attacks the careless optimism of those who persist in seeing evolution as tending in an upward direction under "the supervision of its extreme expression—man." Instead he insists that "there is almost always associated with the suggestion of advance in biological phenomena an opposite idea, which is its essential complement." For evolution, this antithesis is "degradation."¹ The "path of life" is, according to Wells, less like "some steadily rising mountain-slope" than a footway that "goes underground, sometimes it doubles and twists in tortuous streets, now it rises far overhead along some viaduct."² In support of his theory of degradation as a force in nature, Wells sites the tadpole which spends a vigorous but short-lived youth only to undergo some disheartening changes. As the tadpole ages, "sucker-like structures" appear on its head. The animal becomes dull and sluggish and finally attaches itself to a rock. Its eyes and ears atrophy, and it becomes more a vegetable than an animal. The rest of its life is a "passive receptivity to what chance and the water bring along. The ascidian lives henceforth an idyll of contentment, glued, head downwards, to a stone." It is almost as if the
tadpole turned deliberately away from the upward path, so ardently espoused by proponents of progressive evolution, and became finally a "vegetative excrescence on a rock." 3

The notion of "degradation" figures importantly in *The Time Machine*. The novel examines one possible future. In the world of 802,701, evolution has had a devastating impact on the human race: man is in the process of degeneration. Having attained a state of near perfection, mankind is now on the wane. This state of near perfection contained the seeds of man's destruction. When he ceased to struggle in order to survive, he began to lose his humanity--his art and science and finally his language. Like the tadpole in Wells' essay, man has long since lost the vigor of his youth and started the descent toward the rock-like, barely organic globule the Time Traveller sees when he arrives at the end of the world.

The roots of the future decline of the human race are to be found in Victorian society, as the Time Traveller observes:

> it seemed clear as daylight to me that the gradual widening of the present merely temporary and social difference between the Capitalist and the Labourer, was the key to the whole position...Even now, does not an East-end worker live in such artificial conditions as practically to be cut off from the natural surface of the earth...So, in the end, above ground you must have the Haves, pursuing pleasure and comfort and beauty, and below ground the Have-nots; the Workers getting continually adapted to the conditions of their labour. 4

The complacency of the men who listen to the Time Traveller's account and their lack of foresight and vision is in part responsible for the catastrophe that befalls mankind. The members of the audience are like the respectable citizens of the professional classes in "Zoological
Retrogression." These men, like the Time Traveller's guests, are dulled by their professions and married lives, and their imaginations have withered and died through disuse. Like the tadpole, they become passive and vegetable-like, and their present commitment to "that colourless contentment that replaces happiness" insures the future degradation of the race. Since they refuse to be persuaded by what the Time Traveller has to tell them, they are helpless to act to change the future. Although the Time Traveller disappears presumably to try to alter the course of history, he is only one man and has been throughout the novel singularly ineffective against the human inertia (in both the present and future) he has encountered.

Even though he is a visionary, the Time Traveller is a man of his own time. He is singularly unprepared for his journey into the future. He brings no food, weapons, or cameras with him because he naively assumes that the human race will have progressed to a stage where such implements will be unnecessary. He too shares a Victorian belief in progress and an optimism about man's prospects in the future. When he confronts the world of 802,701, his belief is shattered, and his subsequent disillusionment is a devastating attack on the complacent optimism with which most Victorians viewed the tendency of evolution.

His initial fear that he will seem primitive to the men of the future is ironically undercut by what he discovers once he gets there. His typically Victorian prejudices and attitudes keep him from seeing the true relationship between the Eloi and the Morlocks, a truth which is very soon obvious to the reader. At first he thinks he has discovered the Utopia predicted by such men as William Morris. The Eloi inhabit
what seems to be a garden paradise. There is no sign of disease; all the needs of the Eloi are being met with no hardship or toil. The Time Traveller concludes that he has come upon the perfect Communist state; yet this Marxist ideal is soon to be discredited. When man ceased to struggle, he lost his vigor and finally his humanity. The Eloi are little more than children and have the intellect of five year olds. Their language consists only of nouns and verbs, since abstract thought is beyond their capability. Art has disappeared, and what remains of science has gone underground. The Time Traveller's initial discoveries about the world of 802,701 belie the positive assertions of men like Morris or Herbert Spencer. Man has not taken charge of evolution as Victorian optimists claimed he would, and triggered the biological antithesis to progressive evolution—degradation.

When the Time Machine disappears and the Time Traveller senses that the Eloi are not alone, he resolves to come to an understanding of the world based on careful deductions made from the systematic study of empirical evidence. Throughout the narrative, he arrives at a series of conclusions (beginning with the discrediting of the Utopian ideal), each of which, he tells us, is naive and inadequate. Initially, he has difficulty in acknowledging the existence of the Morlocks at all, since he identifies so strongly with the Eloi. When he finally recognizes who the Morlocks are, he arrives at his second conclusion about this world: "that Man had not remained one species, but had differentiated into two distinct animals: that my graceful children of the Upper World were not the sole descendants of our generation, but that this bleached, obscene, nocturnal Thing, which had flashed before me, was also heir to all the
ages" (p. 39). Because he thinks that the Morlocks are what remains of the industrial class of the nineteenth century—the Havens— he assumes that the Eloi are still in control and that they are the aristocracy.

Only after he has returned from his descent to the underground hell of the Morlocks does he arrive at the most complete explanation of this world. While underground he is oppressed by the smell of blood and sees a large piece of meat on a table. He duly notes that the Morlocks are carnivorous, but not until he is safely above ground does he realize what the meat is and why he has such an instinctive loathing of the Morlocks. What remains of mankind is literally feeding on itself, and intellect and emotions—those traits that make us human—are being ground down by the operation of evolution. The Time Traveller confronts the future armed with some typical Victorian assumptions about mankind and a faith in science, technology, and his own inventiveness. What he discovers destroys his notions about the future of mankind. Technology, as Shelley and Stevenson suggest and Wells demonstrates, had disrupted the natural balance of the universe. And ironically since it brought with it perfection, albeit a transient one, diminished man's biological instinct to struggle. This instinct, which gave him a competitive edge over other species, was gradually bred out of the race. Ultimately, then, technology brings the destruction of the intellect and humanity by tampering with the delicate framework of evolution and, paradoxically, turning against mankind.

As a symbol of technology, the Palace of Green Porcelain demonstrates the futility of human endeavor and further undermines the dream of progress. It is the place where the Eloi and Morlocks meet and is
in the process of decay. This museum, which is the only remnant of man's past achievements, contains, the Time Traveller hopes, some clue to how man arrived at his present state and some tie to the past. In the museum, the intellect literally lies molding: "The brown and charred rags that hung from the sides of it, I presently recognized as the decaying vestiges of books. They had long since dropped to pieces, and every semblance of print had left them" (p. 56). Man's accomplishments are beyond redemption. And the darkness of the Morlocks, which prefigures the darkness at the end of the world, is gradually taking over the Palace of Green Porcelain; the light in the gallery diminishes until "the gallery ran down at last into a thick darkness," and the Time Traveller senses "the immediate presence of the Morlocks" (p. 56).

When the Time Traveller finally escapes from the Morlocks, his time machine takes him to the end of the world. The brief glimpse of a dying planet makes his first stop in 802,701 less remote and more believable. Gone are creatures who bear even the slightest resemblance to man. Instead, what remains are a "huge white butterfly," "a monstrous crab-like creature" (p. 60), and thirty million years further in the future "livid green liverworts and lichens" (p. 69), "green slime on the rocks" (p. 70), and a black object with tentacles. What the Time Traveller sees at the end of the world is so alien to the human experience and hence so unbearable that he confesses to feeling "giddy and incapable of facing the return journey" (pp. 70-1).

In The Time Machine, technology, prompted by science and the human desire to understand how the universe works, has upset the delicate balance of evolution in favor of mankind and turned this natural law
against him. Man is undone by those very traits which brought him to the top of the evolutionary ladder in the first place. Consequently, the novel is pessimistic about man's prospects for continued survival as a species, dominant or otherwise. There may, Wells suggests, be no place for us in the future. This is the grim truth the narrator takes away from the tale, and he resolves that "If that is so, it remains for us to live as though it were not so" (p. 76). Although shaken by the Time Traveller's tale, the narrator will cling to the present and allow the future to remain "black and blank...a vast ignorance" (p. 76).

Like The Time Machine, The Island of Dr. Moreau is intimately concerned with the future of the human race. Moreau attempts to guide evolution through manipulation of the animals on his island. The notion of plasticity is the driving force that makes possible the creation of Moreau's world. What Wells meant by plasticity is best expressed in an essay entitled "The Limits of Individual Plasticity," which later appeared in revised form in the novel as "Dr. Moreau Explains":

there is in science, and perhaps even more so in history, some sanction for the belief that a living thing might be taken in hand and so moulded and modified that at best it would retain scarcely anything of its inherent form and disposition; that the thread of life might be preserved unimpaired while shape and mental superstructure were so extensively recast as even to justify our regarding the result as a new variety of being...It is not asserted that the changes effected would change in any way the offspring of such a creature, but only that the creature itself as an individual is capable of such recasting.

