

THE ECOLOGY OF MENTAL DISEASE.*

A DISSERTATION ON THE INFLUENCE OF ENVIRONMENTAL FACTORS IN
THE DISTRIBUTION, DEVELOPMENT AND VARIATION OF MENTAL DISEASE.

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SECTION A.

THE CONCEPT OF ECOLOGY.

THE word "oecology" was coined by Haeckel in 1869, and the study of the complex interactions between organisms and their environment led to fruitful results first in botany (at the beginning of the twentieth century) and later in zoology. In 1935 Bews formulated the principles of human ecology, but the precise boundaries of this discipline (as Banks (1905a) calls it, since it cannot be called a science) are still not the subject of any general agreement. Its dictionary definition as "that branch of biology which deals with the relations of human beings to their surroundings, their habits and modes of life," although simple for the purposes of formulation, is probably too diffuse in practice. On the other hand, Miller (1950), in suggesting that the ecological study of disorders should be confined to their distribution in the purely demographic sense, seems unduly to restrict its application. There is a tendency among American ecologists (who have been the pioneers of this subject) to take a middle course. Park (1936) conceives of human ecology as the study of the community in terms of the *competitive* forces which mould it, as opposed to the *cultural* forces which make for social co-operation. Similarly, Faris (1944) distinguishes the *ecological order*, which arises automatically and unintentionally out of the struggle for survival, from the *cultural order*, which is based on mutual affection and sentiment.

The ecology of mental disease is a natural branch of human ecology, but as it has not so far been the subject of any comprehensive survey its field has yet to be delimited. For the purpose of the present thesis, a definition is adopted from that given by Elton (1950) of animal ecology, and which is in conformity with current American usage: the ecology of mental disorder is an attempt to reduce and coordinate into some scientific scheme the information on the varieties, distribution and social circumstances associated with mental illness, with a view to solving some of the urgent problems which are the result of man's becoming civilized and interfering with his own long-established modes of behaviour. This definition includes a basic assumption that mental illness is to some extent a disease of civilization; and its ecology is an attempt to answer the questions, how much of mental disease is caused by the conditions of civilization, and what particular factors are most responsible for causing it? It is upon the answers to these two questions that the programme of social psychiatry—the prevention and treatment of mental disease by social measures—must be based.

SECTION B.

A HISTORICAL SURVEY OF THE ECOLOGICAL APPROACH TO MENTAL DISEASE.

A Hippocratic aphorism (Book Two, No. 34) holds that when a person is threatened with disease by the hereditary predisposition of his family, his constitution should be changed by appropriate education and environment. Although the passing of millenia did not dim the wisdom of this advice, there could be no real knowledge of just what education and environment would offset particular predispositions until precise studies were made upon the effect of different environments on the development of disease. The census of populations, first made in

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European countries toward the end of the eighteenth century, provided the opportunity and the stimulus for such studies.

During the first part of the nineteenth century, several statistical investigations were made on the distribution of insanity in the British Isles. Their present interest, however, lies less in their results than in the way they illustrate the pitfalls of the statistical method and the distorting influence of long-established prejudice. Prichard (1835), for example, finding that there were more insane persons in agricultural than in urban areas, concluded that the development of insanity "is favoured by some of the circumstances connected with agriculturalists"; he failed to take into account the relative sizes of the total populations in the different areas. The same mistake was made by Stark (1851, 1852). He showed that there were more insane people among the lower than among the middle and upper classes, and concluded that Esquirol was wrong in attributing insanity to the stress of civilization because, on that theory, there should be more insane among the more civilized (that was, the upper) classes. His statistics also showed that there was a greater prevalence of insanity in England and Scotland than in Ireland "or most other countries of the globe," and he found a satisfactory explanation for this in the prevalence of the intermarriage of blood relations. For, he says, it is a known fact that the children of such marriages are not only "much more delicate and liable to scrofulous and brain diseases" than other children, but are also "much more frequently born idiotic, blind, deaf and dumb." The similar opinion of Prichard led that great alienist to conclude that "the numbers of deranged persons in the community might be very much lessened if it were possible to regulate or establish any surveillance over the marriages of the lower orders."

Greater statistical accuracy and a growing awareness of the difficulties of drawing conclusions from statistical data mark the writings of the second half of the nineteenth century. In their *Manual of Psychological Medicine*, Bucknill and Tuke (1874) note once more the unequal incidence of insanity in various European countries, but they do not venture on an explanation. In observing that the insanity rate is greater in urban than in rural areas, however, they suggest physical exhaustion, bad housing, intemperate living and the want of proper relaxation as the causes; but they do not offer any objective evidence to support their conclusions. A few years later, Tuke (1878) published his *Insanity in Ancient and Modern Life*. In answer to the question "whether insanity is more common now than formerly," he concludes that it is commonest in those ages when a high degree of civilization obtains, and hence that civilization is a cause of insanity because "superior organisms have to pay for their greater sensitiveness." He points out the errors of earlier writers in supposing that the proportion of the insane is greater in the working than in the leisured classes or among rural than among urban communities, and he also questions whether the marriage of close relatives is really a major cause of insanity. Nevertheless, his conclusions are for the most part based on clinical impression rather than on statistics; and when we read (page 195) the author's severe disapproval of the fact that "in our day there is a great tendency to spoil children from their earliest years, to grant them everything they wish and to gratify them in every self-indulgence," we cannot altogether escape the feeling that Tuke, like Tacitus before him, is at times less concerned with scientific accuracy than with moral exhortation.

The opening decades of the twentieth century reveal a further advance towards objectivity and impartiality in the social study of mental disease. White (1903), from a study of American census returns, showed that the incidence of insanity was maximum in Massachusetts and decreased uniformly in every direction therefrom. As this distribution was also that of population density and was not that of such climatic factors as temperature, altitude or precipitation, he concluded that climate was not an important cause of insanity, but suggested that mental stress was. He supported his thesis by quoting Morselli's figures for suicide in Europe, showing a maximum incidence in urban areas; and by the fact that insanity among American negroes was highest in regions of high population density although the actual population of negroes was less there than in other regions. His general conclusion was one that had now become widely accepted: insanity is due to the stress of social competition acting upon those who are so predisposed.

