The origin and development of the medical model of psychopathology.

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THE ORIGIN AND DEVELOPMENT OF THE MEDICAL MODEL OF PSYCHOPATHOLOGY

by

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B.A.(Honours), University of Windsor, 1969

A Thesis
Submitted to the Faculty of Graduate Studies through the Department of Psychology in Partial Fulfillment of the Requirements for the Degree of Master of Arts at University of Windsor

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ABSTRACT

This study traces the origin and development of the medical model of psychopathology. The ancient Greeks are credited with having been the first to claim that mental illness is a disease. The major proponents of this view during the ancient times were the Hippocrates and Galen. A competing interpretation, prevalent during pre-Hippocratic times, was a demonological model. According to this view, psychopathology was explained by intervention of supernatural agencies in human lives and events. This orientation gained prominence during the "Dark Ages" and was typified in the famous Malleus Maleficarum of the fifteenth century.

However, with the rise of modern technology accompanied by new discoveries in medicine and the other sciences, an organic, physicalistic explanation regained acceptance as is reflected in the work of Pinel in France, Griesinger and Kraepelin in Germany, and Rush and Gray in America. Thus, a cyclical effect may be observed when historically viewing the rise, fall, and eventual renaissance of acceptance of the medical model orientation.

This historical background is of relevance today since it helps to understand the contemporary discussions of the medical model, as well as the conceptual issues concerning the meaning of the term "mental illness." In light of the recent comments of some professionals in the mental health field including Albee (1966a, 1966b, 1969), Sarbin (1967, 1969), and Szasz (1961), dissatisfaction with both the term "mental illness" and the validity and implications of the medical model is indicated.
Recommendations presented in this study include the abandonment of the term "mental illness," a plea for the case of multiple models (McKeachie, 1967), and a reassessment of the roles and responsibilities of non-medical professionals in the mental health field.
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Contemporary clinical psychology has witnessed the advancement of numerous theories regarding the causation and treatment of psychopathology. Millon (1969) has conceptualized such current theories into four broad classifications, each class having several subtypes. These four broad orientations are the biophysical, intrapsychic, phenomenological, and behavioral. Of particular concern in the present study is the so-called medical model, which may be considered a subtype of the biophysical orientation. Although there is some discrepancy as to exactly what the medical model means, for the purposes of the present discussion, the medical model refers to the explanation of psychopathological behavior as caused by some organic damage, or biological defect, in the individual, generally either in the brain or in the blood. This definition will be elaborated in the following section. This view is by far the predominant one among contemporary psychiatrists and pervades the field of clinical psychology (Sarbin, 1969; Ullmann and Krasner, 1965). However, it has come under severe attack recently by many psychologists, sociologists, and even some psychiatrists (Albee, 1959, 1966a, 1968, 1969; Balance, Hirschfield, and Bringmann, 1970; Laing, 1967; Mowrer, 1960; Fottstarst, 1967, 1969; Sarason and Ganzer, 1968; Sarbin, 1967, 1969; Scheff, 1966; Szasz, 1961, 1969; Ullmann and Krasner, 1969). As Plog
and Edgerton(1969) have indicated as part of the rationale for their recent text, "traditional understandings of mental illness are now being challenged, cherished beliefs have been assailed, and many established truths are being trampled in the relentless march and countermarch of competing ideas and evidence(p.1)."

Definition of Terminology

Model. Millon(1969) has stated that "A model...is merely a tool, a heuristic device to stimulate theoretical ideas and empirical research(p.49)." Chapanis(1961) has commented that Models are analogies. Scientific models are representations, or likenesses, of certain aspects of complex events, structures, or systems, made by using symbols or objects which in some way resemble the thing being modeled(p.115).

Pottharst(1967) has recently pointed out the importance of a model in the mental health professions:

...the issue of what model you follow makes a momentous difference because it determines not only how you go about preparing people to do what they are going to do(training), what the other people you are going to do it with expect of you (image) how other professionals and the public size you up (status), but also what salary or fee you receive(economic return), what legislators are willing to risk public funds on your programs(support and funding), in what settings you will be allowed to function and what you will be allowed to do(job description)(p.4).

Medical Model. As has already been indicated, proponents of this interpretation have conceptualized mental disorders as physical diseases. To help clarify the issue, Millon(1969) has suggested that Those who accept this model assume that an underlying biophysical defect ultimately will be found for the "superficial" symptoms of mental disorders, that is, for the maladaptive behavior and poor interpersonal relations of mental patients(p.48).

Ullmann and Krasner(1965) have stated that
By the disease or medical model we mean that the individual's behavior is considered peculiar, abnormal, or diseased, because of some underlying cause. The analogy is made to physical medicine in which germs, viruses, lesions, and other insults foreign to the normal working of the organism lead to the production of symptoms (p. 2).

Albee (1969) has referred to the medical model as the "sickness model," and he has commented that "This explanation of disturbed behavior...holds that 'mental illness is an illness like any other' (p. 42)." Yacorzynski (1965) has defined organicity, which is crucial to the understanding of the medical model, as follows:

The term "organicity" is reserved for those clinical observations which lead to the conclusion that they are due to an organic condition of the brain involving higher mental processes....

Organicity may be permanent or temporary. In both instances, changes in the brain of an organic nature would be present. Organicity of a permanent nature would be due to an actual destruction of parts of the brain.... The locus and the nature of the destruction and the causative factors may not be known. Definite localized signs may be absent. The diagnosis is made from the results of the available armamentaria for measuring higher mental functions (pp. 675-676).

As is clearly evident, this orientation relies on tangible and observable organic disorders or defects. When none can be found, they are assumed to underlie the manifest symptomatology.

Mental Illness. The definition of mental illness is not an easy task as Jahoda (1953) has indicated. The term "psychopathology" has often been used as a synonym, or as being closely related to mental illness. For the purposes of the present study, these terms may be used interchangeably.

Whereas in physical illnesses, the underlying causes are generally readily observable, or may easily be determined, this is not the case in the mental illnesses. Thus, their definition is linked to some set of values which are arbitrarily and all-
too-often pejorative. As Jantzen (1969) has stated,

In a sense, attempts to define mental health are efforts
to grapple with the nature of man as he ought to or could
be, and thus incorporate general or personal philosophies.
Such definitions frequently go far beyond the scientific
concept of a definition in their concern for good or bad,
desirable or undesirable, or healthy or sick ways of
functioning.... In general, there is agreement that there
is "something wrong", but there seems to be no agreement
on what the abnormality is nor how it should be referred
to (p. 250).

In a discussion of the advantages and disadvantages of the use of
the phrase, Ellis (1967) has defined mental illness as follows:

This is what we really mean when we say that an individual
is "mentally ill" - that he has symptoms of mental mal-
functioning or illness. More operationally stated, he
thinks, emotes, and acts irrationally and can usually un-
condemningly acknowledge and change his acts (p. 440).

Mariner (1967), in considering the question of professional
education in the mental health field, has indicated that the

Discussion of the issues involved has been severely
hampered by intense interprofessional rivalries and by
problems of definition... by defining deviant behavior
and feeling in terms of "illness" or "disease," these
psychiatrists (i.e. the "medically oriented" ones) place
such phenomena firmly within the domain of medicine (p. 271).

Scott (1958) has reviewed some of the more common research
definitions of mental illness. One approach defines mental
illness as exposure to psychiatric treatment. A major short-
coming, however, is that only a limited percentage of those
individuals that may be diagnosed as mentally ill ever receive
any treatment. Likewise, the criteria of social maladjustment,
psychiatric diagnosis, personal discomfort, and the test score
on a psychological inventory all have their unique shortcomings.
This makes it practically impossible to succinctly and comprehen-
sively define mental illness. Perhaps the best possible approach
at present would be to be aware of the various criteria and apply
them when they seem to fit.

In light of this confusion over definition, several researchers have advocated the abandonment of the term on the grounds that no such thing as mental illness exists (Adams, 1964; Albee, 1969; Sarbin, 1967; Szasz, 1960, 1961, 1969). Adams (1964) has stated that

The concept of a functional mental illness is a verbal analogy...it seems questionable to apply the term "illness" to arbitrarily defined patterns of behavior, particularly when there may be no evidence of any physiological malfunctioning.... Failure to clarify these distinctions has had unfortunate consequences.... This ambiguous usage has perpetuated the glib fallacy that mental and physical illnesses are the same thing (p. 191).

In order to avoid the semantic confusion associated with a literal interpretation of the phrase, Adams (1964) has suggested that perhaps a more accurate explanation would be in terms of some type of interpersonal behavior.

Meanwhile, Szasz (1969) has rejected the concept of mental illness on the following basis:

Disease means bodily disease.... The mind (whatever it is) is not an organ or a part of the body. Hence, it cannot be diseased in the same sense as the body can. When we speak of mental illness, then, we speak metaphorically.... I hold that the concepts of mental health and mental illness are mythological concepts (p. 453).

Following a rationale similar to that of Szasz, Sarbin (1967) has criticized the continued use of the phrase "mental illness:"

"Illness," as in mental illness, is an illicit transformation of a metaphorical concept to a literal one...the label is vacuous, save as an epithet of pejoration (pp. 449, 453).

Albee (1966a), however, is critical of the illness concept on the grounds of lack of empirical evidence to support it:

There is precious little firm evidence to support the illness model. Mental disorder is, in truth, a sickness
like no other, and the scientific support for an explanatory model based on biological defect (there can be no twisted behavior without a twisted molecule!) is thin indeed (p. 7).

Furthermore,

The very fact that strenuous efforts made for a century and more, have achieved only limited acceptance of this slogan (i.e. that mental illnesses are physical illnesses) suggests that it is not entirely creditable (Albee, 1969, p. 42).

This researcher has also pointed out the effect that the predominance of the medical model viewpoint has on the role of the physician and the professionals in related fields such as psychology and social work. This will be discussed later.

On the other hand, however, the dissatisfaction with the mental illness concept has not been unanimous. Ausubel (1961) has argued that

In general, it is both unnecessary and potentially dangerous to discard the concept of mental illness on the grounds that only in this way can clinical psychology escape from the professional domination of medicine.... Definition of behavior disorder in terms of sin or of difficulties associated with ethical choice and responsibility would substitute theological disputation and philosophical wrangling about values for specifiable quantitative and qualitative criteria of disease (p. 74).

It is clear, then, that the mental illness concept is a controversial one, and despite the most recent diagnostic classification of mental disorders (i.e. American Psychiatric Association, 1968), the question of definition is far from having been satisfactorily answered. This is largely due, as has been indicated, to the nature of the concept, the arbitrary value judgments connected to the term, as well as the interprofessional power struggle which determines who "treats" these individuals and who is responsible for their welfare. It is crucial that the foregoing
discussion of the definition of the terminology be understood, since much of what will be presented derives its meaning and relevance from this section.

**Background and Orientation**

As has already been indicated, several approaches to the explanation of psychopathology have been advanced, many of which pervade clinical psychology and its related disciplines in the mental health field. Similarly, many models have been developed to help conceptualize the problem (L'Abate, 1969; Millon, 1969; Milton and Wahler, 1969). Thus, Mowrer (1960) has contended that psychopathology is the manifestation of personal irresponsibility and sin rather than of disease. But probably the greatest support in recent years has been given to the behavioral model (Krasner and Ullmann, 1969; Ullmann, 1969) and its derivatives (Albee, 1969; Szasz, 1961) which reject the health-illness terminology and maintain that psychopathology is a manifestation of maladaptive, learned behavior.

Returning to the medical model orientation, unfortunately two aspects of this explanation have been either noticeably neglected or misinterpreted. The first is the conceptual understanding of the problem which has already been briefly considered. The avoidance of the confrontation with the conceptual aspect has often led to the indiscriminate application of the label of mental illness to individuals who are physically healthy (Milton and Wahler, 1969). Thus, Chapman (1967), a contemporary psychiatrist, who is committed to the health-illness terminology associated with the medical model, has stated that "Most psychiatric difficulties are the result of interpersonal problems of the patient
with crucial persons in his environment (p. 3)".