Through a special blend of surgery, vivisection, and hypnosis, Moreau sets out to do precisely what Wells suggests in his essay: to regard the living being "as raw material, as something plastic that may be
shaped and altered...and the organism as a whole developed far beyond its apparent possibilities." He tries to raise animals to the level of man by giving them speech and a superficial civilization which is ground down by their reversion to form after his death. Wells is obviously intrigued by "this curious proposition" and The Island of Dr. Moreau speculates upon the possibilities presented by "this artistic treatment of living things, this moulding of the commonplace individual into the beautiful or the grotesque." Out of these speculations arises the figure of Moreau, a scientist more dedicated and ruthless than either Frankenstein or Dr. Jekyll. Moreau has fulfilled one of Frankenstein's desires and become father to a new race. And although he too abandons what he creates, he has the power to people his world with his flawed creations.

Moreau's island is the cosmos in miniature and Moreau himself its indifferent god. He is, as Bernard Bergonzi suggests, "not the traditional God of Christian theology, but the sort of arbitrary and impersonal power that might be conceived of as lying behind the evolutionary process." He is unable to make his creatures in his own idealized image of himself—that is, as completely rational beings. He cannot stamp out the beast. Instead, he forever tinkers with the hands and claws of the Beast People and tries to manipulate their brains to get at their emotions. But here he always fails. He can only implant fixed ideas in their minds. Alfred Dorrello observes that along with these fixed ideas, Moreau gives them religion of a sort in the Law, which is a parody of the ten commandments. And he instills in them a fear of himself and a sense of his omniscience that even prevails after his death. The threat of the return to the House of Pain and the brutal vengeance of their god
Moreau makes the Beast People adhere to the Law, at least superficially. And he gives them civilization in the sense of decorum he imposes upon them and their marital and other social practices. His will is almost absolute, although Pr DEC laicse senses that the balance Moreau has achieved is tenuous. Moreau's death is a shock to Montgomery, who because he has fallen under Moreau's spell comes to see him as immortal. He goes mad when Moreau dies, and later Pr DEC laicse himself feels the absence of a god in the disordered chaos of the island. He lacks the courage to fill the gap left by Moreau's death and loses the opportunity to take command of the Beast People. Animal instinct replaces the Law, and authority and even survival itself are "based mainly on the capacity for inflicting trenchant wounds."11

But the world, and even Moreau himself, is governed by chance. Only by chance does Prendick survive long enough to get to Moreau's island; later a careless act by Prendick causes the burning of Moreau's laboratory, and only chance determines Prendick's gruesome escape from the island. More importantly, Moreau has chosen the human form for his creations by chance: "I might just as well have worked to form sheep into llamas, and llamas into sheep. I suppose there is something in the human form that appeals to the artistic turn of mind more powerfully than any animal shape can" (p. 132). While science gives Moreau the power of a god, his rule is vitiated by the cruel indifference of chance.

If Moreau is the god of his universe, he is also a figure of nature. In his world, his will is natural law. He alone is responsible for the form his creatures take. He can make them into snakes if it suits his whim. But if Moreau comes to symbolize nature, his will is artificial.
When his creations revert, they do not "decline into such beasts as the reader has seen in the zoological gardens--into ordinary bears, wolves, tigers, oxen, swine, and apes. There was still something strange about each; in each Moreau had blended this animal with that...but each was tainted with other creatures--a kind of generalised animalism appeared through the specific dispositions" (p. 175). Each bears the mark of its creator, a mark which sets it off from its natural equivalent. Moreau, like nature, is indifferent to his creations and is, as Jack Williamson says, "as amoral as the cosmos."  

Finally, Moreau symbolizes science completely divorced from humanity and morality. As he works in his laboratory, one of his creations is "no longer an animal, a fellow-creature, but a problem" (p. 134). Consequently while Frankenstein's Monster and Mr. Hyde assume a human dimension, the Beast People are little more than mechanical parodies of men. They reflect the inhumanity of their creator's arbitrary and insatiable pursuit of knowledge for its own sake.  

This pursuit drives Moreau, but knowledge simply raises more questions. Because perfection eludes him, Moreau becomes, according to Williamson, "an ambiguous portrait of the scientist as planner of progress." Moreau has created a world through scientific knowledge and has attempted to manipulate the animal and push it far beyond its natural capabilities. What he strives for is a completely rational being. Ideally such a goal should result in a utopia, except that Moreau's quest for the rational becomes itself irrational and his research tends toward no coherent end. With god-like arrogance, Moreau, a scientist for whom the world is simply a laboratory, makes light of his failures: "After
all, what is ten years? Man has been a hundred thousand in the making" (p. 137). Moreau does impose progress on the island, but, as Williamson suggests, "the changes he engineers are undesired, pointless, and temporary." The novel is pessimistic about the hope of progress that science seems to offer, and the island becomes the absolute antithesis of a rational utopia.

Like Frankenstein and Dr. Jekyll, Moreau is an artist as well as a scientist. In his desire to create a new species, he resembles Frankenstein, and like Frankenstein he is a failed artist. He cannot, like his predecessor, duplicate artistically the fine points of the human form. Instead, the Beast People are to an even greater degree than the Monster grotesque caricatures of men because they are in reality only animals. In part Moreau's failure, like Frankenstein's, is due to the intractability of his materials. Nature itself seems to defy him by raising the scepter of the beast just when he thinks he has eradicated it. And she willfully throws surprises his way, like intelligence that is "often oddly low, with unaccountable blank ends, unexpected gaps" (p. 136).

In The Island of Dr. Moreau, as in The Time Machine, science and technology threaten the future of the human race. Moreau, like Frankenstein and Jekyll before him, is a man with superhuman aspirations whose scientific and artistic gifts lead him to defy his humanity. This defiance threatens the delicate physical and social balance that accounts for man's supremacy over other species in the universe: the Beast People rise up against and destroy Moreau and Montgomery and stamp out the humanity of Prendick. Moreau's creations, given life and potency through
science, threaten to bring about an irreversible catastrophe for the human race.

Moreau's island is a bleak parody of England at the end of the nineteenth century, a world governed by chance and a careless God who is indifferent to human suffering and pain. Prendick's reflections after the death of the Leopard Man make it clear that the island is the mirror image of Wells' world, a disordered cosmos in which chance and amoral science have gotten the upper hand:

A strange persuasion came upon me that, save for the grossness of the line, the grotesqueness of the forms, I had here before me the whole balance of human life in miniature, the whole interplay of instinct, reason, and fate, in its simplest form... I must confess I lost faith in the sanity of the world when I saw it suffering the painful disorder of this island. A blind fate, a vast pitiless mechanism, seemed to cut and shape the fabric of existence, and I, Moreau by his passion for research, Montgomery by his passion for drink, the Beast People, with their instincts and mental restrictions, were torn and crushed, ruthlessly, inevitably, amid the infinite complexity of its incessant wheels. (pp. 151-2)

If Moreau is the god of his created world, Montgomery, according to Williamson, plays a kind of Christ. He has sympathy for the Beast People and tells Prendick that he likes them better than most men he meets. He tries to teach them things and shares, Prendick suspects, "a vicious sympathy with some of their ways" (p. 141). While Moreau is the Master, Montgomery is the Other with the Whip, an agent and intermediary between Moreau and his creatures who partakes of the god-like ability to inflict pain. He is Moreau's adopted son since he has come under the older man's influence. He, like Christ, is a humanized version of the Father. He winces and swears when he hears the agonized cries of the Puma, as if in
a Christ-like manner he has taken its pain upon himself. Unlike Moreau, Montgomery is weak because he experiences pleasure and pain and because he is finally all too human. He dies, in part, because he recognizes his kinship with the Beast People and cannot separate himself from them. Prendick decides that Montgomery is "half akin to these Beast Folk, unfitted for human kindred" (p. 163). Montgomery's last words, like Christ's, are echoes of despair: "The last, he murmured, 'the last of this silly universe. What a mess'" (p. 165).