The nature of the predisposition, however, remained to be investigated. White himself, in common with most of his contemporaries and the alienists of the previous century, believed heredity to be the all-important factor. This age-old belief

received the apparent support of statistics in a work by Heron (1907), whose figures led him to the conclusion that "the insane diathesis is inherited with as high an intensity as any physical or mental characteristics of man so far examined." But already a new view, that the environment might play a significant part in predisposing a person to later breakdown under stress, was emerging. Freud's work suggested the importance of psychological trauma in childhood as a factor in the development of neurosis, while statistical evidence for the new view was brought in a short paper by MacDermott (1908). MacDermott studied the incidence of insanity in different areas of England over a number of years, arguing that if heredity was the dominant factor in causing the insane diathesis, then it would tend to produce a constant incidence in a stable population both in space and time. His figures, however, demonstrated that the incidence of insanity increased more rapidly in some areas than in others, while in some areas it remained stationary or decreased; and he concluded that the insane diathesis arises from the circumstances of the environment rather than ancestral inheritance.

By the time of the first World War, the importance of environmental factors both in precipitating and in disposing towards mental disorder was well established, and the investigations which had led to its recognition began to bear fruit in a practical programme of preventive psychiatry. The first Child Guidance Clinic in England was opened in 1927; in 1916 the American National Committee for Mental Hygiene was formed. Growing appreciation of the fact that minor degrees of mental maladjustment were exceedingly common and responsible for much unhappiness and inefficiency led to the conception of "positive mental health," so that in 1933 Meyer could define mental hygiene as "an intimate study and education of those factors which make for mental health in a positive, creative and not merely passive or mending way."

Yet it is still not established which, of many possible factors in the environment, are most important in causing mental disease. The following section presents some of the recent ecological evidence bearing on the problem and in Section D this evidence will be discussed and evaluated.

SECTION C.

ECOLOGICAL FACTORS IN MENTAL DISEASE.

Introduction.

In considering the causes of illness, it has been traditional and is still satisfactory to separate those due to heredity from those due to the environment. The present discussion is concerned with the latter, but certain observations may appropriately be made upon the relation of genetics with mental disease.

Many writers (for example, Kallmann, 1948) have attempted to show that certain types of mental disease are inherited according to formal (although complex) Mendelian principles. If this were true, then the ecological factors would probably be of less importance and the prospect of success for any scheme of preventive psychiatry considerably poorer than if it were false. It is therefore appropriate to point out that these genetic theories have recently been the subject of criticism (Gerard and Siegel, 1950; Shulman, 1950), principally on the grounds that the diseases themselves are ill-defined and that the studies ignore the importance of the cultural environment in forming even the most basic patterns of reaction.*

Halliday (1943), in a discussion of the principles of aetiology, has pointed out that for preventive medicine the most fruitful approach to the study of the environment as a cause of illness has been the splitting-up of the environment into various *factors* by the successive application of different techniques. Ecological technique deals with social factors, but the interaction of environmental factors in the development of mental disease is so complex that the division between social, psychological and physical factors is often arbitrary. Some examples will show this.

The imbibition of alcohol is the immediate and essential physical cause in the development of alcoholic psychoses, but the factors which determine the availability of alcohol and whether it is consumed to excess are largely social. Thus Hyde and Chisholm (1944) showed that whereas the incidence of alcoholism was

* This is strikingly illustrated by the fact that persons born blind who later gain their sense of sight by a surgical operation cannot "see" at all in the ordinary way until that sense has been educated for many months.

high among negroes and Portuguese near Boston, it was low among Jewish communities of comparable social status and population density. The most probable explanation of this is that alcoholism is not a culturally permitted mode of escape from frustration among Jews. Moreover, Dayton (1940), from a study of admissions to Massachusetts mental hospitals during 1917 to 1933, has shown that there is a high correlation between alcoholic intemperance and the total admission rate, suggesting that alcoholism may be related not only to alcoholic psychoses but to other types of mental disorder (in particular, schizophrenia, psychosis with cerebral syphilis and involuntional psychosis).

Again, figures given by Stocks (1949) indicate that there is (in England and Wales) a seasonal variation in the incidence of nervous complaints, which cause much more incapacity in winter than in summer months. This might be thought to demonstrate the influence of weather on neurosis, but his figures also show that the incidence, high in October and November, falls sharply in December and then rises again in February and March. Such an occurrence is inexplicable on a purely physical theory; but it is readily understood if neurosis is due to social frustrations which are relieved by the good-will and festivities of the Christmas season.

Recent work has also tended to blur the distinction between social and psychological factors in mental disease. In his early writings Freud (1924) conceived psychological stress as the result of clear-cut traumatic situations disturbing a pattern of mental development which had been inherited and was universally similar. Malinowski (1927) showed that in cultures far removed from that of modern western civilization the pattern was essentially different, and situations which were traumatic in one culture were not necessarily so in another. Practical experience in psycho-analysis led Burrow (1927) to the conclusion that neurosis was essentially a social phenomenon—a view which led him to adopt the methods of group psychotherapy. Although Klein's theories (Klein, 1950) seem to represent a return to the conception of inherited patterns of mental development, yet the general body of psychoanalytic thought has shown "a growing appreciation of the social involvements of the personality and the social precipitation of neurosis" (Miller, 1950). In addition, there is growing evidence that the disposition towards mental disorders, both neurotic and psychotic, may develop from an emotionally unsatisfactory family background, especially where the parents or those in *loco parentis* are themselves mentally unstable. (Gerard and Siegel, 1950; Malamud and Malamud, 1943; Ingham, 1949; Pemberton, 1951.)