The second neglected aspect is the historical approach to the origin and development of this interpretation (Balance, Hirschfield, and Bringmann, 1970; Sharma, 1970). Simon and Weiner (1966) have emphasized the value of such an historical account of models in stating that "the importance of...models for the history of psychiatry and psychology resides mainly in the fact that the problems and questions that they raised have endured as central to subsequent theories about the working of the human mind (p. 303)."

Unfortunately, however, few attempts have been made at a comprehensive investigation of the development of mental illness in an historical framework. Zilboorg and Henry's History of Medical Psychology (1941) is perhaps the classic one. However, since this text was written, much has been learned about the topic and the more recent developments, such as behavior therapy, obviously were not included. Although much has been written concerning psychopathology in general, and the medical model in particular, at present there exists no systematic and comprehensive study as to where the medical model initially arose and how this approach developed historically.

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CHAPTER II

STATEMENT OF THE PROBLEM

Purpose of the Study

It appears evident, then, that in addition to, and perhaps partially a cause of, the recent lively controversy over the medical model, is the fact that at present there is no satisfactory account of its origin and development. The purpose of this study is to integrate major trends in the development of the organic explanation of psychopathology. It is hoped that such an endeavor will enable one to better appreciate the historical roots of the topic and, at the same time, place him in a more knowledgeable position to understand and explain the present-day controversy surrounding the issue. A flow chart listing the important figures in the advancement of the medical model through history will be developed. Additionally, the historical development of the medical model will be related to its present status, and implications will be made for the future role of the clinical psychologist.

Significance

Boring (1929) stated long ago that

The experimental psychologist, so it has always seemed to me, needs historical sophistication within his own sphere of expertness. Without such knowledge he sees the present in distorted perspective, he mistakes old facts and old views for new, and he remains unable to evaluate the significance of new movements and methods. In this matter I can hardly state my faith too strongly. A psychological sophistication that contains no component of historical orientation seems to me to be no sophistication at all (p. viii).
Furthermore, Kerlinger (1964) has stressed the fact that

...it is necessary to know and understand... accomplishments and developments of the past in order to gain a perspective of present and possibly future directions.... Without good history and good historians, a discipline can lose perspective.... Rigorous historiography is needed, just as good scientific research is needed (pp. 698, 700).

Likewise, Chapman (1967) has commented on the particular value of the history of medicine and psychiatry:

Knowledge of the history of a medical specialty has practical usefulness. The study of the past evolution of a medical field emphasizes that there must be future evolution. Knowledge of fruitful methods of the past stimulates productive research in the future, and the study of past misconceptions and errors sometimes points out pitfalls to be avoided. The history of a medical specialty emphasizes that no medical field is ever static; it is in a process of continual change. The present is a narrow point which divides a long, instructive past from a broad, hopeful future. So long as our treatment methods need improvement and human suffering remains, the need for constant evolution in a medical specialty presses us on. The past is our teacher, the present is our opportunity, and the future is our hope (p. 16).

Several investigators have indicated that a clear understanding of the origin and development of the medical model is sketchy at best (Balance, Hirschfield, and Bringmann, 1970; Sarbin, 1967; Sharma, 1970; Szasz, 1961). Very few have concerned themselves with the history of this topic before the nineteenth century (Millon, 1969), and even fewer have dealt with the actual writings of the more recent proponents of this model such as Griesinger and Kraepelin.

Value

This study attempts to provide a systematic and comprehensive account of the origin and development of the medical model from the vantage point of a contemporary perspective. It also endeavors to clarify some of the misconceptions which have arisen
as a result of the indiscriminate use of the terminology associated with the medical model. A flow chart (See Appendix A) listing the important figures of the medical model approach provides a succinct digest of some of the major proponents of this explanation throughout history. Hopefully this study will also provide a clearer understanding of the future role of the contemporary clinical psychologist as determined by the various models. Finally, it is hoped that the conclusions and recommendations arrived at in this study will provide material which may, in turn, generate new hypotheses regarding psychopathology.

Limitations

As an initial investigation, this study concentrates only on the major trends in the origin and development of the medical model and, of practical necessity, has neglected important figures and events, which, unfortunately have been neglected in history. Much information, not available in English, and which perhaps otherwise would have had an effect on the results has not been considered with the exception of brief and relevant sections in French and German. In addition, this study has been restricted to the origin and development of the medical model within Western culture.
CHAPTER III

METHOD

This investigator attempted to follow the guidelines suggested by Kerlinger (1964) concerning historical research. The first basic rule is to always refer to primary sources. "A primary source is the original repository of an historical datum, like an original record kept of an important occasion, an eye-witness description of an event, a photograph, minutes of organization meetings, and so on (pp. 698-699)." On the other hand, "A secondary source is an account or record of an historical event or circumstance one or more steps removed from an original repository (p. 699)." In order to help avoid distortion or consequent erroneous interpretation, secondary sources were used only where primary sources were lacking. The use of the University of Michigan library, the inter-library loan system, and the University of Windsor library made it possible to obtain many of the original primary sources. The inter-library loan system was especially helpful. In addition, numerous relevant journal articles, not readily available, were obtained through the mail from many authors in the form of reprints.

Another problem in historical research is one of accuracy of translation. In those instances where the original primary sources were non-English, an effort was made to review at least two translations of the work in order to check for reliability.
Also of particular importance in historiography are external criticism and internal criticism. External criticism is concerned with the genuineness or authenticity of the data, while internal criticism refers to the avoidance of the distortion of meaning by being as systematic as possible in arriving at conclusions. These issues are closely related to the concepts of validity and reliability which are core issues in the search for true scientific knowledge.

In addition to these guidelines, this study may be viewed as an attempt to function within the "continuity theory" approach which "attempts to explain the development of science on the basis of indebtedness of all authors to their predecessors, the truth finally emerging from this scientific continuity (Mora, 1966, p. 336)."

Many leads were obtained through information available in current textbooks in the history of psychology (e.g. Boring, 1929; Esper, 1964; Kantor, 1963; Watson, 1968), general psychiatry (e.g. Chapman, 1967; Gregory, 1968), history of psychiatry (e.g. Alexander and Selesnick, 1966; Zilboorg and Henry, 1941), history of science (e.g. Sarton, 1952; Sigerist, 1958), abnormal psychology (e.g. Rosen and Gregory, 1965), and psychopathology (e.g. Millon, 1969; Milton and Wahler, 1969). Specialized topics dealt with in greater depth (e.g. biochemical theories of schizophrenia) were obtained from recent handbooks (e.g. Arieti, 1959, 1966; Wolman, 1965). Furthermore, articles in particular journals including American Journal of Insanity, American Journal of Psychiatry, International Journal of Psychiatry, and the Journal of the History of the Behavioral Sciences were helpful generally with regard to the historical aspects of the topic, while the American Psychologist and the Journal of Consulting Psychology
provided several articles relevant to the conceptual issue.

Some of the original writings of such individuals as Hippocrates, Aristotle, Plato, Galen, Paracelsus, Sprenger and Kraemer, Scot, and Griesinger were closely examined and provided excellent insights into not only the views of the particular writers, but of the cultures and the times in which they lived. Finally, the works of contemporary researchers and professionals in the mental health field (e.g. Albee, 1959; Arieti, 1955; Jahoda, 1958; Menninger, Hayman, and Pruyser, 1963; Szasz, 1961) have helped indicate the relevance as well as the controversial nature of the topic.
CHAPTER IV
HISTORICAL DEVELOPMENT OF THE
MEDICAL MODEL OF PSYCHOPATHOLOGY

This chapter will briefly trace and summarize some of the available material concerning the medical model of psychopathology, beginning with ancient Greece. In order to implement and facilitate this discussion, the development will be traced through three broad and fairly common historical epochs:

I. Ancient Period (c.500B.C.-500A.D.)
II. Middle Ages (c.500A.D.-1500A.D.)
III. Modern Era (c.1500A.D.-The Present)

This chapter will conclude with a brief summary of the highlights of each of these epochs.

I. Ancient Period (c.500B.C.-500A.D.)

The theme of this period centers around the replacement of the mystico-religious model of Homeric times by the medical model of the ancient Greeks, most closely associated with the writings of Hippocrates. Although the latter model emphasized organic factors, it appears to have been only a rational and naturalistic explanation, whose empirical basis was suspect. The two major figures during this period are Hippocrates and Galen.

The famous Homeric epic poems of the Iliad and the Odyssey serve as perhaps the earliest source of information concerning psychopathology. Existing since approximately the eighth century
B.C., the epics were tales of action and adventure, and as Simon and Weiner (1966) have pointed out, do not reflect anything resembling a theory of mind.

However, for several reasons, these sources are invaluable for a clearer understanding of ancient psychopathology. They contain a great deal of information about mental activity. These poems were to the Greeks what the Bible was to the early Christians. Finally, since they are considered by many to be the earliest traces of culture to be recorded (Great Books, #4, 1952), it seems reasonable to believe that their content may summarize much of Greek thought up to the time when they were written.

Pervading both the Iliad and the Odyssey is the strong inclination that human behavior is influenced by external factors. Above all, action by the gods is commonly used to explain the occurrences of everyday affairs in the lives of the Greeks. Thus, dreams are sent by a god, as

In the end he deemed it would be best to send a lying dream to King Agamemnon; so he called one to him and said to it, "Lying Dream, go to the ships of the Achaean, into the tent of Agamemnon, and say to him word for word as I now bid you ...(Iliad, 2, 6ff)

And,

...Penelope answered, "Stranger, dreams are very curious and unaccountable things, and they do not by any means invariably come true. There are two gates through which these unsubstantiated fancies proceed...(Odyssey, 19, 569ff).


2 Unless otherwise indicated, the original sources of Homer, Hippocrates, Plato, Aristotle, Hobbes, and Freud will be selected from Encyclopedia Britannica's Great Books of the Western World series.
This same type of thinking is evident when Homer discusses the origin of psychopathology, but only on one occasion is there any reference to illness or disease as a cause of abnormal behavior:

"Then," said they, "if no man is attacking you, you must be ill; when Jove make people ill, there is no help for it, and you had better pray to your father Neptune." (Odyssey, 9, 409ff).

It is even clearer here, however, that the illness has been sent by a god and actually it is this supernatural intervention which has caused the abnormal behavior. Drabkin (1955) concurs with this interpretation:

Greek literature beginning with Homer depicts human behavior in all its variety and records instances of behavior so abnormal, if I may use the term in its popular sense, as to call for some special explanation. The explanation in some of the earliest Greek literature—and it is fair to say that the explanation is a reflection of traditional and deep-seated popular belief—is that the abnormal behavior is prompted by supernatural intervention, whether the supernatural agency remained external to the person or (as was widely believed at various times) actually entered his body (p. 224).

Gregory (1963) has vividly described the primitive animism prevalent in ancient times:

Primitive man was confronted with many events and experiences beyond his comprehension, to which he may have attributed a magical or supernatural origin. Favorable or pleasurable events were apt to be regarded as blessings from the gods, and painful or unfavorable events as punishments invoked by gods or devils, or by other human beings in league with them (pp. 5-6).

One cannot readily determine whether or not Homer believed that psychopathology was caused by anything other than supernatural intervention, but there is insufficient evidence to assert that Homer could be seriously considered as a forerunner of the medical model explanation of psychopathology. This appears to have been
developed later and by someone else. However, it is very im-
portant to understand the type of atmosphere which existed in pre-
Hippocratic Greece, with such an important emphasis placed upon
the basic passivity of the human mind, with the power instilled
in outside forces in general, and supernatural agencies in par-
ticular.