The Beast People are the twisted equivalent of mankind in Moreau's world and are at once the displacement of Moreau's animal nature as well as the recipients of his human civilization and culture. In an essay entitled "Human Evolution, An Artificial Process," Wells states that civilization and culture are artificial by-products of the evolutionary process—and more specifically of the development of speech. Civilization, although artificial, helps to insure the preservation of the human species. Twofactors, suggestive of the id and superego, make up the civilized man: "(1) an inherited factor, the natural man, who is the product of natural selection, the culminating ape, and a type of animal more obstinately unchangeable than any other living creature; and (2) an acquired factor, the artificial man, the highly plastic creature of tradition, suggestion, and reasoned thought." The artificial man sustains civilization, and "in this view, what we call Morality becomes the padding of suggested emotional habits necessary to keep the round Palaeolithic savage in the square hole of the civilized state. And Sin is the conflict of the two factors—as I have tried to convey in my Island of Dr. Moreau." The Beast People live in a state of sin because
Moreau has meddled in the evolutionary process and grafted an artificial humanity onto his intractable animals, a humanity which is a burden to them. Prendick recognizes their predicament and in doing so makes an ironic comment upon the condition of civilized man:

I had not thought before of the pain and trouble that came to these poor victims after they had passed from Moreau's hands. I had shivered only at the days of actual torment in the enclosure. But now that seemed the lesser part. Before they had been beasts, their instincts fitly adapted to their surroundings, and happy as living things may be. Now they stumbled in the shackles of humanity, lived in a fear that never died, fretted by a law they could not understand; their mock-human existence began in agony, was one long internal struggle, one long dread of Moreau—and for what? It was the wantonness that stirred me. (p. 152)

Prendick is enraged by the indifference and cruelty of Moreau in creating such a world and inflicting such needless suffering. What is lacking in this world and its creator is wisdom and humanity.

Moreau's island represents the very antithesis of the statement of hope with which Wells ends "Human Evolution, An Artificial Process":

In the future, it is at least conceivable, that men with a trained reason and a sounder science, both of matter and psychology, may conduct this operation far more intelligently, unanimously, and effectively, and work towards, and at last attain and preserve, a social organization so cunningly balanced against exterior necessities on the one hand, and the artificial factor in the individual on the other, that the life of every human being, and, indeed, through man, of every sentient creature on earth, may be generally happy. To me, at least, that is no dream, but a possibility to be lost or won by men, as they may have or may not have the greatness of heart to consciously shape their moral conceptions and their lives to such an end.19

What Moreau lacks is the "greatness of heart" which, combined with his scientific knowledge, might make possible the realization of a Utopia.
Instead his vision is narrow, and his imagination cannot extend beyond the next problem presented to him by vivisection. This narrowness of vision insures the triumph of the "culminating ape" and the inevitable reversion of the Beast Folk.

In both *The Time Machine* and *The Island of Dr. Moreau*, and, to a lesser extent, *The Invisible Man*, Darwinian evolution has operated to the detriment of the human race. Man is only human and, Wells suggests, can evolve only so far. Then, the very traits that make him human--his intellect and curiosity--conspire to bring about his downfall; his aspirations and endeavors have unforeseen consequences. Both novels demonstrate the futility of man's achievements and the resistance of the physical world to man's rational schemes for it. Man may try to seize control of the evolutionary process, but he lacks the fortitude and wisdom to guide it in a direction that will insure him a permanent place in the universe. Perfection is transient, and humanity's vision is too short-sighted. Nature is what Darwin said it was: random and indifferent to man. And since man fails to adapt to his changing circumstances fast enough, he loses his vitality and individuality. Like the tadpole in Wells' essay, he settles into a form of living death.

*The Time Machine* examines man at three separate points in his evolutionary history. As he journeys into his future, he becomes fragmented and dissociated until he is no longer recognizable as a human being. When man degenerates into the black crab-like creature the Time Traveller sees at the end of the world, the process of degradation that Wells anticipates in "Zoological Retrogression" is complete. *The Island of Dr. Moreau* provides further evidence of man's inevitable decline. Man
fails to use his science to rise above the chaos of nature. Paradoxically, the intellect, which should provide order, is as chaotic as the physical world of which it is a product. Moreau's quest for the rational is itself ultimately irrational.

At the heart of *The Time Machine, The Island of Dr. Moreau*, and *The Invisible Man* is a vision of man's duality, a psychological reality most forcefully stated by Freud. In all three novels, the id is at war with the ego, and the primitive is at war with the civilized (or, in the case of *The Time Machine*, with what little remains of civilization). The unconscious threatens to engulf the conscious mind and, as evolution progresses, do away with human consciousness altogether. The three works, then, explore the consequences of the imbalance of psychic energy in favor of the unconscious and irrational. Ironically, the unconscious is liberated and given a free rein through science and the exercise of the conscious mind.

Like *Frankenstein* and *Dr. Jekyll and Mr. Hyde*, *The Time Machine* treats man's basic duality, and Wells is concerned with how the two halves of man relate to one another. In fact, Wells pushes to a logical extreme the notion that lies at the heart of the two earlier novels: that man is hopelessly divided against himself. For Shelley and Stevenson, this fragmentation is a personal phenomenon; for Wells it is biological. The Morlocks destroy the Eloi, not out of hatred or the desire for revenge, but out of the need to survive: the Eloi are cattle for the Morlocks.

The Time Traveller is essentially a man who is caught in the middle. His invention--the time machine--allows him a vision of man's
duality which threatens to engulf him; the Morlocks steal his machine so that he is in danger of never being able to return to his own time. Although the Time Traveller loathes the Morlocks and sympathizes with the Eloi and although the Eloi initially exert a narcotic influence on him, he possesses characteristics shared by the Morlocks: he is adept with machinery; he is carnivorous, and he is partly in the dark in several ways since he is not entirely certain that he has arrived at the truth about the future. The Sphinx, now sightless and imparting "an unpleasant suggestion of disease" (p. 18), stands over the spot once occupied by the Time Traveller's laboratory, the place where the scientist first imagined finding the answer to the riddle what is man—or, more precisely, what has man become. And the pedestal provides an entrance to the underground world, the world of the Morlocks and their machines. The Time Traveller is practically imprisoned in and finally forced to escape from what his laboratory has become. In the future all that remains of the Time Traveller's science and inventiveness is a mindless attention to the machine. For the Morlocks, science is almost totally divorced from intelligence and planning. What was once the province of the intellect and imagination has been reduced to instinct, and science is in the process of succumbing to the irrational.

In the world of 802,701, the two sides of man's nature have been set against one another by "Necessity...man's watchward and excuse, and in the fulness of time necessity had come home to him" (p. 52). According to Bernard Bergonzi, the Time Traveller's narrative is polarised between "the paradisal...and the demonic, representing extreme forms of human desire and repulsion." These polarities are, of course, symbolized by the Eloi and Morlocks. The Time Traveller lists several
sets of opposites, some social and some mythic, which might explain the relationship between the two halves of the declining species of man. The Eloi, he suggests, represent an aristocracy which has become feeble and consumptive, while the Morlocks are the working classes who even in the nineteenth century began a subterranean existence (p. 41). Or, the Eloi are what remains of the Capitalists, the Haves, and the Morlocks the Laborers, the Havenots. Thus the Eloi represent the aesthetic and the Morlocks the utilitarian. Yet the Eloi and Morlocks have a broader significance. The Eloi are literally children of light who are devoured by the darkness. They inhabit an upper world which is a golden paradise, even though it is falling into a state of ruin. The Morlocks are creatures of the darkness (and the unconscious) who live underground. In the most primitive way imaginable, they govern the lives of the Eloi, who cannot articulate their relationship. The Time Traveller's description of his impressions of their world suggests a vision of an industrial hell:

Great shapes like big machines rose out of the dimness, and cast grotesque black shadows, in which dim spectral Morlocks sheltered from the glare. The place, by the by, was very stuffy and oppressive, and the faint halitus of freshly-shed blood was in the air...It was all very indistinct; the heavy smell, the big unmeaning shapes, the obscene figures lurking in the shadows, and only waiting for the darkness to come at me again. (pp. 45-6)

Finally, the Eloi come to represent the intellect which has atrophied because there are no more battles to be fought. The Morlocks represent the animal in man—and, like the unconscious, the biological heritage bequeathed to him by evolution. Ironically since all forms of non-human animal life have disappeared, man is forced to feed upon himself. The intellect and the conscious mind of which it is a product are
themselves only "fatted cattle" (p. 52). The Morlocks destroy the Eloi.

In Wells' view of the Darwinian scheme of things, man as an intellectual
and emotional being is pursued and ultimately devoured by his own animal
instincts. Or, in Freud's terms, the conscious gives way to the uncon­
scious from which it arose in the first place. The Time Traveller ob­
serves the consequences of the loss of consciousness and goes back to
the future to try to change the inevitable. Man can still hope.

The Island of Dr. Moreau is also a study of man's duality. It
too articulates the relationship between the conscious and unconscious,
a relationship thrown out of balance by Moreau's obsession with the
rational and scientific. Through science—the notion of plasticity and
its biological applications—Moreau hopes to liberate himself from his
own animal instincts. He claims to have conquered the animal within
himself and to have moved beyond pleasure and pain. He jabs himself
with a knife in front of a spellbound Prendick and exclaims: "This
store men and women set on pleasure and pain, Prendick, is the mark of
the beast upon them, the mark of the beast from which they came. Pain!
Pain and pleasure—they are for us, only so long as we wriggle in the
dust..." (p. 133). For Moreau, human sensation stands in the way of
scientific pursuit and the study of the laws of the universe. For him
the quest for perfection through his experiments in the plasticity of
living forms is itself what matters, not morality or ethics.