The basic conflict of opinion has been summed up by Blumer (1937); on the one side there are those who hold that social disorganization is the *result* of individual disorganization, which is itself the result of childhood frustrations; on the other are those who hold that social disorganization, the consequence of impersonal factors such as inventions, redistribution of wealth, new philosophies, etc., is the *cause* of the individual disorganization. Blumer himself inclines to the latter view.

It will be convenient in surveying the ecological factors in mental disease to consider them under the following headings:

1. Culture.
 - (a) Mental disease in different cultures.
 - (b) Mental disease in a changing culture.
2. Migration.
3. Population pressure.
 - (a) Mental disease and isolation.
 - (b) Mental disease and urban conditions.
4. Local and temporary factors.

1. *The Influence of Culture.*

(a) *Mental Disease in Different Cultures.*

If culture is an important factor in the development of mental disease, then it is to be expected that the incidence and variety of these diseases will be different in different cultures. Attempts to verify this hypothesis, however, are confronted with two major difficulties. Firstly, as Toynbee (1934) has pointed out, every civilization except our own has been infected with the virus of Modern Western Civilization. There are no pure cultures left, and the best that can be done is to investigate those preliterate societies which are minimally affected by modern culture. In such cultures, the difficulty of obtaining accurate information and of

establishing satisfactory standards of abnormality is great. Secondly, mental diseases are not clear-cut illnesses but deviations from local standards of normality: "the limit beyond which idiosyncrasy becomes abnormality is never precisely defined and is set by the consensus of opinion characteristic of the age or of the community" (MacCurdy, 1950a). It follows that mental disease is defined in cultural terms and therefore that diseases in different cultures cannot be accurately compared.

In spite of these difficulties, there is considerable evidence that the amount and kind of mental disease varies with culture. Faris (1934) quotes references to show that schizophrenia is rare or absent among primitive peoples unless they have migrated or become urbanized. Thus Faris (op. cit.) found no cases resembling schizophrenia among the Africans of the Belgian Congo, although schizophrenia is common in American negroes. Working among primitive natives of Papua, Seligman (1929) found no evidence of mental disorder (except brief maniacal attacks) in those who had never been influenced by European civilization; but mental disorders were not uncommon among those who had been so influenced, and they also occurred among devotees of new religious cults where there was evidence of a conflict between old and new ideas. Dhunjibhoy (1930), reviewing the psychoses that occur in Indians, considered schizophrenia to be more common in those communities (e.g., Parsees) which were "highly advanced in Western civilization."

According to Van Loon (1927), the condition known as amok is a characteristic reaction of Malay males when they become confused (for it may occur in any state of acute confusion, whether due to febrile delirium, toxins or mental disorder). He ascribes its features to the cultural conditions; for whereas in a European acute confusion may result in "occupational delirium," the Malayan's response is that of one who lives in a jungle village surrounded by hostile tribes and wild beasts and whose first impulse when uncertain of his surroundings is to attack any potential enemy he meets. Similarly, he ascribes the state of latah (automatic obedience in Malay women, principally in those who have worked with Europeans) to the habit of imitation and suggestibility engendered by contact with a more advanced culture.

Benedict (1934) has described a culture (the Dobu, off New Guinea) in which there is a preponderance of paranoid personalities.

A study of insanity among Africans in Kenya has been made by Carothers (1947, 1951). He finds its incidence very low among those who live in their traditional environment and considers this due to their freedom from social, sexual and economic problems. The African community does not require foresight or initiative from its members but only that they obey the rigid code of tribal etiquette; in consequence, the Africans do not develop any personal standards of behaviour, and Carothers considers this to be the explanation of the fact that he never saw a case of obsessional neurosis among them.

In summary, the anthropological evidence indicates that mental disease (as understood in civilized countries) does not occur in many primitive cultures, and where it does occur then either the culture has been in contact with civilization or it contains within its structure sources of mental conflict similar to our own.

(b) *Mental Disease in a Changing Culture.*

Since the beginning of the Industrial Revolution, the pattern of culture within Western civilization has been changing at a rate never known before. If culture is an important determinant of mental disease, then we may expect to find corresponding changes in the variety and incidence of mental disease during the past century. There is a good deal of evidence to support this hypothesis.

In the first place the incidence of mental disorder as a whole appears to be increasing, although there are great difficulties in establishing this fact for certain. The statisticians of the early nineteenth century too readily supposed that the obviously increasing admission rates to asylums indicated a real increase in insanity. It remained for Tuke (1878, ch. 7) to point out that most of this increase could be accounted for by various Acts of Parliament which resulted in more paupers being called lunatics and more lunatics being notified as such. Greenwood (Greenwood *et al.*, 1941) has shown that the suicide rate in England and Wales increased steadily from 1861 to 1938, although he attributed a substantial (though undeterminable) part of this to the availability and convenience of gas ovens. Dayton (1940), from

his study of first admissions in Massachusetts from 1917 to 1933, found (ch. 2, p. 59) that the incidence of mental disease was decreasing in the under-40 age-groups and considers this an indication that mental hygiene activities have been of real value ; but he also concluded (ch. 11, p. 417) that the total incidence was really increasing, though so gradually as to give no cause for alarm. A similar though less complacent conclusion was reached by Malzberg (1943) who found in New York State during the years 1920 to 1940 that the annual first admission rate to mental hospitals increased from 109 to 136 per 100,000. He also pointed out that the rate for dementia paralytica had decreased and that, since almost every case of this disease sooner or later comes to a mental hospital, this was an argument against the general increase being due to an increased rate of hospitalization.