Hippocrates (460-377 B.C.) and his colleagues of ancient
Greece appear to have contributed an alternative explanation for
the aetiology of psychopathology from the mystico-religious, or
possession model evident in the Homeric writings. Generally speak-
ing, this alternative explanation consisted in the interpretation
of the abnormal behavior as being caused by some physical disease.
This interpretation has since become known as the medical model.
In their History of Psychiatry, Alexander and Selesnick (1966)
claim that Hippocrates was the first to attempt to consistently
explain all diseases on the basis of natural causes. Coming from
the school of medicine at Cos, Hippocrates stressed treatment and
prognosis. His view of pathology was based on the concept of
harmony between humors. The Hippocratic theory of humors was in
effect a theory of disease. This novel explanation of pathologi-
cal behavior was both rational and naturalistic. These humors
were black bile, blood, yellow bile, and phlegm, which correspond-
ed to the four elements of earth, air, fire, and water, which
Empedocles had earlier stated as being the fundamental components
of the universe. As a theory of disease, the humoral theory in-
corporated the concept, later formalized by Cannon (1929), of
homeostasis.
Of the more than seventy treatises attributed to the Hippocratic, perhaps the most famous is entitled *On the Sacred Disease*. In this work, the author argues against the role of the supernatural agencies in the aetiology of epilepsy in the following manner:

"But this disease seems to me to be no more divine than others; but it has its nature such as other diseases have, and a cause whence it originates, and its nature and cause are divine only just as much as all the others.... Its origin is hereditary, like that of other diseases...it occurs in those who are of a phlegmatic constitution, but does not attack the bilious. Yet if it were more divine than the others, this disease ought to befall all alike, and make no distinction between the bilious and phlegmatic (Great Books, #10, 1952, p. 155).

As to the whereabouts of the origin of the mystico-religious explanation, the author states:

"My own view is that those who first attributed a sacred character to this malady were like the magicians, purifiers, charlatans, and quacks of our own day, men who claim great piety and superior knowledge. Being at a loss, and having no treatment which would help, they concealed and sheltered themselves behind superstition, and called this illness sacred, in order that their utter ignorance might not be manifest (Jones, 1923, II, p. 141).

Several comments reflect the medical model orientation of the Hippocratic. Temkin (1945) has stated that

"The condition of the mind depends on the condition of the blood. If this is agitated the mind is deranged.... The history of epilepsy opens with the fundamental statement that the seat of the disease is in the brain. The author (i.e. Hippocrates) goes even further: the brain is the organ of all psychic processes both normal and pathological; not only epilepsy, but all mental diseases as well, can be explained by disturbances of the brain (p. 4).

Zilboorg and Henry (1941) have commented that

"...it would appear that Hippocrates, depending upon the case and the occasion, favored a purely anatomical view represented even in the twentieth century, which claims that a disease or injury to the brain is the sole cause of mental illness (p. 46)."
Another example appears in the Third Book of the Epidemics where the author cites the case of a woman who, after giving birth to twins, initially experienced severe insomnia and restlessness, then became delirious on the eleventh day and finally died on the seventeenth day (Jones, 1923). Hippocrates suggested two hypotheses as the cause of this postpartum mental illness. First, that lochial discharge, when suppressed, could be carried toward the head and result in agitation, delirium, and manic symptoms; secondly, that "when blood collects at the breasts of a woman, it indicates madness (Adams, 1886)." Likewise, concerning an individual with the "sacred disease," Hippocrates stated that

> If you cut open the head, you will find the brain humid, full of sweat, and having a bad smell. And in this way truly you may see that it is not a god that injures the body, but disease (Great Books, #10, 1952, p. 158).

With regard to this statement, Rosen and Gregory (1965) have commented that

> The idea of anatomical causation in this quotation was new and important, regardless of the inaccuracy of Hippocrates' description of the epileptic's brain (p. 19).

This implies that Hippocrates had at least observed a brain that was humid. However, it is important to note that any type of dissection or vivisection was not allowed during this period. Perhaps his knowledge was second hand from the writings of Alcmaeon (c. 500 B.C.) who is reputed to have been the first to experiment with the brain of an animal (Alexander and Selesnick, 1966). Or possibly Hippocrates had observed a "madman" whose head had somehow been cracked open. In his Aphorisms, Hippocrates stated that epilepsy in young persons was most frequently cured by changes of air, country, and modes of life (Great Books, #10, 1952). Some of his lesser works also contain
information concerning mental factors being affected by physical illness. In On Ancient Medicine, Hippocrates spent a great deal of time describing the harm, both physical and mental, which might arise if an individual did not adhere to a proper diet. Although much of this discussion would today be considered common sense, it is interesting and significant to note some mental complications of such actions. For example, Hippocrates cited lowness of spirit as a resultant condition. Probably more interesting is his belief that the disturbance would be reflected in the individual's dreams.

In The Book of Prognostics, Hippocrates stressed the importance of the medical doctor to make prognoses. Many symptoms were presented with their accompanying illnesses and Hippocrates outlined the prognosis of such conditions. Although most of the illnesses reflect physical symptoms, Hippocrates was not blind to such characteristics as intellectual aberration and "madness" accompanying bizarre reclining positions which an individual might manifest during the course of his illness. Alexander and Selesnick (1966) have stated that "the Hippocratics had great reputation for their ability to recognize and treat mental illness, and Hippocrates himself appeared as an expert witness at the trial of an insane person (p. 55)." These same investigators have pointed out that Hippocrates was the first to recognize the importance of the brain. This is consistent with the ancient Greek emphasis on a rational approach to the understanding of man, nature, and society.

Sigerist (1953) has described the status of medicine during the Hippocratic era as "a highly developed healing art which had succeeded in ridding itself of the magical and religious elements that
still clung to ancient medicine, and that it was guided by ob-
servation and experiment (p.13)."

On the other hand, however, there is strong support for the
notion that, despite the fact that the humoral theory was rational
and naturalistic, it was based upon little, if indeed any, empir-
ic evidence. Kisker(1941) has stated that

The anatomical knowledge of the time was highly superficial
and the physiological concepts were almost entirely fanciful.... The therapeutics of the early Greek physicians were,
as would be expected, directed by the humoral pathology
which was assumed to underlie the abnormal mental states
(p.540)(underlining added).

Likewise, Veith(1957) has pointed out that

...they relied on a hypothetical schematic explanation of
bodily function and dysfunction which was to them entirely
satisfactory for the explanation of health and disease
(p.385)(underlining added).

In addition, Esper (1964) has stated that

Hippocratic internal medicine could not, of course, be
based on a knowledge of underlying pathology, for the
anatomy and physiology then available were quite in-
adequate for such purposes. (It must be remembered that
pathological anatomy was a development of the eighteenth
century, and bacteriology of the nineteenth.)(p.115).

Thus, it is at least questionable whether or not the humoral
theory was based upon empirical data or merely a rational and
naturalistic system. However, this is a very crucial point. If,
indeed, substantial empirical evidence was available, it is curious
why the possession model regained prominance in the Middle Ages.
Another unclear point is to what extent was the humoral theory
passed on to and believed by the majority of the common laymen in
ancient Greece?

Although the empirical support for the humoral theory among
the Hippocratics is debatable, they must be credited with attempting
to foster medicine in an admirably ethical context. "To do good, or at least to do no harm," was the motto of the Hippocratic physicians as expressed in the famous Oath (Great Books, #10, 1952). Oliver (1925) has stated that

...in vivid contrast with the medicine of 50 years ago, the emphasis is never laid on the symptoms that a patient shows, but on the patient that exhibits the symptoms.... The true physician must be a lover of mankind, a lover of his art for its own sake, a lover of learning, a philosopher.... No young medical man should be encouraged to devote himself to psychiatry, who does not possess the traits of character and temperament on which the School of Cos laid such stress (p.113).

Furthermore, in On the Articulations, it is pointed out that

The prime object of the physician in the whole art of medicine should be to cure that which is diseased; and if this can be accomplished in various ways, the least troublesome should be selected; for this is more becoming a good man, and one well skilled in the art, who does not covet popular coin of base alloy (Great Books, #10, 1952, p.119).

This attitude is indeed admirable in view of the sad role of the epileptic of Hippocratic times as described by Temkin (1945):

The magic conception according to which epilepsy was a contagious disease was one of the factors which made the epileptic's life miserable and gave him a social stigma. For it was a disgraceful disease. The epileptic who felt an attack coming on rushed home or to a deserted place where as few as possible could see him fall, and covered his head.... To the ancients the epileptic was an object of horror and disgust, and not a saint or prophet as has sometimes been contended (p.8).

Thus, the Hippocratics may be viewed as having fostered a humanitarian attitude toward those unfortunate individuals who manifested pathological behavior and may be considered forerunners of the movement generally considered to have been initiated by Pinel. Watson (1968) has claimed that "By the second century after Christ at the time of Galen, Hippocrates had become the prototype of the ideal physician (p.12)."
Although Hippocrates is generally considered to be the most outstanding figure of the Classical Era, some of his contemporaries also made contributions to the development of medicine and, in particular, to a better understanding of mental illness. Plato (427-347 B.C.) suggested two parts of the soul - the rational and the irrational. For him, mental illness occurred when the rational part of the soul was not functioning. He felt that therapy should deal with philosophical persuasion back to rationality.

In the Timaeus (Great Books, #7, 1952), Plato stated that

...the disorder of the soul, which depend upon the body, originate as follows.... He who has the seed about the spinal marrow too plentiful and overflowing, like a tree overladen with fruit, has many throes, and also obtains many pleasures in his desires and their offspring, and is for the most part of his life deranged, because his pleasures and pains are so very great; his soul is rendered foolish and disordered by his body; yet he is regarded not as one diseased, but as one who is voluntarily bad, which is a mistake. The truth is that the intemperance of love is a disease of the soul due chiefly to the moisture and fluidity which is produced in one of the elements by the loose consistency of the bones (p. 474).

This statement clearly indicates that Plato subscribed to the humoral theory of the Hippocratics.

Aristotle (384-322 B.C.) is important as a systemitizer and organizer of laws regarding rational thinking. According to Aristotle, reason was immortal and independent of man or matter. Thus, due to its very nature, it could not be influenced by illness which, based upon the fundamental tenets of his psychology, led to the conclusion that "every mental illness is a physical, organic illness (Zilboorg and Henry, 1941, p. 55)." This is apparent when Aristotle stated in On the Parts of Animals, that
For if the brain be either too fluid or too solid, it will not perform its office, but in the one case will freeze the blood, and in the other will not cool it at all; and thus will cause disease, madness, and death (Great Books, #9, 1952, p. 653).

Hence, Aristotle also appears to have been influenced by the humoral theory.

During the ancient period, contributions were also made by some Romans as well as individuals who emigrated to Rome. Cicero (106-43 B.C.) was critical of the view of mental illness as due to a disturbance of the sensori-perceptive apparatus. In his Tusculan Disputations (Cicero, 1910), he appeared to make a distinction between physical and mental illness:

...the mind and body are unlike that though the mind when in perfect health may be visited by sickness, as the body may, yet the body may be disordered without our fault, the mind cannot. For all the disorders and perturbations of the mind proceed from a neglect of reason.

As is implied in this statement, Cicero is also important for his consideration of the problem of legal responsibility and its relationship to mental illness.

Asclepiades (124-40 B.C.) espoused a humanitarian approach toward the mentally ill. He was critical of some of the conventional treatment procedures of his day such as bleeding and he urged the use of music as a therapeutic device. He felt that the condition of the mentally ill could be improved by employing psychological treatment, and he was the first to divide diseases into acute and chronic. Celsus (25 B.C.-50 A.D.) instigated the belief that mental illness affects not just one organ of the body, but the entire personality. Aretaeus (50-130) insightfully suggested that mania and melancholia were actually two expressions of the same illness. This modification affected the classification...
schema of mental illnesses developed by the Hippocratics. Are-taeus was also perhaps the first to give an in-depth description of people prior to mental breakdown. Likewise, he did not believe that all mentally ill necessarily suffer intellectual deterioration as was a widespread view even to the time of Kraepelin. Soranus (?) is important for his opposition to demonology as an explanation of the cause of mental illness, for his authoritative biography of Hippocrates, and also for his humanitarian approach characteristic of Asclepiades.