The Island of Dr. Moreau is about the war between the "natural"
man and the "artificial" man. The Beast People are, like the Monster,
Mr. Hyde, and the Morlocks, representatives of the animal in man and
unique symbols of the unconscious which struggles to assert itself over
the thin veneer of civilization and culture. And this novel, perhaps even more than *Dr. Jekyll and Mr. Hyde*, is a devastating comment upon what it means to be a civilized man and the terrible consequences of enforced social repressions. Moreau, like Frankenstein and Jekyll, wishes to dissociate himself from his own baser instincts, and because he is less conscience-stricken and less bound by social convention is to some degree more successful than his predecessors. The Beast People are more distinct from Moreau than are the Monster and Mr. Hyde whose identities blend with their creators. It is Moreau who leaves his indelible stamp on the Beast People and not the other way around: after they revert they still bear Moreau's mark.

Because Frankenstein and Jekyll are so intimately bound up with their creations, they are pursued and finally destroyed by them. But Moreau is more detached from his creations than either Frankenstein or Jekyll and more divorced from his own animal nature. He never worries that his creations will seek revenge upon him: "I turn them out when I begin to feel the beast in them, and presently they wander there. They all dread this house and me...They only sicken me with a sense of failure" (p. 137). Each new creature provides him with a fleeting glimpse of perfection. But he will never "make a rational creature of my own" (P. 137) because the Beast Folk are a reflection of his own humanity and its necessary corollary his animal nature. Since the Beast People remind him of the limitations of his artistic vision and his human capabilities, he turns away from them, and they finally come back to haunt and destroy him. As an artist, Moreau tries to duplicate the perfection of God and ends up with monstrosities that are reflections of his own diseased
imagination and his own hopeless duality. He cannot completely eliminate the animal from himself. His creations reflect this failure, and he dies when he is on the brink of success. Just when he is about to bring the instincts of the Puma Woman under the control of his science and manipulate them for his own ends, she turns on him and kills his. The animal reasserts itself; the unconscious is not subject to the kind of understanding Moreau wishes to impose on it.

Like Moreau, the invisible man, Griffin, wants to drive out the animal in himself and purify his existence through his invisibility. However, his researches are not carried out according to a fixed idea like plasticity. What motivates him is greed: "Whatever I did, whatever the consequences might be, was nothing to me. I had merely to fling aside my garments and vanish. No person could hold me. I could take my money where I found it." He seeks to liberate himself from his biological humanity, and this obsession with refining himself into an abstraction becomes finally irrational and turns him into "a flagrant absurdity" (p. 251).

Griffin, like Jekyll before him, frees the id in pursuit of a perfect disguise. Initially his physical being is a burden to him, and he desires invisibility because he wants to get outside the bounds of "common conventions of humanity" (p. 279). Society will allow him no privacy and is intolerant of his speculations and research. He is forever being intruded upon, first by his landlord (p. 270) and later by Mrs. Hall and her friends at Iping (p. 191). He inspires the distrust of the people around him because, like Hyde, he threatens the social fabric of his world. As a figure of the id, the invisible man assaults
the social order.

In his quest to free himself from social and biological restraint, the invisible man forgets one very obvious detail, clothing. Because he does not possess invisible clothing, he is more a slave to his physical needs than he was when he was visible. The body he tries to escape becomes an even greater burden to him, and in his invisibility he is, according to Philmus, more preoccupied than other men with his daily needs. Instead of rising above other men and becoming invulnerable, he proves himself only too human. And the fits of temper that drive him to commit criminal acts only confirm his bonds with the common humanity he tries to transcend. Like Moreau's island, Griffin's experiment in invisibility is a failure because his imagination is flawed and limited. As Marvel's conversation with the Mariner at Port Stowe makes clear, Griffin's aims are as base as the men he disdains. What Marvel imagines an invisible man can do is exactly what Griffin does: "Suppose he wants to rob--who can prevent him? He can trespass, he can burgle...And wherever there was liquor he fancied--" (p. 237). He is driven by nothing so noble as a scientific principle, and the wonder of his invisibility is diminished by the pettiness of his vision.

The Time Machine, The Island of Dr. Moreau, and The Invisible Man all present startling images of man's inescapable duality and his destruction by the irrational forces freed through his pursuit of the rational. In each of the novels, an observer—the narrator in The Time Machine, Prendick, and Kemp—witnesses this phenomenon and is to some degree shaken by what he sees. Each of these characters shares a sympathy with the scientist-hero, yet is closer to our experience than are the Time
Traveller, Moreau, and Griffin. Consequently, each is meant to guide our response to our confrontation with man's divided nature and to comment further on man's prospects for the future.

The narrator of The Time Machine, like Walton in Frankenstein, feels a mysterious sympathy for the Time Traveller, and his response is meant to mirror our own. He is "one of the Time Traveller's most constant guests" (p. 11) and one of the only members in the audience to appreciate the Time Traveller's imagination and vision. He is moved by the discussions he engages in at the Time Traveller's home. He alone returns after hearing the tale and resolves to wait for the Time Traveller to come back in spite of his commitment to the present. He hungers for a second glimpse of the future. As the "Epilogue" makes clear, the narrator grieves over the absence of the Time Traveller three years after his disappearance. He speculates about what might have happened to the scientist and holds out the hope of seeing him again. The narrator's continuing devotion to the Time Traveller and his belief in the power of the imagination provide what limited affirmation the book has to offer. The narrator becomes a symbol of enduring humanity; he is the guardian of the flowers, those "two strange white flowers--shrivelled now, and brown and flat and brittle--to witness that even when mind and strength had gone, gratitude and a mutual tenderness still lived on in the heart of man" (p. 76).

The Island of Dr. Moreau, however, offers no such solace. Having observed the duality of man's nature and witnessed the destruction of human consciousness, Prendick emerges an alienated and disappointed figure. He does not anticipate the future or sustain a glimmer of hope
the way the narrator in *The Time Machine* does. After Moreau and Montgomery die, Prendick lives alone on the island with the Beast People for ten months and initially makes some feeble attempts to preserve the order he has destroyed. Then he too begins to change: "I, too, must have undergone strange changes. My clothes hung about me as yellow rage, through whose rents glowed the tanned skin. My hair grew long, and became matted together. I am told that even now my eyes have a strange brightness, a swift alertness of movement" (p. 175).

He contrives an escape from the island but is strangely unwilling to return to humanity. Like Gulliver, Prendick has encountered a vision of mankind which isolates him from his fellow creatures. While Gulliver's pessimism about the human race comes from having spent a year with the Houyhnhnns, Prendick's comes from having spent a year with the Yahoos. He feels fear and disgust when he is with men because he sees resemblances between them and the Beast People and senses that men too may begin to revert. Yet he exhibits the marks of the Beast People that he so fears in others; he seems strange to the people he meets and is forced to admit, "I may have caught something of the natural wildness of my companions" (p. 180).

He returns to England with what remains of Moreau's vision. Naturally the men he meets think he is mad, and he must feign amnesia; he finds only one sympathetic ear. Experiencing little solace in human comings and goings, he literally looks to the stars. He is not, like Walton in Frankenstein or the narrator of *The Time Machine*, enlightened and humanized by his contact with the scientist. Instead, his experiences on the island simply demonstrate the futility of human endeavor.
Even the humane scientist (Prendick) is at the mercy of blind chance, and even he cannot resist the pull of the animal within himself.

Like Prendick, Kemp is a humane scientist who is compromised by his contact with a scientific idea. Chance brings Griffin to Kemp's door, and Kemp betrays his former schoolmate. He learns in broad outlines how Griffin became invisible, and his curiosity is whetted by what he finds out. But he is a man limited and defined by his society, and he lacks the imagination and vision demonstrated by the narrator of *The Time Machine* and even Prendick. He listens with interest to Griffin's tale only to detain him until help arrives. When Griffin asks for a response to what he has revealed, Kemp coolly replies, "I never blame anyone...It's quite out of fashion" (p. 230). This calculated reply undercuts Kemp's authority with the reader and shows a lack of feeling for his fellow scientist. He is not enlightened or particularly disillusioned by his glimpse of man's duality. And the secret of invisibility remains hidden, even though "Kemp has fished unceasingly" (p. 306) for it. Griffin's book which contains his formulas and calculations, stays with Marvel, who is incapable of understanding it. The scientific miracle of invisibility is reduced to another in a series of cheap thrills to be reported in the newspapers. The invisible man's fantastic tale lacks the poignancy of the Time Traveller's and Moreau's stories, perhaps because Kemp himself is not a very sympathetic or moving audience. In the world of *The Invisible Man*, there is not even one man--as there is in *The Time Machine* and *The Island of Dr. Moreau*--who can participate with feeling in the joy and terror of scientific visions.