There is also evidence of a change in the relative prevalence of different mental diseases during the past century. It is now generally accepted that the " grande hystérie " of Charcot's Salpêtrière clinic was a product of the age, place and prevailing psychiatric theory. MacCurdy (1939) has stressed that the now classical examples of neurosis on which Freud built his theories were not of timeless pattern, but reflected the cultural atmosphere of *fin-de-siècle* Vienna. Many authors have drawn attention to the changing fashions in the symptomatology of the visceral neuroses (for example, Banks, 1950b), while Halliday (1948) has shown that these changes can be correlated with such social changes as the emancipation of women and the disruption of the patriarchal family group. This same author (op. cit.) has suggested an explanation in cultural terms of the different prevalence of hysterical and obsessional neuroses (and of the corresponding personality types) in the Victorian age and in our own. The large families of the Victorians provided their children with freedom of expression and a wealth of social contact among siblings ; big nurseries and adequate domestic help rendered a premium on strict bowel-training unnecessary ; but the patriarchal structure of the family and the prevalent opinion that children should be seen and not heard led to a suppression of the development of individual personality and (in women) to a repression of sexual impulses. A personality so moulded tends (on psychoanalytic theory) to become hysterical. By the twentieth century, however, these early influences had changed : small families were the rule ; mothers took more pride in and expected greater perfection from their fewer children ; breast-feeding declined and bottle-feeding by the clock was substituted ; the benefits of increased sanitation led to a firmer emphasis on cleanliness and so on training ; more babies were in prams and few in arms ; the " dummy " became anathema. It is this rigidity of upbringing (itself perhaps a reflection of the need for a sense of security in a drifting world) which has produced the obsessional personality of our times.

Halliday's theory is of special interest as it may soon become susceptible to validation. During the past ten years the principles of bringing-up children have changed once more. Breast-feeding has become fashionable again, comforters are permitted and even encouraged, and if, as has been reported (Corwin, 1947), the " self-demand " method of infant feeding does away with feeding difficulties, then this is also likely to achieve widespread popularity. The children of these principles will mature during the next decade or so and it may then be possible to determine if the prevalent type of neurosis changes in the way that the theory predicts.

2. *The Influence of Migration.*

In a complex society, the struggle for survival is constantly tending to produce a selfishness and competition in which individuals are regarded either as rivals or as mere utilities to each other. This socially disruptive tendency is normally balanced by the integrating forces of mutual affection and sentiment. Migration, as Faris (1944) has observed, upsets this balance in two ways. Firstly, by his separation from a community where he was an accepted member and his entry to one where he must win his way, the migrant is forced to adopt a more competitive attitude to life. Secondly, from contact with other ways of life, he loses the sense of the sacredness of those customs in which he was brought up and so stands in danger of losing awareness of the fact that without some such customs society could not exist at all. On the hypothesis that individuals become unstable when their social life disintegrates, it is to be expected that migration will be associated with an increased incidence of mental disease. Some evidence for this will now be considered.

Dayton (1940, ch. 3) showed that in Massachusetts between 1917 and 1933 the incidence of admissions to mental hospitals was highest in the foreign-born population and decreased by regular steps in the native-born of foreign parents, of mixed parents, and of native parents. He also showed that younger migrants tend to break down sooner than older ones and that the excess of male over female admissions was higher in the native-born of foreign parents than in the other groups. Although he suggests no reason for these findings, they are explicable on the assumption that these groups are more exposed (the foreign-born) or more susceptible (the young, and the native-born sons of foreign parents) to the stress of acculturation.

Hyde and Chisholm (1944), in a study of mental disorder among 60,000 army recruits from Boston, found a high incidence of psychopathy in negroes, Irish and Italians, and considered that the stress to which these immigrant minority populations are subject is a causative factor. They argue that immigrants who experience the effects of xenophobia tend to segregate themselves from the surrounding community and to bring up their children in the old culture to which they cling. The children are thus torn between the culture of their home and that of their school, and the conflict leads to a distrust of sentiment and a disrespect for authority which results in antisocial and psychopathic behaviour. This view is supported by the work of Glueck (1918) who showed that the crime rate is higher among native-born children than among their immigrant parents; and by that of Faris and Dunham (1939) who showed that the same is true of the incidence of dementia paralytica.

The psychological consequences of enforced migration have been studied among "displaced persons" who come from Europe to Canada (Tyhurst, 1951). After an initial period of over-activity and euphoria, the migrant gradually becomes aware of language difficulties, differences in custom and value, and a sense of not belonging to the community. He develops a feeling of helplessness, which in turn engenders frustration (leading to symptoms of anxiety and depression), egoism (leading to somatic complaints) and aggression (leading to paranoid trends and hostility to natives). The author considers that his hostility increases xenophobia so that a vicious circle is set up.

Another example of the effects of migration can be seen among people who move from the country-side into the town. This move, as Hyde and Chisholm (1944) have pointed out, is often associated with a great change in cultural atmosphere. In rural areas the effect of law is small but the pressure of social opinion is high; in big towns the opposite is true. They consider that this migration accounts in part at least for the high rate of mental deficiency among Chinese and Negroes in Boston—suggesting that their apparently low intelligence is really "an attitude of stupidity" which country folk are inclined to adopt in the face of difficulties. Similar conclusions on the effect of rural-urban migration on mental disease were reached by Sorokin and Zimmerman (1929).

From the ecological view-point movement from one social class to another may also be considered a form of migration. Not much work has been done on this problem, though Faris and Dunham (1939) have shown that the incidence of alcoholism is high among people who live in districts of a different social level from those in which they were born. They put forward the suggestion that cleverer and more ambitious individuals migrate to better areas and then tend, if they find the competition too severe, to take to drink.

3. *The Influence of Population Pressure.*

(a) *Mental Disease and Isolation.*

Although the relation between mental disease and the physical isolation of an individual from his fellow-men is not of much practical importance in planning for mental health, the theoretical implications are very great. For if a relation can be established, it will support the hypothesis that cultural contact is essential for normal mental health.