The work of Galen is generally considered as the outstanding medical contribution of the second century, which witness the end of the Roman Era. Born in Pergamon, Galen moved to Rome in his early 30's to practice medicine and soon gained widespread recognition for his remarkable skill. He was a prolific writer, and although he considered himself to be an eclectic, there is no doubt that Hippocrates, who had preceded him by some six hundred years, was his ideal (Sarton, 1954). As Sigerist has pointed out (Green, 1951), Galen's "...physiology and pathology are to a large extent speculative and could not be anything else at that time, but the theories are based on observation many of which are perfectly correct (p. viii)." Much of Galen's work is valuable because little of medical importance was developed for several hundred years following his death. Galen borrowed the concept of the four humors from the Hippocratics, but he elaborated the interpretation to correspond to a theory of temperaments or personality. He claimed, as did the Hippocratic writers before him, that disease is a condition which results when an imbalance of the bodily humors exists. According to Green (1951), Galen believed that
health consists in a definite proportion of so-called constituent elements, of warm, cold, moist, and dry, and is fulfilled by the composition of the same organic elements, their quantity, size, and conformation (p. 5).

Galen also made contributions to neurology. He claimed the brain to be the central organ of the nervous system and the spinal cord to be directly connected to the brain. He accurately traced many of the cranial and spinal nerves (Robinson, 1912). Galen may clearly be viewed as a medical model proponent as evidenced by the following comment of Temkin (1945):

Altogether... Galen distinguished three forms of epilepsy:
1. Epilepsy due to an idiopathic disease of the brain.
2. Epilepsy due to sympathetic involvement of the brain originating from the cardia.
3. Epilepsy due to a sympathetic involvement of the brain originating from any other part of the body (pp. 62-63).

Such a naturalistic explanation is reminiscent of the teachings of the Hippocratics. Furthermore,

... if suffices to know that the brain is the affected place, a viscous and thick humor being collected in the ventricles ... To all practical purposes he assumes that idiopathic epilepsy is the result of a cold and moist dyscrasia of the brain resulting in the collection of a thick phlegm in its ventricles, and that consequently it is a phlegmatic disease and of a cold and moist nature (Temkin, 1945, p. 69).

Since epilepsy is not always associated with the classical examples of mental diseases, the following statement may clarify the question of whether Galen can accurately be described as a proponent of the medical model:

Mental diseases, such as senile dementia, melancholy etc, will be located in the brain. They arise when the substance itself of the brain is deteriorated by one of the humors. For the state of the soul depends in the first place upon the condition of the cerebral substance (Temkin, 1945).

Sarton (1954) has pointed out that in one of Galen's works, the author stated that the habits of the soul follow the temperament
of the body. Finally, Siegel (1968) whose work includes the most recent and comprehensive review of Galen's life and contributions, has claimed that

Galen quite arbitrarily related the mental traits and associated structural variation of the body to the changing composition of the humors. He identified a quickly changing mind with an excess of heat; emotional stability to a 'cool' character (p. 210).

II. Middle Ages (c. 500 A.D.-1500 A.D.)

This period has been described by many as the "Dark Ages" and it witnessed a tremendous decline in the development of science in general (Alexander and Selesnick, 1966; Kantor, 1963). Closely related to this regression is the reappearance of the mystico-religious model and the fact that during this period, much of the medical work was done by members of various religious sects. Very little occurred toward the advancement of the medical model.

The death of Galen is generally regarded as the end of the great advancement in knowledge and understanding which occurred during the so-called Classical Era (Alexander and Selesnick, 1966). The subsequent years have generally been considered to have been a period of stultification if not outright regression in the attitude toward and search for scientific knowledge. Alexander and Selesnick (1966) attribute part of the cause of this decline of interest in scientific thought to the pressures of the Barbaric tribes which came routing from the North, as well as the repeated epidemics in the first centuries following the death of Galen. These investigators suggest that such horrendous conditions were conducive to shattering the scientific attitude which had been so rationally developed particularly by the ancient Greeks.
Furthermore, Constantine’s Edict of Milan in 313 established Christianity as the state religion and this event led the way to a return to vogue of supernatural causes of the human condition. Concomitantly, he forbade the study of Plato and Aristotle (Zilboorg and Henry, 1941). The time was ripe for the return of magic and superstition, and

The whole field of mental diseases was thus torn away from medicine. Medicine at first did not seem to relinquish this territory unwillingly. Medical psychology as a legitimate branch of the healing art practically ceased to exist.... Seven hundred years of effort seemed for a long while to have spent themselves in vain. The ardent voice heard in Hippocrates’ discourse on the Sacred Disease was lost in the wilderness; it was silent for nearly twelve centuries (Zilboorg and Henry, 1941, p. 103).

Hillen (1969) has referred to this period as the “Medieval Regression To Primitivism And Witchcraft” and has stated that

The enlightened ideas of Hippocrates were submerged for centuries following the death of Galen and the fall of the Roman empire. During the thousand years of the Dark Ages, superstition, demonology and exorcism returned in full force only to be elaborated with greater intensity into sorcery and witchburning. With but few dissenting voices scattered over the centuries, the naturalism of the Greco-Roman period was all but condemned or distorted by notions of magic (p. 6).

Alexander and Selesnick (1966) have stated that

The collapse of the Roman security system produced a general regression to belief in the magic, mysticism, and demonology from which, seven centuries before, man had been liberated through Greek genius.... In these times of catastrophe people turned for comfort to supernatural explanations, and Christianity exquisitely satisfied many of the emotional needs of the demoralized masses.... The medieval motto credo quia absurdum est (I believe it because it is absurd) is in opposition to the scientific position, which relies on observation and reason. Rationalism, as a social force disappeared, or to be more precise, had to go underground for centuries (pp. 77, 78-79).

Diepgen (1914) has also stressed the notion of a great decline in scientific development in the area of medicine by stating that
"Medical wisdom came to an end with the passing of Galen (p. 9)." Zilboorg and Henry (1941) have pointed out that during this period "...the Greeks were considered the sole authorities.... As to psychopathology (the Dark Ages seem) to have become fully ripe for the monk to replace the doctor.... (Thus) the decline was complete (pp. 95, 116-117)."

Although the notion is widespread that the Middle Ages were a period of intellectual stagnation, as may readily be observed from Kantor's illustration (1963) of the two cycles of psychology, Gerard (1966, 1968) has cited several sources as indicating that the foundation of the scientific method, which was based on empirical observation, was laid in the Middle Ages. In addition, interspersed with the predominant supernatural view of psychopathology, Alexander and Selesnick (1966) have described several individuals who made admittedly meager contributions to the organic approach. Aetius of Amida (527-565) outlined three types of "phrenitis" or mental disease, the locus of each being a specific part in the brain, and affecting some of the higher mental processes such as memory, reason, and imagination. Alexander of Tralles (525-605) also contributed to the clearer and more extensive understanding of the conditions of mania and melancholia.

Rosen and Gregory (1965) have suggested the notion that demonological theory again became so prominent during this period that "a naturalistic approach to the mind was unthinkable (p. 21)." With the development of religion as an institutionalized agency to a degree never before realized, "the psychiatry of the Middle Ages can be scarcely distinguished from prescientific exorcism (Rosen and Gregory, 1965, p. 79)."
The mentally ill aroused great fear and they were often cast out of the family environment. The fifth century witnessed the development of an interesting social phenomenon known as St. Vitus' Dance in which entire town populations would gather together and participate. As Rosen and Gregory (1965) have described:

They danced wildly, tore off their clothes, beat each other, rolled on the ground, drank, sang, and talked ceaselessly. It is reasonable to suppose that this psychopathological social pattern was a temporary and violent release from the dangers and uncertainties of life in medieval times. The prevalence of belief in demonology is not surprising in such a social context (p. 22).

Thus, as Alexander and Selesnick (1966) summarize the plight of the mentally ill during the medieval period,

The mentally ill were caught up in the witch hunt. Theological rationalizations and magical explanations served as foundations for burning at the stake thousands of the mentally ill as well as many other unfortunates (p. 101).

Wright (1939) believed that on the basis of the poetry and general literature of the times, medieval laymen had more enlightened views toward the mentally ill than did their contemporary professionals. Zilboorg and Henry (1941) have stated that the majority of those who were interested in medicine kept but a tenuous contact with the past, and about the fourth century an interest in astrology awoke to play an important part in the history of medicine; mental diseases, which apparently were increasing in number, had been almost completely excluded from medicine and had become a part of general superstition. A gradual systemization of the superstitious attitude began to be defined. Superstition with regard to mental disorders had always existed, even, of course, in pre-Christian Rome. The spirits of the woods... were supposed to cause mental illness (p. 106).

With the belief of the aetiology of mental illness deeply entrenched in supernatural mysticism, Zilboorg and Henry (1941) have suggested that "psychiatry... became a study of the ways and means of the devil and his cohorts (and the most valuable treatment lay

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in the application of sainted relics (p. 108)." Simultaneously, "Hippocrates and Galen survived, not because they had been read by the medical profession of the Empire, but because of their reputation (Daremberg, 1865, p. 112)."

At the beginning of the tenth century Arabian influences had developed to a degree reminiscent of the age of the Hippocratics, and some claim that credit is due then for preserving medical knowledge during this period. Meunier (1924) claimed that a Christian named Honain

...gave the Arabs access to Aristotle, Hippocrates and Galen, whom he translated into Syrian. It is through his translation that the Arabs were enabled to continue the tradition of Greek medicine, the clarity of which they obscured to a great extent; this clarity was not re-established till the sixteenth century, when the great classics were rediscovered and published (p. 159).

Unfortunately, ...the Arabian physician shared the handicaps of his Christian colleague in that the Koran for the Arab, like the Scriptures for the Christian, was considered the source and authority for all knowledge.... One therefore searches in vain for new ideas about normal and abnormal psychology among the Arabs. They followed the psychophysiological theories of Galen and Hippocrates... and contributed little that was new to the treatment of mental diseases (Zilboorg and Henry, 1941, pp. 122-123).

Nevertheless, Alexander and Selesnick (1966) have pointed out some of the achievements of the Arabian influence which rose during the sixth century and remained powerful through the eleventh century. The Nestorians are important since they founded medical schools in Mesopotamia and Persia which served as the forerunners of the famous medical school at the University of Salerno.

There are also several Arabian scholars who made contributions in the sciences in general, and medicine in particular. Rhazes
(865-925), the "Persian Galen," was a Hippocratic physician in the true sense of the term. He was primarily a clinician, who was critical of charlatanism and his Liber Continens summarized the Arabian medical knowledge to his time. Unfortunately, anatomical dissection was not allowed according to the Koran, and as Alexander and Selesnick (1966) have pointed out, "Arabian medicine was stymied by lack of intellectual freedom (p. 92)," and they reaffirmed the notion that the Arabs contributed nothing new to the study of mental illness, or for that matter, medicine in general:

Arabian physicians were not able to make any real contribution to psychiatric theory because they depended entirely on the organic speculations of Hippocrates (p. 92).

Avicenna (980-1037) wrote The Canon in which he attempted to reconcile Aristotelian philosophy, Hippocratic observation, and Galenic speculation. The result was the development of a medical bible for Asia which was used extensively until the sixteenth century. Arabian philosophers including Avenzoar (1113-1162), Averroës (1126-1198), and Maimonides (1135-1204) exerted their influence on the medicine of the times and were instrumental in developing a humane orientation in the contemporary hospitals such as at Baghdad, where there even existed a separate ward for the mentally ill!