Like *Frankenstein* and *Dr. Jekyll and Mr. Hyde*, Wells' three works
re examinations of the interior universe of a scientist. The novels are structured to demonstrate the gap between our world and the nightmares brought about by science divorced from morality and wisdom. Each work involves a journey inward—and in the case of Moreau and Griffin a journey toward the terrors of the unconscious mind given physical reality through science. All three novels use framing devices which point toward a central narrative in which the scientist-hero explains himself. The distance between the characters in the frame and the scientist at the center is a further expression of man's inescapable duality, as neither seems capable of reconciling themselves with the other.

Except for the narrator and the mysterious Silent Man, the characters in the frame of *The Time Machine*, while perhaps entranced by the force of the Time Traveller's personality, tend to make light of his gloomy predictions about the future. Their obtuseness encourages us to sympathize with and finally believe in the Time Traveller's vision. From the very first page of the novel, the Time Traveller must fight to be heard over the stubborn objections of Filby and the Psychologist. And the Very Young Man sees only an opportunity to make money from the Time Traveller's wild theorizing about the future. Their doubts and limited foresight help to focus more attention on the Time Traveller as a scientist and dreamer and a man whose vision sets him apart from those around him. The narrator, who is entirely sympathetic to the Time Traveller, observes that he is too clever for his own good:

The fact is, the Time Traveller was one of those men who are too clever to be believed: you never felt that you saw all around him; you always suspected some subtle reserve, some ingenuity in ambush, behind his lucid
frankness. (pp.10-11)

He inspires the skepticism of the people around him because he is a speculator who is given to wild flights of imagination. In fact, his dinner guests can barely follow his train of thought when he discusses the fourth dimension and can conceive of wanting a glimpse of the future for only the meanest and most naive of reasons. They are rooted in the present and lack the breadth of vision granted to the Time Traveller because of his scientific knowledge. This knowledge literally opens new worlds for him and makes him into a visionary, a man who can see the future.

In The Island of Dr. Moreau, Wells uses a device typical of his scientific romances. He creates a common man who confronts a fantastic situation, comes to understand it, and finally lives to tell others about it. Prendick is an ethical scientist, who by the merest accident ends up on Moreau's island. He is a man of common sense and compassion, and these very traits cause him to misunderstand and ultimately participate in the destruction of Moreau's world. Like Wells himself, Prendick "had done some research in biology under Huxley" (P. 97) and "did my Biology at University College" (p. 82). He is introduced to the island through Montgomery, who revives him when he boards the Ipecacuanha and later rescues him from the ocean. Montgomery deliberately withholds information about the nature of Moreau's experiments and tells Prendick only that the island is a "biological station--of a sort" (p. 97). This withholding of information makes possible Prendick's misapprehension about Moreau's activities and causes him to precipitate the death of Moreau.
At least when he is present, Moreau commands complete control over the Beast People. They willfully defy the Law when Moreau is not around, but he still maintains a tenuous mastery over them. Prendick is the outsider who disrupts this world, which is particularly vulnerable to intrusion. He initially thinks that Moreau is vivisecting men and crossing them with animals. Ironically just the opposite is the case. Moreau would be appalled at Prendick's suspicion that he and Montgomery intended to "fall upon me with a fate more horrible than death, with torture, and after torture the most hideous degradation it was possible to conceive--to send me off, a lost soul, a beast" (p. 115). This ironic misapprehension and the fear that it brings cause Prendick to commit a fatal error: he reveals to the Beast People that although he is a man, he too is an animal. The Beast People discover that though Prendick has a form identical to their god Moreau and the Other with the Whip, Montgomery, he shares their physical needs and wants. He eats and sleeps and is willing to participate in the life of the huts. And he commits the ultimate sin which results in his own undoing: he shouts blasphemies against the island's god. He tells the Beast People that Moreau and Montgomery are frightened of them and exposes the uneasy and tenuous balance between the rational and irrational that Moreau has achieved.

These two acts set the stage for Moreau's narrative, "Dr. Moreau Explains," and although Prendick now knows the truth about Moreau's work, he still cannot escape his role in the destruction of the scientist's world. He, it seems, is only too human. The very first demonstration we get of Prendick's humanity and hence his kinship with the Beast People is when he is revived by Montgomery's drink on the ship. Signi-
Significantly, the drink tastes like blood, and this detail alone prefigures Prendick's own reversion to the animal level. On instinct he kills the Leopard Man and causes the Beast People to taste blood in Moreau's presence. After the death of the Leopard Man, it is only a matter of time before the inevitable happens. And Prendick deals the final blow to Moreau's scientific aspirations when he accidentally sets fire to Moreau's laboratory. Moreau's nightmare is destroyed, and the ego and consciousness reassert themselves with Prendick's return to civilization. But his experience with his own animal nature and his observation of the similarities between civilized man and the Beast People suggest that consciousness gains the upper hand only temporarily.

Like *The Island of Dr. Moreau*, *The Invisible Man* is structured to reveal the conflict between the id and ego, a conflict symbolized by Griffin's single-handed struggle with the world around him. We see first the results of his invisibility and the social chaos it creates. Only when he is at the end of his reign of terror do we hear a first-hand account of how he became invisible.

Griffin like Moreau is an alienated and terrifying figure who wantonly destroys his father and abandons all human contact in pursuit of scientific knowledge. His adventure in invisibility is a tale of pursuit and rejection. Society refuses to leave him alone, and he, in turn, wants to use his powers to manipulate society to his own ends. Of course, when he seeks to establish contact with other men, he is betrayed. Marvel escapes, and Kemp brings him to the attention of the law. Toward the end of his narrative, Griffin speaks of a partnership with Kemp and realizes the foolishness of carrying out his plans
alone (p. 285). In the course of confessing his need for another human being, he reveals his vulnerability to Kemp; invisibility "means little advantage for eavesdropping and so forth--one makes sounds. It's of little help, a little help perhaps--in house-breaking and so forth. Once you've caught me you could easily imprison me. But on the other hand I am hard to catch" (p. 285). Furthermore, the food he eats is visible until it is assimilated. Kemp uses this knowledge against Griffin and insures his destruction. Griffin's crime is his alienation and subordination of his humanity to a scientific idea. Like Hyde, he is hounded out of existence by society and proves such a threat that the entire countryside must be mobilized to capture him. And as in Dr. Jekyll and Mr. Hyde civilization prevails, but only because of the meanness of Griffin's ends.

In The Time Machine, The Island of Dr. Moreau, and The Invisible Man, Wells explores the implications of man's duality, implications that are all the more terrifying because science provides man with the tools to manipulate his identity in dramatic ways. He can, perhaps, become invisible or graft portions of his humanity onto animals. For Wells, man is hopelessly divided, and his novels explore the tenuous balance between the conscious and the unconscious mind and between the id and ego. Science, which should symbolize reason, threatens to tip the balance toward the unconscious and hence sows the seeds of civilization's destruction. Excessive rationality is in itself irrational, as Moreau and Griffin so aptly demonstrate. And their misdirected efforts in the present result in man's division into two species--the Eloi and Morlocks--and the eventual disappearance of the human race from the face of the
earth in the future.

Perhaps more than any other science fiction novels in the nineteenth century, *The Time Machine* and *The Invisible Man* explore ideas drawn from physics and use these ideas as devices to actualize the fantasy. The notions of time travel and invisibility are based upon Wells' understanding of the physics of human perception. *The Time Machine*, in particular, seems to anticipate the discoveries of Einstein in the early part of the twentieth century, and both novels reveal a world in which all material phenomena can be understood through physics. Physics makes possible the impossible and explains the fantastic.

Wells' notion of time travel, at first glance an absurdity, is made plausible by the Time Traveller's discussion of the fourth dimension in which space and time exist in a continuum. The Time Traveller's speculations are firmly grounded in nineteenth-century physics. At mid-century, several attempts were made to measure the velocity of light, a measurement that combined space (a distance of 186,000 miles) and time (one second). J. Fizeau in 1846 and L. Foucault in 1862 both invented devices to measure the speed of light. It was discovered, in part through the experiments of A. A. Michelson and M. Morely in 1887, Sir Oliver Lodge in 1893, and, later, G. F. Fitzgerald, that the velocity of light was constant no matter what the position or condition of the person who observed it. This fact led to Einstein's conclusion in 1905 (a conclusion anticipated in the early pages of *The Time Machine*) that there are no such things as absolute space and time and that they are relative to the person observing them.

In 1676, the Danish astronomer Olaus Romer first discovered that
light travelled at a finite velocity. The implication of this discovery is that stars visible to us at one moment on earth actually appear, depending on their distance, as they did in the past. And some may have disappeared altogether by the time the light they emit has travelled far enough to be visible on earth. Therefore, there is no absolute distinction between past and present, since what we see on earth exists in the past. Later experiments in physics have supported this concept of the relativity of time. According to Dampier, if a traveller moving at the speed of light takes a trip among the stars and returns to earth after one of our years, we may feel one year older, but "to him no time seems to have elapsed; he is still in the 'now' of our last year. Thus the analogy of a plane, the same for all men at all places, separating past and future must be given up." 25 Only in the human consciousness, then, does time seem linear and irreversible, and even this irreversibility is not absolute, as the Time Traveller points out: "We are always getting away from the present moment...For instance, if I am recalling an incident very vividly I go back to the instance of its occurrence: I become absent-minded, as you say, I jump back for a moment" (pp. 5-6).