From the statistical aspect, Hyde and Kingsley (1944*b*) have shown that mental disorder (as measured by the rejection rate of recruits from the environs of Boston) is high in sparsely-populated areas. The rate was 12.1 per cent. where population density was less than 500 per square mile, as compared with 7.5 per cent. where

density was 500 to 1,000 per square mile. Evidence is also provided by the work of Hobhouse and Brockway (1922). They showed that prisoners kept in solitary confinement or in silence had a high insanity rate; and also that, even when frank insanity did not develop, such prisoners became dull and introverted and ceased to be interested in their visitors or the prospect of their release.

Faris (1934) has drawn attention to the fact that shepherds and persons who live in remote regions or have little contact with other men become seclusive, avoid companionship, and are suspicious and irritable with strangers. He also quotes references which indicate that in communities where social isolation is impossible there are no schizoid personalities and no schizophrenia.

Social isolation is a fate which befalls many old people through retirement from work, bereavement or physical incapacity. In discussing mental deterioration among the aged in Wolverhampton, Sheldon (1948) observes that "domestic anxieties, loneliness and physical defects with consequent limitation of movement appear to be important underlying causes which—by depriving the old person of the feeling that he or she is still necessary and that there is something to live for—seem to induce mental failure" (p. 109). He draws attention (p. 135) to the fact that many old people who live alone do not complain of loneliness. These people, although happy and in good health, are described as solitary eccentrics and of paranoid personality. The difficulty of deciding what constitutes "isolation" is reflected in a paper by Post (1951). He found no clear correlation between breakdowns of 226 old people in South London and their social isolation as measured in terms of living alone or with relatives, but he admits that these criteria may not be satisfactory.

The importance of social contacts for mental health is further illustrated in a paper by Line (1951). He quotes an unpublished thesis of Sawatsky, from the University of Toronto, in which it was shown that the "service" departments of a large business firm had lower rates of sickness, accident, alcoholism, grievances and turnover than "production" departments; and that this lower rate occurred wherever the work involved immediate service to fellow-workmen, easy communication, and opportunity to determine the quality of performance.

Finally, mention may be made of Fraser's study (1947) of neurosis among 2,400 factory workers. He found that a more than average incidence of neurosis occurred in those workers whose social contacts were restricted, while the reverse was true of those whose social contacts were above average. It is possible to criticize this work, however, on the grounds that the meaning of neurosis was not very adequately defined—a criticism which can be made of most statistical studies of this indefinite subject.

(b) *Mental Disease and Urban Conditions.*

It has long been known that the incidence of vice, crime, suicide and mental disease is higher in urban than in rural areas, and the evidence for this is now overwhelming (for example, Tuke, 1878, ch. 5; Sorokin and Zimmerman, 1929; Dayton, 1940, ch. 10). Its significance is less clear. During the past 20 years detailed analyses of the variations within urban areas have been made with the object of shedding more light on the causal relation between big cities and social disintegration. There are two outstanding contributions in this field: that of Faris and Dunham, and that of Hyde and Kingsley.

Faris and Dunham (1939) studied the home distribution of over 20,000 cases admitted to the mental hospitals of Chicago between 1921 and 1931. They showed:

1. That the total insanity rates followed the ecological structure of the city, being highest in areas of social disorganization (slums, "hobo" areas), and steadily declining towards the periphery of the city.
2. That the distribution of the different types of insanity was not the same. Schizophrenia followed the ecological pattern very closely; senile psychosis, alcoholism and dementia paralytica somewhat less closely; manic-depressive psychosis and epilepsy not at all, being randomly distributed.
3. That the varieties of schizophrenia were differently distributed, paranoid schizophrenia being most common in communities which were highly mobile (as measured by the percentage of home-owners, lodgers and single persons), and catatonic schizophrenia in the slum-areas of the foreign-born.

4. That in negro areas the incidence of schizophrenia in negroes was low, but in whites was high, while the converse was true in the white areas. The same differential incidence in minority areas held for dementia paralytica.

5. That the variation in the rates for the foreign-born was not correlated with their varying proportions in different areas, implying that race difference was not an important factor in mental disease.

They next considered the possible significance of their findings. These might be due to chance; but apart from the statistical improbability, a similar (though less detailed) study in the city of Providence yielded the same results. They might be due to a failure to make statistical allowance for the rapid turnover of population in the "mobile" areas; but this mobile population presumably comes from and goes back to other big cities, and even if the rates for the mobile areas were divided by three (allowing for a total turnover of population three times each year) they would still be very high. It could be argued that poor people with mental disease are more likely to be admitted to institutions than rich people, and that this is sufficient to explain the excess of cases from the poorer areas; but if that were the principal factor, then the different types of illness should all show the same pattern of distribution. Finally, the observed distribution might be explained on the assumption that schizophrenics (and to a less extent the seniles, alcoholics and paretics) drift, because of their incapacity, into the areas of disintegrating social life. This assumption can be tested by a comparison of old and young cases, for the older cases have had more time to drift and should therefore be in higher concentration in the hobo areas. Such a comparison was made for paranoid and catatonic schizophrenia, but no significant difference was found.

The authors are thus led to reject each of these explanations and conclude that "the conditions of social life in certain areas are causal for psychosis." They also conclude that the contrast in distribution of schizophrenia and manic-depressive psychosis lends support to the clinician's view that there is a real distinction between these two diagnoses; and that the same is true of the paranoid and catatonic varieties of schizophrenia.

Two criticisms may be made of this work. Firstly, the author's reason for rejecting the significance of "drift" is not altogether satisfactory, for people may drift to disorganized areas long before they become ill—that is, the drift may represent a segregation of personality types rather than of pre-psychotics. Secondly, the authors relied for their diagnosis upon that given in the hospital records, but differential diagnosis in psychotics is notoriously unsatisfactory, and more especially so when the diagnoses are made by a multitude of physicians working in different hospitals for a decade;* and if the diagnostic groups are misleading, then the argument against the selective factor due to poverty loses its force.