The eleventh century witnessed the development of the famous medical school at Salerno. Sigerist (1958) has pointed out that although at the outset Christianity was fundamentally hostile to classical science, by degrees the new faith became reconciled to it, and even to pagan medicine.... In the early Middle Ages, doctors were in holy orders. Doubtless there were lay practitioners as well, but they formed an infinitesimal minority. Priests and monks were mainly responsible for keeping the literature of medicine alive, as well as for being medical practitioners (pp. 68-69).
Constantine (c. 1010-1087) is of particular import since he translated many of the Hippocratic and Galenic writings into Latin, these works becoming standard texts at the aforementioned school at Salerno, where many of the contemporary physicians received their medical training. Thanks to Constantine, "The Hippocratic tradition of organic medicine guaranteed once again an emphasis on pathology of the nervous system, and in particular the brain, in the explanation of mental illness (Alexander and Selesnick, 1966, p. 95)."

In summary, it appears that for at least the major part of the Middle Ages, the medical model approach took a back seat to the revival of the supernaturalistic explanation of psychopathology, which had existed in pre-Hippocratic times. It appears evident that this occurrence was either caused, or at least facilitated by the so-called period of "monastic medicine" (Sigerist, 1958). Nevertheless, White (1963) has concluded that "modern technology was born of the Western Middle Ages (p. 273)."

A fitting ending to this period occurred with the appearance of a book entitled Malleus Maleficarum (The Witches' Hammer) in 1487. Written by two monks, Johann Sprenger and Heinrich Kraemer, the text is an attack against religious dissenters, schismatics, and the mentally ill, all of whom were labeled "witches." The book is comprised of three parts. The first part deals with proving the existence of devils and witches; the second part describes how to identify them, and the third part presents the procedure for their trial in civil courts and their subsequent punishment. A major theme of the book is that all unknown diseases are caused by witchcraft. The authors devoted considerable effort to the explanation...
of how devils enter the head of the human body:

Again, although to enter the soul is possible only to God Who created it, yet devils can, with God's permission, enter our bodies; and they can then make impressions on the inner faculties corresponding to the bodily organs. And by those impressions the organs are affected in the way which has been shown: that the devil can draw out some image retained in a faculty corresponding to one of the senses; as he draws from the memory, which is in the back part of the head, where are the cells of imaginative power; and finally to the sense of reason, which is in the front of the head. And he causes such a sudden change and confusion, that such objects are necessarily thought to be actual things seen with the eyes. This can be clearly exemplified by the natural defect in frantic men and other maniacs (Summers, 1928, p.125).

Such misinformation coupled with the general regression in the pursuit of scientific knowledge characterized the Middle Ages.

III. Modern Era (c.1500 A.D.-The Present)

This period witnessed the rediscovery of the ancient writings of the Greeks which was accompanied by a revival of interest in the sciences. Simultaneously, an organic, physicalistic, medical model again gained prominence and the mystico-religious model declined in importance. The modern technology led the way to new discoveries, many of them being in medicine and psychiatry, and the organic viewpoint reached its peak during the middle of the nineteenth century probably most strongly supported by Griesinger and Kraepelin. More recently, this has led to wide experimentation in the relationship of biochemistry and genetics to mental disease.

15th Century. This period was a time of transition. Paracelsus (1493-1541), perhaps the major figure, reawakened the Hippocratic tradition and rejected all belief in superstitious practices, while attempting to offer a "natural" explanation of mental disease. However, close scrutiny of his writings appears to indicate that
Paracelsus' beliefs regarding the nature and aetiology of psychopathology reflect a regression to outside agencies (Mora, 1967). Nevertheless, Alexander and Selesnick (1966) have claimed that for Paracelsus,

mental disease was a disturbance within the internal substance of the body and could not be considered a result of external effects (pp. 119-120).

Paracelsus rejected the concept of the four humors and substituted the notion of "three principles" - sulphur, salt, and mercury - which represent principles conferring structure and function upon matter (Mora, 1967). His book, The Diseases That Deprive Man of His Reason written around 1525, describes four types of mental illness: falling sickness, mania, the four groups of "Truly Insane People," and insanity caused by natural diseases. The aetiology of falling sickness is in the "living spirits" (spiritus vitae) of the patient and it is transmitted by heredity. Mania is defined as a transformation of reason and not of the senses, and is specifically caused by a distilled humor which enters the head. The "Truly Insane People" are comprised of Lunatici, Insani, Vesani, and Melancholi. The Lunatici become ill due to the attractive power of the moon which tears the humors and cerebral virtues out of the head, causing insanity. The Insani become ill by receiving defective ova and/or sperm from their parents. The Vesani become ill from excessive eating and drinking. The nature of Melancholici is not clear although it is apparently similar to mania. Finally, the fourth classification of mental illness include those caused by natural diseases such as worms in the intestine, abnormalities of the womb, and wounds on the head (Mora, 1967).
Robinson (1912) has stressed the importance of Paracelsus in the history of the understanding of syphilis:

Several of his original observations concerning this disease are correct. He divided it into stages, observed the heredity of syphilis, and was aware of its influence on the course of other diseases (p. 56).

The description of the causes of the mental diseases as outlined by Paracelsus clearly reflects his organic, physicalistic orientation. Further support of such an interpretation is reflected by his recommended therapy:

Treatment of mania is essentially surgical, by opening the extremities of the fingers to let the strength of the disease go (Mora, 1967, p. 808).

Another important figure was Andreas Vesalius (1514-1564), not so much because of his concern with psychopathology, but rather for his knowledge of human anatomy as indicated in De Humani Corporis Fabrica written in 1543. He compared human brains with those of lower animals as well as differentiating the areas consisting of gray and white matter. Continuing the tradition developed by the Hippocrates, Felix Plater (1536-1614), a professor of medicine and anatomy, considered most mental diseases to be caused by some type of organic brain damage. According to Alexander and Selesnick (1966), "Plater, indeed, can be considered a worthy precursor to the nineteenth-century German classifier of mental disease (p. 107)."

Another outstanding medical figure was Johann Weyer (1515-1588) who, according to Zilboorg and Henry (1941), was "the first physician whose major interest turned toward mental diseases (p. 228)." Weyer was an outspoken critic of the Malleus Maleficarum as is apparent in his De Praestigio Daemonum. He reflected the Hippocratic
tradition when he wrote that "those illnesses whose origins are attributed to witches come from natural causes (Ehrenwald, 1956, p.240)." Referring to his vast clinical experience with abnormal behavior, Weyer stated:

I could cite here an infinite number of examples in which you could see the senses involved in many ways, by humors and melancholic vapors which affect the basis from which all these monstrous fantasies spring (Rosen and Gregory, 1965, p.23).

It is clear, then, that Weyer represents the medical model approach to abnormal behavior during Renaissance times. He believed that the mentally ill were innocent, sick people, and in this way he followed in the humanitarian tradition. Unfortunately, he was one of a tiny minority.

Reginald Scot (1538-1599) supported Weyer's attack against demonology with his own work entitled The Discoverie of Witchcraft, published around 1584. Millon (1969) has claimed that this book is a daring and forceful exposition of the fallacies of witchcraft and...a convincing rebuttal to the notion that demons inhabit the mentally ill (p.7)." In the conclusion to his attack against witchcraft, Scot (1964) stated:

All wisemen understand that witches miraculous enterprises, being contrarie to nature, probabilitie and reason, are void of truth or possibilitie. All protestants perceive, that popish charms, conjurations, execrations, and benedictions are not effectual, but he toies and devises onelie to keepe the people blind, and to inrich the cleargie. All christians see, that to confesse witches can doo as they say, were to attribute to a creature the power of the Creator. All children well brought up conceive and spie, or at the least are taught, that juglers miracles doo consist of legierdemaine and confederacie. The verie heathen people are driven to confesse, that there can be no such conference between a spiritual divell and a corporall witch, as is supposed. For no doubt, all the heathen would then have everie one his familiar divell; for they would make no conscience to acquaint themselves with a divell that are not acquainted with God (pp.397-398).
17th Century. The medical model appears to have been fostered during this period as is evidenced by the writings of two famous philosophers who certainly made significant contributions to the foundation of modern psychology. Concerning abnormal behavior, Thomas Hobbes (1588-1679) stated in Leviathan (Great Books, #23, 1952) that

...to have stronger and more vehement passions for anything than is ordinarily seen in others is that which men call madness.

Whereof there be almost as many kinds as of the passions themselves. Sometimes the extravagant passion proceedeth from the evil constitution of the organs of the body, or harm done them; and, sometimes the hurt, and indisposition of the organs, is caused by the vehemence or long continuance of the passion. But in both cases the madness is of one and the same nature (p. 68).

Even Descartes (1596-1650) appears to have nonchalantly accepted and ascribed to the humoral theory of psychopathology advanced by the Hippocratics, as is reflected from his Meditations on the First Philosophy (1961):

How could I deny that these hands and this body are mine? To do so would be to liken myself to those madmen whose brains are so disturbed and clouded by dark bilious vapors that they persist in assuring us that they are kings when they are poverty-stricken, that they are dressed in purple when they are gourds, or that they are made of glass; but they are insane, and I would be no less demented if I were to follow their example (p. 60).

18th Century. Alexander and Selesnick (1966) have succinctly described the developments of this period concerning mental illness:

The objective point of view had finally dislodged the demon from human disease, and psychiatry was about to find its way into medicine through organic channels. By the early decades of the century physicians were looking for destroyed matter in the brain to explain mental disease, and concepts like the seat of the soul and "animal spirits" were gradually going into oblivion (pp. 144-145).
Benjamin Rush (1745-1813), oftentimes referred to as the founder of American psychiatry, was clearly one of the most significant pioneers of medicine. In 1812, he wrote his famous work *Medical Inquiries and Observations upon the Diseases of the Mind* which was the first textbook on mental diseases written by an American. According to Rush (1835),

The cause of madness is seated primarily in the blood vessels of the brain and...depends upon the same kind of morbid and irregular actions that constitute other circulatory diseases. There is nothing specific in these actions. They are a part of the unity of disease, particularly of fever; of which madness is a chronic form affecting that part of the brain which is the seat of the mind (pp. 15-16).

Rush advocated the method of bloodletting, which, by relieving the body of vascular congestion, "would eliminate a basic cause of mental illness (Alexander and Selesnick, 1966, p. 163)." Influenced by the writings of his teacher William Cullen, Rush concurred with the use of the gyrating chair which, through rotary movement, would allegedly release the congested blood in the brain and thus prevent the mental illness.

Corner (1948) has vividly described the social milieu in which Rush lived. Prior to the 17th century as we have already seen, the major medical system had been the humoral theory.

In the 17th and 18th centuries, however, the advance of physics and the beginnings of biochemistry made humoral physiology obsolete without first substituting an adequate body of new facts.... Rush taught that all diseases are due to debility, which may be either direct, from insufficiency of stimulation, or indirect, from the after-effects of excessive stimulation.... Both of these states, if suddenly induced, are accompanied by an increase of excitability, but if chronic both are attended by reduction of excitability. Rush thought that the exciting causes of fever are certain irritants or stimulants which act upon the accumulating excitability and produce irregular or convulsive action of the blood vessels...(pp. 361, 364-365).
Gf Tush, Tourney (1969) has stated that a "rigid medical model characterized his thinking (p. 30)."

William Cullen (1712-1790), Rush's teacher, coined the term "neurosis" and defined it as those diseases not accompanied by fever or localized pathology. He believed that the aetiology of neurosis was organic decay in either the brain or the nervous system. Cullen (1812) described melancholia as follows:

Fear and dejection of mind, or a timid and desponding disposition, may arise in certain states, or upon certain occasions of mere debility.... The disease of melancholia, therefore, manifestly depends upon the general temperament of the body (pp. 327, 330).

Philippe Pinel (1745-1826) is perhaps most famous for his enlightened attitude toward the mentally ill, whom he claimed were not wicked, but sick. He was an avowed proponent of the humanitarian movement. Alexander and Selesnick (1966) have commented on Pinel's philosophy and his contribution to the understanding of mental illness:

Pinel believed that the basis of mental derangement might be a lesion in the central nervous system, since he maintained traditional notions about the physical cause of mental disease. Furthermore, he believed mental illness was a natural phenomenon to be studied according to the principles which prevailed in the natural sciences - observation first, then a systematic presentation of data. Pinel was convinced that mental illness was not something superimposed upon the sufferer, but a result of heredity and life experiences (pp. 151-152).