Wells' whole idea of time travel is based upon relativistic assumptions about the universe. Even the most skeptical of the Time Traveller's guests, the Psychologist, can explain why the small model of the time machine propelled into the future is not visible in the present:

We cannot see it, nor can we appreciate this machine, any more than we can the spoke of a wheel spinning, or a bullet flying through the air. If it is travelling through time fifty times or a hundred times faster than we are, if it gets through a minute while we get through a second, the
impression it creates will of course be only one-fiftieth or one-hundredth of what it would make if it were not travelling in time. (p. 9)

His explanation echoes one of the deepest philosophical implications of the doctrine of Relativity—that matter is merely a series of events in four dimensional space-time and that, in Dampier's words, "There are only differential relations which connect together neighboring events in space-time." In this view, the physical world itself is reduced to a set of equations which figure out these connecting relations.

If Einstein is correct and matter is simply the relationship between the observer and the thing he observes, it is a difficult if not impossible task to settle on the nature of reality. The individual becomes almost entirely isolated in his perceptions, since his position in the world at a given time rather than any solid physical properties of matter determines what he sees. Or, as Timothy Ferris says in paraphrasing the twentieth century astronomer Arthur Eddington, "...the laws of nature reside within our minds, are created not by the cosmos but by our perceptions of it, so that a visitor from another planet could deduce our science by simply analyzing how our brains are wired." The Time Machine is literally about the isolation of the individual over time. By travelling into the future in his machine, the Time Traveller experiences the relative nature of time. He covers thousands of years in several moments of his own subjective time and lives eight days in the future during what amounts to eight hours in the present.

Because the Time Traveller has experienced temporal relativity, he is dislocated in time and liberated into the fourth dimension—a metaphor for the imagination because through it we envision other worlds.
The Time Traveller's proposal that a man can travel backward and forward in time and remain fixed there suggests the physical projection of the self into the world of the imagination. This is, in fact, precisely what happens to the Time Traveller. He is an artist who is consumed by his own vision of the future as he sees it along the continuum of time. The truth he perceives has alienated him from his contemporaries, and, as the narrator tells us, the Time Traveller "thought but cheerlessly of the Advancement of Mankind, and saw in the growing pile of civilization only a foolish heaping that must inevitably fall back upon and destroy its makers in the end" (p. 76). The last glimpse we get of him is as a "phantasm" who disappeared three years previous to the narrator's account. The Time Traveller does not want to lose a grip on his vision by remaining in the present and cannot, like the members of his audience, accept the tale as merely a fiction, a figment of his imagination. So, he disappears into the fourth dimension and the isolation of his own perceptions over time.

Because the Time Traveller lives in a relativistic universe, the explanations that he offers of his experience in the future are necessarily tentative. By the time he finishes his narrative, he admits that his interpretations still may not be correct. His insights are a product of his position in the universe: he is equipped only with the scientific knowledge of his own day. He can make judgements on the basis of science, while admitting that forces beyond what he knows may have been responsible for what he sees in the future. Because he is only one man and hence limited in his perceptions, his vision is open-ended and incomplete.
Throughout the narrative, Wells frequently suggests that the Time Traveller's tale is a fantasy or a dream. Perhaps Wells makes this suggestion because the Time Traveller gets to the future through the realm of the imagination. He travels in the fourth dimension. This dimension is intuited though not actually seen by the dinner guests since it exists below the threshold of normal human perception. Filby and the others cannot directly experience the fourth dimension because they are too firmly rooted in their own time. The Time Traveller himself fears becoming fixed in time. When he returns to his dinner guests after having spent a week in futurity, he begins to doubt the reality of his vision. Even as he recounts his experience, he feels it slipping away from him and speaks "like one who was trying to keep hold of an idea that eluded him" (p. 73). And, he must reassure himself that he has indeed travelled in time and that his tale is not the "gaudy lie" (p. 74) the Editor says it is by observing that the time machine has moved from its original position.

After the Time Traveller finishes his narrative, he states that one way to interpret the possible future he has presented is as a prophecy. In fact, Wells seems deliberately to call attention to the creative process when he has the Time Traveller ask for his audience's response to his tale:

No. I cannot expect you to believe it. Take it as a lie—or prophecy. Say I dreamed it in the work-shop. Consider I have been speculating upon the destinies of our race until I have hatched this fiction. Treat my assertion of its truth as a mere stroke of art to enhance its interest. And, taking it as a story, what do you think of it? (p. 72)
The Time Traveller's tale and the novel itself are, of course, fictions. But Wells intends us to read them as prophecy, that realm, according to Philmus, of "metaphorical truth which mediates between the blind and complacent optimism evidenced by the fictive audience and the resultant devolution envisioned by the Time Traveller." His explanations of the future—the imaginary world of the Eloi and Morlocks—are important only as they make clear that "the world projected in the fiction is prophecy; that is, 'the working to a logical conclusion' of what can be observed in the world of the present." The novel works as prophecy because, as the Time Traveller says, "Time is only a kind of Space" (p. 5). This fact allows him to establish a real physical and mental connection between the present and future and makes possible his journey. The Time Traveller, then, is in a unique position as a prophet, since he has literally seen what the future holds in store for the human race.

Like time travel, the idea of invisibility is firmly grounded in Wells' knowledge of physics. He draws upon the work of Newton and others on optics and the properties of light to explain Griffin's invisibility. Query 29 of Newton's Principia contains a question which forms the basis for Griffin's explanation in the chapter "Certain First Principles": "Are not the Rays of Light very small Bodies emitted from shining substances?" In other words, light itself is made up of particles projected into the eye. Color is the dispersion of light by the surface of an object, and, as Dampier states, "Newton inferred that some, at all events, of the colors of natural objects are due to their minute structure, and calculated the dimensions necessary to give these effects." Griffin's insights about the nature of visibility are drawn
in part from Newton's work. When Griffin confronts the confounded Kemp with the fact of his invisibility, he says, "Visibility depends on the action of visible bodies on light. Either a body absorbs light, or it reflects or refracts it, or does all these things. If it neither reflects nor refracts nor absorbs light, it cannot of itself be visible" (pp. 255-6). Visibility is what Newton said it was, the interaction of light with the various surfaces of objects in the physical universe.

Visibility and color are also functions of the medium in which light travels. In 1850, Foucault observed and calculated the velocity of light in air and water and concluded that it travels slower in water than in air. Thus objects in water will appear less vivid in color since less light escapes from their surfaces, and some may be rendered invisible altogether. Again Griffin calls upon his knowledge of optics when he discusses how he performed the miracle of his invisibility: "And if you put a sheet of common white glass in water, still more if you put it in some denser liquid than water, it would vanish altogether ..." (p. 256) because light is slowed down in water and hence does not reflect and refract off of surfaces as rapidly as it does in air.

Since, according to Griffin, the human body is made up of tissues that are more transparent than pieces of paper (p. 257), it is not difficult for him to calculate the formulas for the reflection and refraction of light off of himself once he has arrived at his mysterious "general principle of pigments and refraction" (p. 255). This mysterious principle which demonstrates how blood may become transparent remains conveniently hidden in Griffin's book and like the time machine escapes rigorous examination in the text. Both machine and principle are casually in-
serted into fairly straight-forward discussions of nineteenth-century physics.

Physics suggests a level of reality which is paradoxical and seems to defy our common-sense notions about the world. Wells is quick to seize upon these paradoxes as devices for introducing fantastic speculations into his scientific romances. If physicists have proposed the existence of a world below the threshold of normal perception—in which space and time are a continuum—then time travel and a time machine are distinct possibilities, even though men have as yet been unable to turn them into realities. And if the phenomenon of vision is simply the interaction of light and the surfaces it contacts, then invisibility too is possible. In The Time Machine and The Invisible Man, Wells employs physics to expand our conceptions of ourselves in relation to the world around us. He uses the physics of human perception, both literally and metaphorically, to acquaint us imaginatively with the future and our possibilities for continued survival in it.