This second criticism cannot be made of the work of Hyde and Kingsley (1944a), who personally examined 60,000 army recruits and did not attempt to subdivide the psychoses. They classified the homes of these recruits into six grades according to the "desirability" of the district, and showed that the percentage of men rejected for service on psychiatric grounds increased steadily from 7.3 in the highest grade areas to 16.6 in the lowest. They also showed that whereas this trend was present for psychosis and mental deficiency it was less marked for chronic alcoholism and psychopathic personality, and absent for psychoneurosis. The fact that their results agree with those of Faris and Dunham supports the general conclusion that there is a relation between social conditions and mental disease.

In a further study (Hyde and Kingsley, 1944b), the authors investigated the relation between mental disease and population density. They were able to compare groups in such a way as to eliminate the effects of nationality and socio-economic levels. The total incidence of mental disease (as measured by the rejection rate) was found to increase regularly from 7.5 per cent. where the population density was 500 per square mile to 14 per cent. where it was over 20,000 per square mile. The incidence of chronic alcoholism and psychopathic personality was consistently correlated with population density, and they suggest that the former is due not only to the greater number of bars and stronger advertisement stimulus in crowded areas but also the pressure of competition and customs of privacy which make sociability difficult without alcohol.

* Strömberg (1948), observing that in some state hospitals 9 per cent. of admittances are schizophrenics, in others 41 per cent., remarks that this "cannot be solely the fault of the patients."

4. *The Influence of Local and Temporary Factors.*

Besides large-scale investigations into the general effect of social and cultural conditions on mental disease, a number of studies have been made to determine and analyse the effects of local and temporary conditions of stress. Some of these will now be briefly mentioned.

(a) *War.*

Dayton (1940, p. 18) found a higher incidence of mental disease in Massachusetts during the first World War (1917-18) than subsequently and concluded that this was due to the stress and emotional turmoil occasioned by that event, but he has no pre-war figures for comparison, a fact which also detracts from the significance of his finding (page 346) that certain psychoses (e.g., dementia praecox) were more common then, while others (e.g., the manic-depressive group and psychoneurosis) were less so.

Before the second World War it was widely anticipated in Britain that the bombing of cities would disintegrate civilian morale and cause many psychiatric casualties. This did not happen, and a study by Hemphill (1941) led him to the conclusion that "the early effects of war on the mental health of a large city are negligible." He found that the admission rate to Bristol Mental Hospital was less in 1940 than in the previous 5 years, and in only 25 of the 354 admissions could war be accounted even a minor contributory factor. He suggests that the increased social cohesion and sense of purpose more than outweigh the purely physical and mental strain on the population of a bombed city.

Combatants in wartime are liable to undergo severe stress from fatigue, privation and the sense of danger. A clinical study of stress among bomber crews of the Royal Air Force has been made by Symonds (1943) and his figures have been analysed statistically by Reid (1948). Symonds points out that the condition known as "flying stress" was recognized during the first World War, and was thought at first to be an occupational disease due to fatigue or lack of oxygen. Later, when flying stress was shown to occur in airmen who had flown neither for long hours nor at high altitudes, a temperamental unfitness for duty was assumed. Symonds' study of cases in the second World War indicated that although the predisposition to neurosis led a man to break down sooner, the precipitating cause (or, in ecological terms, the limiting factor) was a breakdown in morale due to the apprehension of being killed. Reid showed statistically that a high casualty rate was associated with an increased incidence of neurosis, and also that the factor of apprehension was more decisive in precipitating neurosis than was prolonged or intensive effort.

(b) *Academic Education.*

Striving for academic honours may be a consequence either of ambition or of the desire to uphold a favourable opinion bestowed on one by past successes or praise. In either case, it has been commonly supposed that the strain on the studious scholar may be very great. As far back as 1876 Farquharson, writing in the *Lancet*, pointed out that young men at a university are at a sensitive period of life and may feel that success or failure then will make or mar their career; "the element of anxiety comes into play, sleep is disturbed, exercises neglected, digestion suffers and the inevitable result follows of total collapse from which recovery is slow and perhaps never complete." Tuke (1878, ch. 6) held that excessive cramming for competitive examinations was one of the principal causes of insanity in the higher classes; "it seems to be thought," he says (page 112), "that the cubic capacity of the British skull undergoes an extraordinary increase every few years and that therefore, for our young students, more subjects must be added to fill up the additional space."

More recently an investigation into the health of Oxford undergraduates has been made by Parnell (1951). He showed that over a three-year period there were 9 suicides, an incidence much higher than in the equivalent social classes throughout the country. Although this figure is too small to be very significant, he also showed that the illness which caused 1.45 students to lose a term or more was in over 50 per cent. of cases a mental illness. His conclusions are that between a

half and one per cent. of undergraduates suffer a serious mental illness or nervous breakdown each year, and that this high incidence is presumably correlated with the stress and competition of academic life.

(c) *Hospitalization.*

It is somewhat too naïvely assumed that the removal of a patient to hospital may do him good but cannot in any case do him harm. Although, of course, hospitalization is never likely to be a major factor in the development of mental disease, there is some evidence that the conditions in certain types of hospital are not so entirely conducive to mental health as is commonly presumed. A recent annotation in the *Lancet* (1950) drew attention to the psychological effects on patients and their relatives of the alarming names which hospitals have possessed—names including the words “cancer,” “consumption,” and “for the dying.” Some of these names have recently been altered. It is becoming the practice to drop the word “mental” (a word which seemed, after its official adoption at once to take over the unhappy connotation of its predecessor “asylum”) from the names of mental hospitals.

Exton-Smith (1951) has indicated that, in the opinion of the staff, relatives and patients themselves, aged people in a municipal hospital before the National Health Act were admitted there to die and that the lack of active treatment and the atmosphere of hopelessness led to apathy and mental deterioration among the patients. A fresh approach to the prognosis and treatment has led to a reversal of the effect of hospitalization on the mental health of the aged.