Chiarugi (1759-1820) classified mental diseases in a very similar manner to Pinel. Accepting the localization concepts advanced by Morgagni, Chiarugi believed that mental illness was caused by the physical deterioration of the brain. However, in treatment, Chiarugi placed a great deal of emphasis on the importance of dealing with and respecting the mentally ill as individuals.
19th Century. Müller (1801-1859), in the true medical model tradition, believed that a psychologist must be a biologist as well. He stressed the importance of experimentation and observation in the progress of medical science. According to Menninger, Hayman, and Pruyser (1963), Broca's (1824-1880) discovery that "certain forms of aphasia were correlated with definite lesions of the cortex, brought about numerous attempts to found a purely organic psychiatry." In 1822, Bayle (1799-1858) discovered that progressive paresis was a specific organic brain disease. Krafft-Tbing (1840-1902) discovered the relationship of general paralysis to syphilis. Tourney (1969) summarized the history of the paradigm of general paresis, which provided much of the empirical support for the organic viewpoint as follows:

Initially we have the clinical description of the illness based on naturalistic observations, then a specific disease concept, the search for etiology and pathology, the establishment of a biological test, the discovery of a specific treatment and prophylaxis with a conquest of the disease.

In addition, Rosen (1968) stated that

"More than two hundred years after the problem of general paresis first appeared dimly on the medical horizon, this discovery finally brought clarity into a perplexing aetiologic problem and made possible an approach to rational methods of control."  

Concerning the relationship between syphilis and general paresis, Mönkelöller (1911) stated that "the opponents of this causal connection are almost completely silenced." These advances lent strong support to the medical model explanation of psychopathology.

Heynert's (1833-1892) classification of mental disorders reflects a clear medical model orientation. The three major subtypes,
as outlined in his *Textbook of Psychiatry* (1884), include mental disorders resulting from anatomical changes and nutritional disorders of the brain, and intoxications. Wernicke (1848-1905) fostered psychiatry in a physiopathological framework. "Like his teacher, Weynert, (Wernicke) believed that all mental diseases were caused by brain pathology (Alexander and Selesnick, 1966, pp. 205-206)." In his *Textbook of Psychiatry* (1900), Wernicke established an all-encompassing system of organicist and mechanistic psychiatry. Distinguishing three hypothetical brain areas, he classified disorder into three types: deficit, excess, and distortion. This system is reminiscent of the Hippocratic humoral theory of disease.

In America, Isaac Ray proposed a similar orientation as Rush which he presented in his *Treatise on the Medical Jurisprudence of Insanity* (1839). Meanwhile, speaking on behalf of the members of the Association of Medical Superintendents of American Institutions for the Insane, Brigham (1844) very clearly voiced the opinion of his colleagues:

> We consider insanity a chronic disease of the brain, producing either derangement of the intellectual faculties, or prolonged changes of the feelings, affections and habits of the individual.

As outlined by Tourney (1969), Earle discussed the causes of insanity and concluded that heredity was the most important:

> Other physical causes included intemperance, opium, epilepsy, head trauma, cerebral disturbances, masturbation, onset of puberty, ill health, fever, dyspepsia, pregnancy, parturition, lactation, amenorrhea, and uterine disturbances (p. 30).

Furthermore, Earle (1848) stated that
Insanity, being a disordered manifestation of the mind, dependent upon some disease of the body, either functional or organic, is subject to the same laws as many or most other maladies to which the human race is subject.

The passions are emotions whose activity tends to depress the energies of both body and mind, may be considered, on strictly physiological principles, as powerful agents in the production of mental disease.

Returning to Germany, the most important figure was Wilhelm Griesinger (1817-1868). He is associated with coining the phrase that "mental diseases are brain diseases." According to Ackerknecht (1965), "This opinion is consistent both with his French localist background and with the findings at the autopsy table in an era when a very high percentage of the insane suffered from syphilis of the brain (Preface)." Griesinger advocated humane treatment of the mentally ill including a proper proportion of repose and activity, occupational therapy, drugs, medicines, and placing the individual in a new environment. He founded the Archiv für Physiologische Heilkunde as well as the Society for Medical Psychology. However, it would be inaccurate to believe that he completely overlooked psychological influences in the etiology of mental illness. This is clear in the following case of a patient of Griesinger, who felt guilty because of his strong urge to masturbate. He was so impressed by his patient's guilt feelings that he stated that the guilt was "by far more important than its direct physical effect (Griesinger, 1967, p. 173)." Nevertheless, Griesinger stands out as perhaps the most classical figure in the entire history of the medical model orientation. His major work, Mental Pathology and Therapeutics (1867) unambiguously proposes an organic viewpoint in the etiology of psychopathology.
Insanity itself, an anomalous condition of the faculties of knowledge and of will, is only a symptom; our classification of the group of mental diseases proceeds upon the symptomatological method, and by such a method alone can any classification be affected. The first step towards a knowledge of the symptoms is their locality - to which organ do the indications of the disease belong: what organ must necessarily and invariably be diseased where there is madness: The answer to these questions is preliminary to all advancement in the study of mental disease.

Physiological and pathological facts show us that this organ can only be the brain; we therefore primarily, and in every case of mental disease, recognise a morbid action of that organ(p.1).

Later, Griesinger pointed out that

Pathology proves as clearly as physiology, the the brain alone can be the seat of normal and abnormal mental action; that the normal state of the mental process depends upon the integrity of this organ; and that both together are influenced by the state of the other organs in disease.

The invariable and essential symptoms of cerebral diseases may arise from internal or external lesions; may proceed from anomalies of sensation and movement, and, in serious diseases, even from disturbance(exaltation or depression of the ideality, loss of self-consciousness, delirium,&c). Cases of less frequent occurrence, where, with serious disorganisation of the brain and loss of brain-substance, no disturbance of the mind is apparent, do not invalidate the results of our everyday experience.

Further and more apposite testimony in favour of our assertion, that the brain is the organ affected in insanity, is furnished by examination of the bodies of the insane after death. In many such examination, true anatomical changes are found in the brain itself, or in its coverings; and where anatomical changes exist those of the brain are, at least, the only constant(pp.3-4).

Furthermore,

Under the head of Causes in mental as in general pathology, are understood all the different classes of circumstances to which may be ascribed an influence on the development of the disease, although their mode of connection may be variously exhibited. The causes comprehend, on the one hand, the external circumstances(nationality, climate, season of the year) under the influence of which insanity is generally, with more or less frequency, observed; on the other hand, they signify certain external injuries(sunstroke, wounds of the head) of which insanity is frequently a consequence; finally, they comprehend certain internal states dependent on the organism itself(hereditary disposition, previous disease,
or other general disturbance of the organic mechanism, such as disease of the lungs, the genital organs, &c.) which we know by experience have an influence in the development of insanity. In very many of these circumstances the intimate connection between them and the influences ascribed to them, the mode in which from them the mental disease is developed, is scarcely ever or not at all evident... A closer investigation of the etiology of insanity soon shows that, in the great majority of cases, it was not a single specific cause under the influence of which the disease was finally established, but a complication of several, sometimes numerous, causes both predisposing and exciting (pp.127,130).

Finally, while espousing his clearly organic viewpoint, Griesinger refuted any role of supernatural or moral factors:

"Insanity being a disease, and that disease being an affection of the brain, it can therefore only be studied in a proper manner from the medical point of view. The anatomy, physiology, and pathology of the nervous system, and the whole range of special pathology and therapeutics, constitute preliminary knowledge most essential to the medical psychologist. All non-medical, more particularly all poetical, and ideal conceptions of insanity are as regards its study of the smallest value.... A similar reproach is applicable to the manner in which the moralists consider the subject, and still stronger, on account of the earnestness with which some such attempts appeared. Nothing is more false, nothing is more opposed to everyday observation, than any attempt to transpose the nature of the mental diseases into the territory of morality (pp.9-10).

Alexander and Selesnick (1966) have briefly summarized Griesinger's contribution to psychiatry:

"Perhaps Griesinger's most important service to psychiatry was not in profound psychological theories but in revitalizing the hope that medical psychology would eventually become a sound medical discipline, so that psychiatry could walk hand in hand with other medical specialties as a proud equal, no longer to hide its head as a stepchild of medicine (pp.200-201).

Griesinger's influence on the medical model orientation was international. In America, this viewpoint was adopted and strongly supported by John P. Gray, who, as editor of the American Journal of Insanity, and superintendent of the Utica State Hospital in..."
New York, "dominated American psychiatry from 1855 to the 1880's (Tourney, 1969, p. 30)." Gray (1870) believed, as did Griesinger, that the same laws applicable to the common physical diseases could be applied to mental diseases as well. He stressed the role of heredity and rejected all moral explanation. Gray (1871) presented impressive statistics to support his claims and was convinced that through careful clinical diagnosis, a physical cause of the mental disorder would be found in every case. According to Tourney (1969)

Gray predicted that the microscope would ultimately disclose structural changes in the cerebral tissue of all forms of insanity and that the entire range of the disease at its various stages would be defined (p. 31).

However, it would be misleading to believe that the somatic explanation of mental disorders developed with no opposition during this period. Ray (1873) was far from convinced that the diseased areas of the brain were necessarily related to mental disorders since, many contemporaries did not believe that the brain had anything to do with insanity. Nevertheless, the three-fold development of medical diagnostic tools, a genuine and now much more valid research orientation, and significant medical discoveries, fostered the tremendous growth of the biological viewpoint in psychiatry initially in Germany, and then in England and the United States. In England, Maudsley (1835-1918) was a major proponent of the medical model orientation:

(Maudsley) believed, like Griesinger, that insanity is fundamentally a bodily disease, and he had even less use for Romantic metaphysical speculations about mental illness. He maintained that character is determined primarily by the structure of the brain, yet he was not a pure materialist inasmuch as he considered physiological laws as manifestations of the "will of God." Maudsley was as
Highly regarded in England as Griesinger in Germany.... Although Maudsley emphasized the importance for the psychiatrist to study the patient's life history, he rejected introspection and belongs, with Griesinger, to the same anti-psychological period that was a reaction against the speculative excesses of the Romantic era (Alexander and Selesnick, 1966, p. 201).

Despite Maudsley's strong support for the medical model in England, his contemporary, John Hughlings Jackson (1835-1911), "the father of British neurology (Menninger et. al., 1963, p. 30)" voiced dissatisfaction. On several occasions, Jackson stated emphatically that the physician's concern was with the body only, not with the mind.

'It is exceedingly important to get rid of the psychological implications which the convenient expression "diseases of the mind" has. Our concern with mind is indirect.' Or, 'I urge again: our concern as physicians is simply to get to know what is wrong with the nervous system.' And finally, 'Our concern as medical men is with the body. If there be such a thing as a disease of the mind we can do nothing for it.' (Stengel, 1954, p. 146).

Unfortunately, as this author has pointed out,

Jackson's views on mental disorders are rarely referred to, because he does not go beyond stating general principles. Throughout he adhered to a physiological approach. He declared that as the result of damage to the nervous system no new patterns of behaviour emerged, but that previous ones were released which normally remained unconscious.... He recognized the regressive character of mental disorders, and he spoke of the physiological insanity of the dream. However, his attitude to psychiatric research precluded him from making any contribution in that field beyond the stating of general principles, which have remained practically unknown among psychiatrists (p. 195).

Returning to Germany, the organic viewpoint flourished under Emil Kraepelin (1856-1926), who is perhaps best known for his classification of the mental diseases. As Menninger et. al. (1963) have pointed out,
Following Griesinger, and taking general paralysis as a paradigm of mental disorder, Kraepelin regarded mental illnesses as organic disease entities which could be classified on the basis of etiology, course, and outcome (p. 457).