In his three early scientific romances, Wells is ultimately pessimistic about man's prospects in the universe, in spite and maybe because of the possibilities opened up to him by his scientific knowledge. The Time Machine, The Island of Dr. Moreau, and The Invisible Man are more extreme representations of ideas found in Frankenstein and Dr. Jekyll and Mr. Hyde. In Wells' works, the scientist is a powerful figure able to create worlds only suggested in the two earlier works. For Wells, more than for Shelley and Stevenson, science is intimately bound up with every aspect of man's future. Advances in biology, psychology, and physics allow man to create radical changes in himself and the world
around him so that he and it become almost unrecognizable. The complacency of the dinner guests and the excesses of men like Moreau and Griffin set the stage for what the Time Traveller sees at the end of the world. Looking at the nineteenth century from the other end, Wells was able to see that what Shelley predicted in *Frankenstein* had in part come true. Man's inability to use scientific knowledge with wisdom and restraint had liberated the Monster.
CONCLUSION: SCIENCE CREATING MAN

Science fiction, as its name implies, is a type of literature that is directly concerned with possibilities opened up by science. Science fiction is about the ways science explores the limits of our humanity. Since the beginning of the nineteenth century, science has redefined what it means to be human and changed forever the way we see ourselves. Through science we can look at the world and understand our place in it. Science gives us a system of belief and, at the same time, cause for despair. It promises us solutions to all our problems and threatens us with extinction; it reveals the history of the human race but offers only brief, tantalizing glimpses of the future. So, science can tell us where we came from, how we got where we are, and how we function day to day. Science fiction, however, can map out in infinite variety where we may be going in the future.

Darwin and Freud have much to say about our origins and our current situation in the universe. For both scientists, man is little more than a logical outgrowth of the operation of natural law. The title of Carl Sagan's book on the evolution of human intelligence and rationality—faculties that supposedly separate us from everything else in the world—is a suggestive one. The "dragons" of Eden are precisely what concern Darwin and Freud: those primal instincts and fears we carry with us from Eden, the mythological starting place of the human
race. For Darwin, the dragons reside in our common link with the rest of the animal kingdom, our biological inheritance. For Freud, they reside in the unconscious or the id. And the dragons of Eden are related to the emergence of Frankenstein's Monster, Mr. Hyde, the Beast Folk, and all the monsters that populate science fiction stories and novels. In his preface to The Last Starship from Earth, John Boyd makes clear the connection between dragons and science fiction: "As Carl Sagan implies, the eons-old reptilian complex of the human brain may retain neural patterns fixed on it by our terror of dinosaurs, our memory of dragons, which may well be the chthonic source of science fiction's bug-eyed monsters." The most powerful experiences of our primitive ancestors have been imprinted in the human brain and passed on from generation to generation only to manifest themselves in the various forms of literature by which we define ourselves. The dragons of Eden, then, make science fiction so terrifying and real.

If Darwin and Freud describe the primitive dragons that haunt our psyches, thermodynamics directs us to the present and explains how we get along from day to day. It shows us how our bodies are perfectly tailored to our surroundings so that we can engage in all types of activities with comfort and ease. Like a chick whose eggshell is designed so that it will receive the right mix of oxygen and carbon dioxide in order to emerge, man is just one self-regulating energy system within the larger energy system of nature. The source of our body heat and energy is not some mysterious, perhaps God-given substance around the heart. Instead, our bodies are like complex machines (steam engines or cars) that convert fuel (food) into energy through heat. All of our acts—
our most astonishing feats—are regulated by the same equations that
describe the transformation of heat into energy. Like Darwin and Freud,
thermodynamics assures us that our bodies and minds make sense in terms
of the physical universe. We are not divinely inspired creations, only
beings subject to the same laws that govern the emergence of a chick from
its shell or the heating of a coil on a stove.

Many science fiction writers are repelled by such a constrained
view of man. Emotionally they sense that there is more to being human.
A literature that portrays man as little more than a machine is as terrify­ing
as one that conjures up dragons and appeals to primitive fears.
Wells' novels, for instance, are characterized by an individual's attempt
to escape the confines of prescribed physical law and, in doing so, to
stretch the boundaries of what it means to be human. In one way or an­
other, the Time Traveller, Dr. Moreau, and Griffin are all trying to
prove that we are more than what thermodynamics says we are. We have
imagination and vision which allow us to create fantastic schemes for
getting beyond our evolutionary heritage. For the Time Traveller
and Griffin, the escape from the limits of laws like those that govern
thermodynamics means liberation into, or entrapment in, the realm of the
imagination. This liberation, both marvelous and horrifying, is an
assertion of our humanity in the face of an increasingly mechanistic
model of the world.

Scientific theories explain nature in patterns of ever-increasing
complexity. Although they are generally cautious about first causes,
scientists are relatively certain that they can find all the answers to
the questions that most puzzle us, or, at the very least, provide us with
schemes that satisfy us until other, more convincing ones come along. A science that can postulate the existence of quarks and instantons—minute particles of energy whose affects on matter can only be observed indirectly—is capable of divine miracles. George Gamow's Big Bang, an infinitely expanding or undulating universe are certainly as marvelous as and, at least for now, more convincing than mythic or Biblical accounts of creation. The fact that science describes the universe does not diminish our sense of wonder about the world around us. When we discover how and why a physical object works or a natural phenomenon occurs, our enjoyment of it is enhanced. Science fiction aims for a similar effect. The title of a recent bibliography of science fiction and its criticism demonstrates this effect. The book is called The Anatomy of Wonder. At first glance, anatomy, which implies rational analysis, and wonder seem incongruous. Yet science fiction, like science itself, frequently establishes a hypothesis, one that may supply a radical alteration of the world as we know it, and works out its implications. In the process, science fiction offers us visions of what we can expect in the future. The world of 802,701 in Wells' The Time Machine, for instance, is all the more awe-inspiring because we see the connection between it and our world and because we are involved in the working out to their logical conclusion of some basic assumptions about the way men at the end of the nineteenth century lived. To dissect the future, then, is not necessarily to make it less wonderful or to diminish its power over our imaginations.

Part of science fiction's power comes from its ability to explain possible futures and familiarize us with the marvelous or defamiliarize us with the everyday. Yet, all of the writers considered in this dis-
sertation are uncomfortable with scientists' assurance that they can explain the universe and are fearful of the model of the world that science provides. Shelley, Stevenson, and Wells feel that the universe is mysterious and that there are things a man cannot and does not know. As Frankenstein and Dr. Jekyll and Mr. Hyde so aptly demonstrate even the most brilliant of scientists cannot predict with absolute certainty what the results of their experiments will be. And usually they are surprised by some unforeseen turn of events. The world will not be reduced to a set of scientific formulas, and the Monster and Mr. Hyde are testimonials to this fact. The "reptilian complex"--the most ancient of the three parts of the human brain and the part responsible for the aggression, territoriality, and ritual characteristic of our reptilian ancestors--warns us that there are unknown and unforeseen dragons waiting to destroy us. The terror of Frankenstein's and Jekyll's fate comes not so much from their handiwork turning on them as it does from their failure to account for all the possibilities, human or otherwise. (This is even more ironically the case for Griffin; in trying to transcend his humanity, he fails to consider his basic physical needs and insures his own destruction.) The lesson to be learned is that we simply cannot predict the outcome of what we do, and science fiction and science itself frequently offer us unpleasant reminders of the limitations of our vision. These reminders too may explain why science fiction moves us.

Scientists think they can expand the limits of our humanity; science fiction writers are not so sure. To Shelley and Stevenson, in particular, men are hopelessly divided against themselves and unable and perhaps unwilling to understand the nature of this internal split.
The essence of Jekyll and Hyde's relationship is that it is mysterious. No one in the novel, least of all Jekyll himself, can explain it, and Jekyll's research is finally inconclusive. Similarly, Frankenstein and the Monster are bound together through hatred and madness. Although Jekyll and Frankenstein are excessively rational they are, ironically, more driven by irrational human desires than most men. They cannot know everything there is to know, and this restriction drives them insane. So, while science seems to offer us new and startling worlds, we remain, according to writers of nineteenth-century British science fiction, stubbornly human and trapped by the limits of our knowledge.

Science fiction, and especially that of Wells, reminds us of our humanity in still a different way, one that also inspires fear and awe. A novel like *The Time Machine* reveals the operation of impersonal universal processes that dwarf human endeavor. We go from a human to a geological time scale. The end of the world is a concept we can grasp intellectually, but we are unequipped emotionally to understand what three million years or a geological age mean. We can only imagine such a large span of time. And when, like Darwin or Wells, we make predictions that span millions of years, we realize that we are doomed, not only as individuals but as a race. This is, of course, the source of the recurrent quest for immortality in science fiction.

Because it is concerned with externalities and documentations of physical phenomena, science would seem to turn us outward. Yet science fiction repeatedly demonstrates that what we encounter when we look to the outside is ourselves. Frankenstein, Jekyll, and Moreau are men whose main problem seems to be that they cannot escape from themselves. When
they attempt to manipulate the physical universe, they get distorted versions of themselves. Science fiction suggests that what modern science shows us about the nature of the world we live in may tell us more about our own minds than the real properties of anything "out there."

Instead of directing us outward, then, science turns us excessively inward, and what we perceive as scientific "truth" may be little more than contrived patterns to make our lives more liveable.