The dangers attendant on the prolonged hospitalization of children have been stressed by Hunter (1949) and by Anna Freud, while Bowlby (1951) quotes evidence to show that maternal deprivation in early childhood (such as may occur in hospital) can have a far-reaching effect on mental health.

Although, from a study of 116 cases, Hemphill and Murphy (1951) conclude that hospitalization is not an important factor in the aetiology of puerperal psychosis, the history given in the Appendix (p. 594) suggests that hospital environment may occasionally play a part.

SECTION D.

AN EVALUATION OF THE EVIDENCE.

The total amount of mental illness and the degree of social inefficiency which it occasions is staggering and is a tremendous challenge to medicine. “For all industrial civilizations, mental illness has become a problem of the greatest urgency.” (Rodger, 1948.) In the second World War, psychiatric disorders were by far the largest single cause (in America and in Britain) of unfitness for service. Fraser’s work (1947) indicates that neurosis is probably the largest single cause of loss of working time in industry. The proportion of patients who visit their doctor’s surgery with mainly psychological complaints has been variously estimated at between 30 and 50 per cent. (Donnan, 1947). Stock’s figures (1949) suggest that more than 25 per cent. of all incapacity due to sickness is caused by neurosis or psychosomatic disorders. Furthermore, it seems likely (from the evidence already summarized) that the amount of mental illness is increasing.

With such a vast amount of ill-health, prophylaxis offers more hope than treatment; as Rees (1950) has said, “Neurosurgery and psychoanalysis are negligible in the face of the major problems.” The importance of the ecological approach is that it seeks a rational basis for preventive psychiatry (for the empirical treatment of diseases, however successful, adds nothing to our knowledge of their cause). Although the principles of ecology are simple, the complexity of its material, the difficulty of demonstrating the effect of one among a great number of interacting factors, and the impossibility of establishing a causal connection other than by sheer weight of statistical probability, make the significance of its results still largely a matter of opinion. In evaluating the evidence presented in Section C, it must be remembered that this has of necessity been abstracted and somewhat simplified; no mention has been made, for instance, of the relation of mental disease to race, nationality, religion or economic level,* nor of the ecological relation between the incidence of mental disease and that of many physical diseases such as

* It may be observed in passing that these factors, with the exception of economic level, are not thought to be of much causal significance by the majority of investigators.

venereal disease, pulmonary tuberculosis, arteriosclerosis, and the psychosomatic disorders.

The evidence clearly indicates that there is an association between mental disease and social factors. The first great question is: are these social factors causal in the disease or are they symptomatic of the underlying constitutional tendencies? The causal significance of the ecological distribution of certain psychoses has been criticized on the basis of diagnostic difficulties, the selective factor in hospitalization and the tendency to "drift." Another criticism has been made by Krout (1938). Commenting on the findings of Faris and Dunham (see Section C, 3*b*), he argues that the distribution of schizophrenics and manic-depressives can be explained on psychoanalytic theory: the parents of schizophrenics live on a low social level and so cause their children more and earlier anxiety-provoking situations, leading to frustration at the early oral level and so to the liability to schizophrenia; whereas children of better-class parents suffer frustration more at the anal level and so develop a character-structure of the manic-depressive type. However, the general weight of evidence seems to show, and it is part of the thesis here maintained, that social factors are directly and significantly causal in mental disease. Granted this, it remains to discuss the second great question: which of the social factors are most responsible for causing mental disease?

It will be convenient to employ here a concept which has proved useful in plant and animal ecology, that of "limiting factors." A large number of factors are always operative in any particular ecological pattern, but it often happens that the stability of the pattern depends in practice upon only one or a few of these factors, which are then termed limiting factors.* The thesis adopted here is that social communication between individuals is a limiting factor in the maintenance of mental health, and that in modern Western civilization the breakdown of social communication is one of the principal causes of mental disease. By "social communication" I mean the process through which an individual both satisfies his need to feel an accepted member of a stable community and at the same time is subjected to the informal social control which conduces to conventionality in behaviour.

This thesis represents a view which has been expressed by many workers. Blumer (1937) defines social disorganization as a loss of common objectives between individuals, and suggests that it leads to individual disorganization by causing a confusion of aims, a sense of isolation and a loss of "personal orientation." Rodger (1948), addressing the International Congress of Mental Health, said, "It has become clear that the basic fault . . . is the distortion in the structure of society which occurs as a community becomes progressively industrialized"; the modern town dweller fails to obtain the satisfaction of participating in group activities whose nature he understands; the recent great increase in psychological disturbance indicates that we are approaching the limit of man's adaptability with the consequence that primitive impulses are less constrained; "our only hope lies in establishing conditions which will create fresh possibilities of co-operative life." MacCurdy (1950*b*) has argued that man, in addition to the sensory basis of social cohesion which obtains in animals, has also a system of beliefs and behaviour (the *ethos*) whose acceptance by an individual symbolizes his membership of the group; but that when he loses contact with it or it changes suddenly or markedly, he becomes disquieted and is apt to panic like a lost sheep.

According to Faris (1944) the weakening of the consensus unity in society is one of the basic causes of social disorganization in industrial civilizations and an underlying condition of much of the abnormal in human behaviour at the present time. He considers that communication is essential for normal mental development and has developed the hypothesis that schizophrenia is due to progressive isolation of the individual from intimate social relations. This hypothesis is based on the observation that many schizophrenics were "spoiled" as children (see also Gerard and Siegel, 1950; Malamud and Malamud, 1943); and he suggests that this led them to an unreal picture of themselves with consequent rejection by others and the development of a vicious circle. His opinions have the approval of Hyde

* An example may be quoted from Elton (1950). The number of crayfish present in French streams, although influenced by such factors as salinity, aeration and sunlight, is in practice limited by the amount of calcium carbonate in the water. Where calcium carbonate is absent, there are no crayfish; where its concentration is high, crayfish are abundant.

and Kingsley (1944b), who believe in addition that the *type* of culture is an important determinant of mental disease because it governs not only the type of stress but also the acceptability of normal and abnormal outlets.