According to Alexander and Selesnick (1966), "Kraepelin's inclinations toward an organic approach to mental illness were encouraged by his teachers and associates, his reading of Griesinger, and his great curiosity about concrete facts (p. 212)." The eighth edition of Kraepelin's Textbook contained seventeen subtypes of mental diseases including mental conditions resulting from brain injuries and brain diseases, intoxications, infections, syphilitic mental conditions, epilepsy, and mental disorders resulting from a constitutional predisposition. Zilboorg and Henry (1941) have commented that...

...both from the standpoint of terminology and clinical descriptions Kraepelin's nosological innovations were but the natural culmination of a generation of efforts in both France and Germany.... The system of Kraepelin emerged from a definite past and it did so not suddenly but very gradually, methodically, certain of its ground and of its attitude. There was an age-long scientific attitude which assumed as an established fact that mental disease is a physical disease. There was also an assumption, which was perhaps less overtly expressed, that everyone knows what a mental disease is and that it is something definite. This certainty about a matter so uncertain is in itself a uniquely puzzling phenomenon is science (pp. 453-459).

Nillon (1969), however, has pointed out that

Despite Kraepelin's rigorous application of the disease concept, he recognized, in his seventh edition, that the milder disturbances of neuroses, hysteria and fright were probably of psychogenic origin (p. 12).

In hindsight, Penninger et. al. (1963) have spoken highly of Kraepelin:
Kraepelin's lifelong work represents probably the greatest nosologic synthesis ever accomplished in psychiatry. Most of the systems of his contemporaries and immediate successors were imitations of his, or inspired from him.

As the most persuasive proponent of the biological method in psychiatry, Kraepelin succeeded in bringing about some degree of fusion of psychiatry and medicine, which had been the goal and ideal of psychiatric workers since the time of Hippocrates (p. 463).

Thus, Lundin (1965) has succinctly described the prevailing orientation toward psychopathology in 19th century Germany:

There (i.e., in Germany) the stress was on the somatogenic or organic viewpoint. By the middle of the nineteenth century in Germany, the somatic view had won the day; the brain had supremacy over any other organ in the body. Germany proceeded to produce a psychiatry without any psychology in it (p. 47).

Likewise, Hurst (1965) has stated that

During the closing decades of the nineteenth century, the predominant trend was to consider all forms of mental disorder and defect to be hereditary in an indiscriminating, nonspecific manner (p. 141).

20th Century. Several important figures including Sigmund Freud (1856-1939), Eugen Bleuler (1856-1935), and Adolf Meyer (1866-1950) spanned both the latter half of the nineteenth century and the first half of the twentieth century. Meyer has been referred to as having made the greatest contribution to psychiatry in America, and as a catalyst who strove to bring about a successful synthesis between the "organicists" and the "functionalists" (Conn, 1955). As a synthesizer, Rosen and Gregory (1965) credit Meyer with the emphasis on a holistic or organismic viewpoint, and the fundamental tenet that neither the organic nor psychological factors should be ignored in psychopathology. Bleuler, a Swiss psychiatrist and contemporary of Meyer, also stressed the interrelationship of biological and psychological factors in classifi-
cation. Nillon (1969) has stated that

Although committed to Kraepelin's view that dementia praecox was primarily an organic disease, Bleuler emphasized the presence of psychological ambivalence and disharmony in this impairment, entitling it schizophrenia, to signify the "split" he observed between the intellectual and emotional functions in these patients (p.12).

Although primarily recognized for realizing the role of unconscious processes in motivation, and more generally, for the importance of psychological factors related to psychopathology, Freud, at least during his early lifetime, appears to have reflected a medical model bias. This may be due to the fact that he was originally trained to be a neurologist. Thus, Freud (Great Books, "J", 1952) commented on the relationship of anxiety and hysteria in his Selected Papers on Hysteria (1893-1903):

The indication that we deal with an accumulation of excitement, that the anxiety which probably corresponds to such accumulated excitement is of somatic origin, so that somatic excitement becomes accumulated, and, furthermore, that this somatic excitement is of a sexual nature, and that it is accompanied by a decreased psychic participation in the sexual processes—all these indications, I say, favor the expectation that the mechanism of the anxiety neurosis is to be found in the deviation of the somatic sexual excitement from the psychic, and in the abnormal utilization of this excitement (p.94).

Concerning the processes operating in the aetiology of the psycho-neuroses, Freud pointed out that

We can hardly avoid imagining these processes in the last place as chemical, so that we can recognize in the so-called actual neuroses the somatic effects of disturbances in the sexual metabolism, while in the psychoneuroses we recognize besides, the psychic effects of the same disturbances (p.114).

In his discussion On Narcissism (1914), Freud's apparent medical model orientation is again evidenced:

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"Hypochondria, like organic disease, manifests itself in distressing and painful bodily sensations and also concurs with organic disease in its effect upon the distribution of the libido. The hypochondriac withdraws both interest and libido—the latter specially markedly—from the objects of the outer world and concentrates both upon the organ which engages his attention. A difference between hypochondria and organic disease now becomes evident: in the latter, the distressing sensations are based upon demonstrable organic changes; in the former, this is not so. But it would be entirely in keeping with our general conception of the processes of neurosis if we decided to say that hypochondria must be right; organic changes cannot be absent in it either (p. 603).

However, it is clear that Freud changed his views toward the aetiology of the psychoneuroses as reflected in the following statement concerning the traumatic neuroses, from Beyond The Pleasure Principle (1920):

The terrible war that is just over has been responsible for an immense number of such maladies and at last, has put an end to the inclination to explain them on the basis of organic injury to the nervous system due to the operation of mechanical force. The clinical picture of traumatic neurosis approaches that of hysteria in its wealth of similar motor symptoms, but usually surpasses it in its strongly marked signs of subjective suffering—in this, resembling rather hypochondria or melancholia—and in the evidences of a far more comprehensive general weakening and shattering of the mental functions.... In the traumatic neuroses, there are two outstanding features which might serve as clues for further reflection: first, that the chief causal factor seemed to lie in the element of surprise, in the fright; and secondly, that an injury or wound sustained at the same time generally tended to prevent the occurrence of the neurosis (p. 641).

Freud continued, by stating the psychoanalytic interpretation of the aetiology of the traumatic neurosis:

"While the latter (i.e., shock theory) takes the essential nature of the shock as residing in the direct injury to the molecular structure, or even to the histological structure, of the nervous elements, we seek to understand the effect of the shock by considering the breaking through of the barrier with which the psychic organ is provided against stimuli, and from the tasks with which this is thereby faced (p. 649)."
Sarason and Ganzer (1968) have argued against the notion that Freudian theory is a reflection of a medical model orientation:

Psychoanalytic hypotheses of psychopathology are clearly psychological, and not based on physical disease assumptions. In its essence, the basic model is deceptively simple. The only analogies borrowed from medicine reside in the terminology and not the assumption of organic causality. It is true that Freud veered in the direction of being a physiological reductionist. But while he thought that all psychic energy derived somehow from the biological substrate of the organism, he clearly did not theorize that psychopathological behaviors (neuroses and functional psychoses) were disease entities (p. 508).

Thus, "Neuroses (unlike infectious diseases, for instance) have no specific determinates. It would be idle to seek in them for a pathogenic factor (Freud, 1949, p. 81).” Commenting on the nature and scope of psychoanalysis, Freud (1964) stated that

I have assumed...that psychoanalysis is not a specialized branch of medicine. I cannot see how it is possible to dispute this. Psychoanalysis is a part of psychology; not of medical psychology in the old sense, not of the psychology of morbid processes, but simply of psychology. It is certainly not the whole of psychology, but its substructure and perhaps even its entire foundation (p. 103).

Thus, it is clear that despite the complexity of the process of psychoanalysis, Freud did not conceive of his technique to fall within the framework of what now has come to be known as the medical model. On the contrary, his theory is founded upon psychological principles.

A more concerted effort toward a research orientation by psychiatrists developed during the first quarter of the twentieth century. This was partially the result of Mitchell's emphasis (1924) on the need to consider such topics as biochemistry, pathology, and physiology to better understand the nature and scope of mental disease. Folin (1904) did produce some studies concerning the relationship of chemical factors in mental disease. However,
besides the findings of a strong likelihood of a positive relationship between general paresis and mental disorders, he generally obtained negative results. Southard (1910, 1915) compared the organic and the psychogenic approach to the study of psychopathology. He concluded that the somatogenic hypothesis lacked satisfactory support. This opinion was supported by the work of Dunlap (1924) who was unable to discover any neurological aetiology in mental disease.

However, the early part of the twentieth century witnessed the support for the organic approach as outlined by Cotton (1912):

Without doubt, from the standpoint of prophylaxis, at least, the most important aspect of psychiatry has always been a factor of heredity. It has been known for years, in a general way, that heredity has played an important role in the etiology of the psychoneuroses, but we have been very far from having any definite knowledge of the subject.

After having traced the evolution of modern genetics, which has undoubtedly had a profound influence upon the medical model explanation of psychopathology, Hurst (1965) has observed three distinct stages. The first stage was characterized by the experimental work of Mendel, originally published in 1866, in which he discovered the phenomena of dominance, recessiveness and the intermediate hybrid. The second stage is marked by the identification of the physical basis of inheritance in the work of Thomas Hunt Morgan and his colleagues. The third and final stage is associated with the work of Goldschmidt and is best understood as the period of physiological and biochemical genetics.

The advances made in the field of genetics have been applied to the study of psychopathology in the area of genes, enzymes, and chromosomes, and their relationship to abnormal behavior.
In addition, several statistical methods have been developed including the pedigree method, contingency method, and the twin study method. Turst (1965) has presented, in tabular form, the findings of some twenty recent studies which have generally provided experimental support for the validity of the medical model. Nevertheless, following nearly fifty years of search for biochemical factors in mental disorder, Osmond (1958) stated that progress has been limited by

...the immense difficulties not merely of looking for a needle in a haystack, but of searching for a needle in a heap of needles-for this is what hunting in the body for minute quantities of an unknown chemical compound resembles.

Furthermore, Russell (1965) has stated that

The search has also been seriously handicapped by a lack of theoretical models for interactions between biochemical events in the body and behavior, models from which specific testable hypotheses could be derived.... There is considerable evidence that psychotics do differ from normal in certain biochemical dimensions, but because of the difficulties in unambiguously testing either psychological or biochemical hypotheses concerning precipitating factors, the question of whether the differences are primary or secondary is still in doubt(pp.197,203).

Durell and Schildkraut (1966), in reviewing nearly three hundred studies, have made an extensive investigation of some of the most recent research concerning the relationship of biochemical factors and mental illness, and their conclusion is that

Despite many years of investigation and a plethora of reported abnormalities, no biochemical lesion has been definitely established in either the schizophrenic or the affective disorders(p.443).

Willon (1969) has stated that

...most of the data has proved to be either incorrect or difficult to identify with any specific nosological disorder. Despite this finding, a...note should be made of
mounting technical armamentarium available to the mid-twentieth century researcher. These new tools, in theory, may lead to more conclusive biological discoveries (p.15).

Although a prominent medical professional, Arieti (1955) has been rather apprehensive about the validity of the organic approach in explaining schizophrenia:

This book will pursue chiefly the psychological approach which, in the opinion of the author, so far has yielded results more significant than those of any other kind of research toward the solution of this problem (p.3).

Furthermore,

The quantity of these works (i.e., research on schizophrenia involving the organic approach) and the variety of directions which they have taken, reveal that no headway has been made and that no constructive avenue of research has yet been found in the organic field (p.9).

Finally, after reviewing some of the recent research concerning the biological theories of schizophrenia, Fety (1965) has concluded that "a present consensus that a pathological lesion characteristic of schizophrenia or any of its subgroups remains to be demonstrated (p.402)."