Science has become a source of modern myth and given us a new way of talking about who we are. Instead of God's creation of the world, we have the Big Bang. Instead of Adam and Eve, we have Australopithecus robustus and Homo habilus. Science offers us a system of belief in its assurance that the world can be understood in human terms and in its certainty that, given enough time, men will solve all mysteries and face all problems. Science gives us a new version of the past and so helps us to anticipate the future and has become, finally, integral to the present and future welfare of the human race. And, science fiction represents the literary response to the fact that science has become an essential ingredient in our definition of ourselves as human beings.

Different types of literature give us different models to define what it means to be human; science is the informing agent behind our current model. Because we have the potential to explore extremes of inner and outer space and because we exist in an age of "future shock," science fiction seems relevant to us. If we lived in a static culture, science fiction would no longer be relevant, and we would replace it with another, more appropriate model. The scientific world view orients us toward the future, one that promises to be radically different from the way we live
now. Science fiction maps out an infinite variety of possible futures for us. In doing so it seeks to accommodate us to change, expand our imaginative horizons, and prepare us for what is to come. As scientific knowledge increases, we become more aware of our surroundings and gain more control of our interior and exterior worlds. Science fiction deals with the impact that awareness and control have on us and, for Shelley, Stevenson, and Wells, in particular, with how we will use science to guide the future.

Science offers us brief glimpses of the future; from these glimpses science fiction extrapolates worlds. In these worlds it considers the emotional, intellectual, and philosophical implications of scientific ideas. Science fiction humanizes science, bringing it to a level we can understand. Science fiction opens up the future for our examination and approval or disapproval. In the process, it helps us consistently to redefine what it means to be human, thus providing us with new myths that inspire our terror and delight. Through science fiction we see who we are and where we may be going—we become accustomed to the future as it draws closer to our experience.
Chapter 1:


2I discuss three novels of Wells because his work represents a culmination in the treatment of scientific themes and a mapping out of worlds only suggested in earlier science fiction.


5Ibid., p. 3.


14 De Beer, p. 5.


17 *Origin*, p. 94


20 Gould, p. 90.

21 *Origin*, p. 144.

22 *Descent*, p. 489.


26 Samuel Butler, *Erewhon, or Over the Range* and *Erewhon Revisited* (New York: Modern Library, 1927), p. 56. Further reference will be to this edition and will be noted in parentheses in the text.

27 Sussman, p. 135
28 Ibid.


30 Edward Bulwer-Lytton, *The Coming Race* (New York: Thomas Y. Crowell & Company, 1894), p. 69. Further references will be to this edition and will be noted in parentheses in the text.

31 Philmus, p. 17.

32 Clarks, p. 94.

33 Gerber, p. 20.

34 William Morris, *News From Nowhere, or An Epoch of Rest Being Some Chapters from a Utopian Romance* (New York: Longmans, Green and Co., 1940), p. 119. Further references will be to this edition and will be noted in parentheses in the text.

35 Anthony Trollope, *The Fixed Period*, Vols. 1 and 2 (London: Blackwood, 1882), vol. 1, p. 180. Further references will be to this edition and will be noted in parentheses in the text.


38 Dampier, p. 323.


40 Hall, p. 13.

41 Dampier, p. 327.
42 Hall, p. 12.

43 Ibid., p. 13.


47 Ibid., p. 652

48 Ibid., p. 38.

49 Ibid., p. 660.

50 In The Interpretation of Dreams, Freud also talks about a third part of the mind: the preconscious. The preconscious contains thoughts which have been pursued in the conscious mind and have subsequently been neglected, broken off, or suppressed. The content of the preconscious can be relegated to the unconscious or summoned up by the conscious mind. See pp. 632-2.

51 Most of the following discussion of the id, ego, and superego is taken from Hall, pp. 22-37.

52 Oscar Wilde, The Picture of Dorian Gray (New York: Dell, 1973), p. 110. Further references will be to this edition and will be noted in parentheses in the text.

53 Dampier, p. 217.

54 Ibid., p. 256.

55 Ibid., p. 43.

56 Dampier, p. 246.
57 Ibid., p. 248.
58 Ibid., p. 243.
59 Ibid., pp. 388-9
60 Jaynes, p. 437.
Chapter 2:


3 Dampier, p. 93.

4 Ibid., p. 126.


6 Shelley, p. xiv.


11 M. A. Goldberg, "Moral and Myth in Mrs. Shelley's Frankenstein,"
12Miyoshi, p. 84.


15In 1786, Galvani noted that a frog's leg contracted when it came contact with a discharge of electricity. Later he noticed the same contraction when a nerve and muscle were connected to two dissimilar metals in contact with one another. Galvani thought that these contractions were caused by animal electricity (Dampier, p. 232). And like Galvani, Franklin experimented with electricity and linked the lightning flash with the electrical spark and invented the lightning rod (Bernal, p. 114).
Chapter 3:

1Robert Louis Stevenson, "A Chapter on Dreams" in Memories and Portraits and Random Memories (New York: Charles Scribner's Sons, 1925), pp. 172-3. In this essay Stevenson claims that he was influenced by an article on Freudian psychology that he read in a French journal when he was working on the novel.

2Philmus, pp. 96-7.

3Ibid.

4Ibid.


6Robert Louis Stevenson, The Merry Men, and Other Tales (New York: Everyman, 1968), p. 3. Further references will be to this edition and will be noted in parentheses in the text.

7Masao Miyoshi, "Dr. Jekyll and the Emergence of Mr. Hyde," College English, 27 (1965), p. 472.

8Philmus, p. 97.


10Stevenson had always been preoccupied with the notion of the double and in "A Chapter on Dreams" admits that even as a very young man he had been plagued by the idea that he really lived two lives:
one waking and one dreaming (p. 164). In the same essay, he claims that he dreamed a good bit of *Dr. Jekyll and Mr. Hyde* (p. 172).

11 Philmus, p. 99.


14 Eigner, p. 158.


17 Ibid., p. 174

18 Ibid., pp. 171-2.

19 Ibid., p. 180.
Chapter 4:


2 Ibid., p. 159.

3 Ibid., pp. 161-2.

4 H. G. Wells, *The Time Machine in Seven Science Fiction Novels of H. G. Wells* (New York: Dover, 1934), p. 41. Further references will be to this edition and will be noted in parentheses in the text.

5 "Zoological," p. 163.


7 Ibid.

8 Ibid., p. 39.


11 H. G. Wells, *The Island of Dr. Moreau in Seven Science Fiction Novels of H. G. Wells* (New York: Dover, 1934), p. 173. Further references will be to this edition and will be noted in parentheses in the text.

12 Williamson, p. 80.

13 Ibid., p. 78.
14 Ibid., p. 79.
15 Ibid., p. 80
17 Ibid., p. 217.
18 Ibid.
19 Ibid., p. 218.
20 Bergonzi, p. 49.
21 H. G. Wells, The Invisible Man in Seven Science Fiction Novels of H. G. Wells (New York: Dover, 1934), p. 282. Further references will be to this edition and will be noted in parentheses in the text.
22 Philmus, p. 103.
24 Dampier, pp. 419-20, and Clerke, pp. 278 and 288.
25 Dampier, p. 423.
26 Ibid., p. 470.
28 Robert Philmus, "The Time Machine: or, the Fourth Dimension as Prophecy," PMLA, 84 (May 1969), 530-35.
29 Ibid., p. 532
30 Dampier, p. 177.
31 Ibid.
32 Ibid., p. 180.
CONCLUSION:


2Sagan, p. 60.
BIBLIOGRAPHY:

General:


Clerke, Agnes M. *A Popular History of Astronomy During the Nineteenth Century*, New York: Macmillan, 1887.


Books, 1953.


Mary Shelley:


Lovell, Ernest J., Jr. "Byron and the Byronic Hero in the Novels of
Pallin, Burton R. "Philosophical and Literary Sources of Frankenstein." Comparative Literature, 17, 97-108.
________________. Frankenstein, or the Modern Prometheus, ed. James Rieger.


Robert Louis Stevenson:


Egan, Joseph J. "The Relationship of Theme and Art in The Strange Case of Dr. Jekyll and Mr. Hyde." English Literature in Transition,


Miyoshi, Masao. "Dr. Jekyll and the Emergence of Mr. Hyde." *College English,* 27 (March 1966), 470-80.


__________. *Kidnapped.* New York: Charles Scribner's, 1925.

__________. *The Master of Ballantrae.* New York: Charles Scribner's, 1925.

__________. *Memories and Portraits and Random Notes.* New York: Charles Scribner's, 1925.

__________. *Treasure Island.* New York: Charles Scribner's, 1925.
Weir of Hermiston. New York: Charles Scribner's, 1925.


H. G. Wells:


Philmus, Robert and David Y. Hughes. Early Writings in Science and


University of Windsor Review, 2 (Spring 1967).


_________. Seven Science Fiction Novels of H. G. Wells. New York: Dover, 1934.