However, Russell (1965) has optimistically weighed the prospects of future developments in this area:

This discussion began with the realistic admission that, at present, the search for biochemical factors in mental disorders has more prospects than definitive knowledge. Firm information is available for certain disorders, i.e., the "organic" psychoses, but very little is yet known about biochemical bases of others, such as schizophrenia. So little is known, and the possibilities of where to look among the many biochemical events within the body are so great, that in the past only a relatively few hardy souls persisted in their attempts to find specific factors. Recently, however, the search has acquired new vigor; the volume of research - and of controversial points of view - has increased (p.213).

Some recent comments regarding the present status of biological psychiatry and the appreciation of the medical model orientation...
by the major professional organizations concerned with mental health is appropriate. Thompson (1954) has outlined the fundamental viewpoint of the Society of Biological Psychiatry which was founded in 1945, and which clearly reflects the influence that such individuals as Griesinger and Kraepelin has made on its members:

Psychiatry has built an enormous culture, an enormous superstructure of observations and interpretations. Those who seek to advance the biological concept wish only to build a foundation under the superstructure and not detract from the important contributions of psychopathology. They wish to add substance to anatomic structures which make these concepts possible. Neurochemistry is considered an essential element of mental function. In biological psychiatry the mind remains in the body and particularly in the brain. The brain is the organ of the mind (p. 390).

Perhaps the hallmark of the medical model orientation was stated by Gerard (1955):

"When experience leaves an enduring trace, it must be some sort of material imprint; and, so to speak, there can be no twisted thought without a twisted molecule. Perhaps the simplistic generalization to keep in mind is that all behavior in the external world, as well as all awareness of it, depends explicitly on the discharges of neurones. Certain neurones are fired by a given sensory input, these activate others, and still others, and in time certain final neurones activate particular muscles to contract or glands to secrete. Clearly, the properties of the neural units and of their relations are crucial to all normal and disturbed behavior (p. 82) (underlining added).

Concerning the treatment of abnormal behavior, Martin, Noyes, and Hendrick (1954), in an official notice composed jointly by the special committees of the American Medical Association, The American Psychiatric Association, and the American Psychoanalytic Association have stated that.
Psychiatry is the medical specialty concerned with illness having chiefly mental symptoms. The psychiatrist is also concerned with mental causes of physical illness, for we have come to recognize that physical symptoms, may have mental causes just as mental symptoms may have physical causes. Psychotherapy is a form of medical treatment and does not form the basis for a separate profession. The application of psychological methods to the treatment of illness is a medical function. Any physician may utilize the skills of others in his professional work, but he remains responsible, legally and morally, for the diagnosis and for the treatment of his patient.

The medical profession fully endorses the appropriate utilization of the skills of psychologists, social workers, and other professional personnel in contributing roles in settings directly supervised by physicians. It further recognizes that these professions are entirely independent and autonomous where medical questions are not involved; but when members of these professions contribute to the diagnosis and treatment of illness, their professional contributions must be coordinated under medical responsibility (pp. 385-386).

This statement unambiguously declares the primacy of the medical model orientation which was fostered during the first half of the twentieth century. However, as has been pointed out earlier, the past decade has witnessed a severe attack against this approach by psychologists, sociologists, and psychiatrists alike.

Summary. This chapter has briefly traced the origin and development of the organic explanation of psychopathology from the forerunners of the ancient Greek culture to the middle of the twentieth century (See Appendix A, p. 67). It appears that, although perhaps only a rational and naturalistic explanation, it was developed by the Hippocrates in ancient Greece and fostered up to the time of Galen. Following the death of Galen, a tremendous decline in the development of scientific knowledge occurred, and a mystico-religious interpretation, which had been common during pre-Hippocratic times, reappeared. Not until the sixteenth century and the dawn of the modern era did the supernatural explana-
tion decline in importance. With the development of new technologies and new discoveries, many in the field of medicine, an organic viewpoint gained support and perhaps reached its peak in mid-19th century Germany. Around the turn of the century, a new tradition emphasizing psychological factors in psychopathology appeared with Freud and psychoanalysis. However, the first half of this century witnessed widespread experimentation in the study of the relationship of genetics and biochemistry to mental disease. Coupled with the limited success of this research, and the development of behavior therapy and its emphasis on learning principles, a psychological or behavioral model has gained considerable support. Within these two broad orientations, the somatogenic and the psychogenic, several other interpretations have been advanced. Indeed, at present, multiple models are available.
CHAPTER V

DISCUSSION

The major theme of the present study has been that an historical appreciation of the development of the medical model of mental illness would prove beneficial in understanding and avoiding the conceptual issues which have recently led to a basic misunderstanding of the nature and relevance of the term. Sarbin (1969) has vividly pointed out how the term "mental illness" historically evolved and eventually underwent a metaphor-to-myth transformation sometime during the sixteenth century. With this in mind, along with the general cyclical effect of the supernaturalistic mystico-religious and naturalistic medical models predominating alternately through history, the practical implications of the terminology are more readily understandable.

Historical Implications

A knowledge of the background of the mental illness discussion enables one to better tackle the popular and often-asked question, "Does history repeat itself?" Although no clear-cut answer is available, this question is very appropriate in considering the role which the major models played throughout history in explaining psychopathology. Initially, in pre-Hippocratic times the spiritualistic interpretation prevailed, followed by the rise of a rational and naturalistic model which has been presented as the forerunner of the modern medical model. However, following the
death of Galen, the possession model regained widespread acceptance and remained for an extended period as is reflected in the Galens De Maleficarum of the fifteenth century. Nevertheless, the Renaissance period witnessed a major transition and the organic interpretation was again espoused. But during subsequent centuries, some empirical evidence was obtained, due to a large extent to the various new discoveries and the onset of modern technology. Thus, a peak was achieved around the middle of the nineteenth century for the organic explanation. Despite the development of the psychoanalytic movement, the medical model prevailed through much of the first half of the twentieth century and only very recently has there been a severe attack waged upon the medical model. Presently, with the tremendous support for behavior therapy techniques, as well as criticism from within the medical profession (e.g., Szasz) as well as from without (e.g., Albee, Sarbin), a behavioral or psychological model has been proposed. What can we expect for the future? Will the medical model eventually regain virtually complete control as it once had, or perhaps, as unlikely as it may now appear, will a supernatural model regain in prominence? Such predictions are most difficult to make; however, the future will probably depend to a great degree, upon the amount of empirical support such contemporary models as the behavioral model obtain. Perhaps Koffka's plea (1967) for multiple models is the most fruitful alternative.

To answer the question raised above, a tentative, conditional answer is "No." No one model has maintained major support throughout history. Rather, a cyclical effect of two models has been the
case in the past, and recently there is a strong indication that
developing models may either replace the old ones, or at least
struggle for competition.

Some Conceptual Implications

Several investigators (Balance, Hirschfield, and Dringmann, 1970;
Garin, 1969) have noted the pejorative nature of the term "mental
illness." That is, "its use has the effect of publicly degrading
a person and also of providing the basis for self-devaluation
(Garin, 1969, p. 21). To be sure, changing the term or even discon­
tinuing its usage, will not automatically solve the problem. How­
ever, a greater general public awareness and understanding of the
social problem combined with the implementation of the tenets as­
associated with "Mental Health's Third Revolution" (Hobbs, 1968)
should reduce the pejorative implication of the character or
individuals generally diagnosed as mentally ill.

Continued support for the medical model should result in con­
tinued, if not expanded, financial support for research in the
 genetics of psychopathology in general, and such narrower areas
as the relationship of biochemical factors to schizophrenia. On
the other hand, however, and related to the recent attack on the
medical model, non-medical professionals should be much more like­
ly to obtain funds if satisfactory results occur as a consequence
of the adherence to non-medical or psychological models.

Closely related to the issue of funding are the notions of
role, responsibility, and identity. Pottharst (1967) has pointed
out how "Clinical psychology's commitment to the medical model has
been accidental, ambivalent, and opportunistic from the beginning
(p.1)." During the years of, and following the second world war,
the only settings available for clinical training were psychiatric ones. Thus,

Clinical training programs happen to begin where post World War II psychology departments could negotiate a chance for students to do research and learn therapy in clinics and hospitals, and they could negotiate this only through talking illness-health language. In order to prove their competence to the general public and to gain acceptance of the other professions, then, it became necessary to adopt the medical language and to work within the medical model (Pottharst, 1967, p. 2).

In order to avoid this problem, Albee (1966b) has urged that psychologists should be trained in institutions controlled by psychologists. Shako (1963) has criticized Albee's position and has argued that

...psychologists (should be trained) in the most adequate institutions (which, at least for the present, are, and probably for the near future will continue to be, predominantly medical) where competent and mature representatives of different disciplines are represented, and let the identifications develop (p. 168).

Since the vast majority of training centers, as well as care-taking settings for the "mentally ill" have been under the control of medical men, it is only just that the medical profession be held responsible for the training of future professionals and the welfare of the individuals receiving therapy. This has been clearly outlined (Martin et al., 1954). However, the recent controversy over the utility of the medical model indicates a definite dissatisfaction with this approach, which requires immediate assessment. If the dissatisfaction is justified, as many have recently argued, legal and professional responsibility should be shared by the members of the non-medical professions and their functions should be reflective of an equality in role status. If the dissatisfaction with the medical model is not justified (this does not
appear possible, based upon the evidence presented herein), the medical profession should retain legal and professional responsibility, while at the same time, maintaining a higher status due to its more important role. It may be of historical interest to note that the conflict between contemporary clinical psychologists and psychiatrists is not unique. On the contrary, Seashore (1942) has pointed out that around 1920 "organized psychology and psychiatry were at swords' point, and the time had come for a truce... (p.126)." Realizing the ambiguity and conflict which existed with regard to the professional roles and responsibilities, a conference was organized. One of the recommendations suggested at that time was that "to deal competently with the situation...persons should be trained both as psychologists and as psychiatrists, the ideal being a combination of the two(p.132)." This provision has never really been very seriously attempted and the basic issue of the roles and responsibilities of these two professional groups has continued to remain unclear.

Recommendations

It appears necessary to conclude this discussion with certain recommendations concerning some of the major issues surrounding the medical model of psychopathology.

Firstly, I urge the discontinuation of the use of the term "mental illness." It has been shown to be a misnomer, and due to its conceptual shortcomings, has led to several serious logical pitfalls. This does not mean to imply that some people do not experience "problems of living" (Szasz, 1961) or have difficulty coping with daily affairs. It would be naive not to believe such
a thing, and I realize, therefore, that some term, hopefully more meaningful and relevant, must be used to replace "mental illness." I suggest that this term be "maladaptive behavior." Certainly not a new term, but one, I feel, which does not lead to the conceptual problems related to "mental illness," while at the same time indicating a lack of ability to cope with certain life situations as an important aetiological factor, and not implying any particular "treatment" nor any particular class of individuals (non-professionals as well as professionals) to be concerned and even responsible for their welfare.

Secondly, concerning what model is most appropriate, I supportMcKeachie's plea (1967) for multiple models, since it is apparent that no one model will solve all of the problems presently under discussion. However, in order to evaluate the comparative strengths and weaknesses of the various models, some appropriate criterion such as degree of success must be obtained. Although beyond the scope of the present study, I would suggest that such a criterion could be measured quantitatively by asking therapists which models have proven most successful in helping clients. Likewise, the laboratory results of research concerning the relationship of genetic factors and abnormal behavior, as well as the results of behavior therapy techniques, could be readily obtainable. Then, appropriate funding could be made available on the basis of the relative success of each model.

Thirdly, depending upon the results of that which has been outlined above, legal and professional responsibility as well as role and status could be assigned accordingly. The Albee-Shakow
issue could be dealt with on the objective results of the relative success of the models. Finally, I concur with Szasz's view (1959) of the role and professional identity of the clinical psychologist as being a social educator. This is a logical conclusion if maladaptive behavior is interpreted in terms of problems of living in a social-interpersonal existence, as well as of education and learning, often involving ethical implications.
Note. Some of the major proponents of the medical model orientation to the explanation of mental illness.
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