The relation between mental disease and various social factors can thus be largely explained in terms of the breakdown of social communication. We may briefly examine, from this point of view, the findings of Section C.

Culture and migration.—An individual's personal orientation and sense of membership of a stable group is disturbed when he suffers from a clash of cultures. This will account for much of the mental disease which occurs in primitive societies coming under the influence of civilization and also for that associated with migration. It may further be argued that the high incidence of mental disease in our own civilization is due, partly to the fact that an increasingly complex culture develops an increasing number of incompatible patterns (which means, in effect, that there is a clash of inter-cultural patterns); and partly to a rate of change so rapid that children brought up to one set of rules are confronted with a different set by the time they reach maturity.

Population density.—In sparsely populated rural areas there is monotony, absence of urban "necessities," and a lack of stimulation from outside contacts; in big towns there is intense competition, anonymity and an excess of passive entertainment. All these factors make for difficulty in social relations. In the central and most over-populated areas of big towns the mobility of the population prevents the establishment of enduring friendships, while the high proportion of unmarried adults reduces the influence of family ties.* The prevailing cultural ambition of men to get on, make money and do better than anyone else (Mead, 1949) militates against social cohesion, while the unpreparedness of the modern "lady clerk" for marriage and her resulting incapacity for neighbourliness has been well described by Pearse and Crocker (1943) and is probably in part responsible for the so-called suburban housewives' neurosis. Such an interpretation leads to the natural corollary that social needs at the present time are most adequately satisfied in small towns and semi-rural communities (Mumford, 1938; Hyde and Kingsley, 1944b; White, 1951).

War.—The somewhat unexpected finding that the second World War had no great effect on the incidence of mental disease among civilians is explained if we assume that the increased fatigue and apprehension were compensated by the increased sociability and sense of purpose which the war engendered. Among fighting forces, where the importance of morale has always been recognized, the work of Symonds and of Reid shows that mental disorder occurs when the factor of apprehension outweighs that of morale. We can therefore say that morale (which is essentially a measure of the degree of social communication within a relatively small group) is a limiting factor in the mental health of combatants.

Academic education.—The struggle for academic success parallels that in other fields, but is apt to be more severe because scholars are imbued with the belief that the harder they work the greater their success will be. It may be tentatively suggested that relative social isolation results both from the competitive atmosphere and from the fact that many scholars are struggling to maintain a false opinion of themselves (which, as in the case of spoiled children, leads to their rejection by others).

Hospitalization.—The hypothesis that social isolation is a common factor in mental disease readily explains the mental deterioration of the aged in a hospital where all hope of return to family life is abandoned and where the contractures which result from confinement to bed prevent sociability even among the patients. Children in hospital have every physical need satisfied but it is clear that they are isolated from their principal source of social communication and it seems reasonable to attribute the adverse effects (described by Bowlby and others) to this isolation.

Finally, if the hypothesis is true, then the factor of morale will be of great significance in the treatment of the mentally ill. This opinion has frequently been stressed (Michaels, 1947; Anderson, 1950). Solomon (1950) states that the recovery rates in American mental hospitals were high in the eighteen-fifties, but fell at the end of the nineteenth and beginning of the twentieth centuries. He correlates this with the early optimism of the physicians and their later pessimism. Rubé (1948),

* Halbwachs (quoted by Faris, 1944) showed that in France the expectation of suicide in a parent decreased as the number of his children increased.

noting that the remission rates of schizophrenics in hospital rose each time a new treatment was introduced and gradually fell back to that of the "spontaneous" remission rate, concluded that the important factor was the attention which patients received, while Freudenberg (1947), though less sceptical about the benefits of insulin coma therapy, observes that patients undergoing that treatment do better when treated in groups.

CONCLUSION.

From a survey of the principal facts which are revealed by the ecological approach to mental disease, it is possible to distinguish, in every environmental situation, a constant underlying factor necessary for mental health. This factor, which may be called "social communication," reflects the fact that a human being's normal mental development depends upon his being able to borrow a sense of security from a community by whom he is accepted as a member. Without such a sense of security he can neither develop nor maintain the degree of mental integration which has become normal for social man. The price each individual must pay for this sense of support is conformity with the cultural traditions of his community. Thus a person may be deprived of social communication either because his social environment does not provide sufficient stability or control, or because he cannot or will not conform with its conventions; in either case the social isolation which results constitutes a threat to his mental health.

If this hypothesis is accepted, then a further conclusion may be reached. The rapid changes in the established modes of thought and behaviour which have been occurring all over the civilized world during the past century and a half and which have been due for the most part to scientific discovery and technological progress, have made it increasingly difficult for individuals to obtain the degree of social communication necessary for mental stability. In other words, social communication has become a limiting factor in mental health.

The two questions posed in Section A (p. 579) can now be tentatively answered. We can say, firstly, that at the present time the conditions of modern Western civilization are becoming increasingly important in the aetiology of mental disease; and, secondly, that the principal causative factor in these conditions is lack of the sense of security and worth which an individual must derive from a social group. Such a hypothesis offers a rational approach to the problems of social psychiatry.

SUMMARY.

1. The connotation of the word "ecology" in relation to mental disease is considered and a definition adopted.
2. A historical account of the development of the ecological approach to mental disease is given, and recent work on the subject surveyed.
3. The significance of ecological factors in mental disease is critically assessed and the hypothesis put forward that social communication is a limiting factor in the maintenance of mental health.
4. The principal findings of ecological work on mental disease are shown to be explicable in terms of this hypothesis.

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APPENDIX (see p. 589).

The patient was a married woman, aged 26, admitted on account of a mild puerperal psychosis. She had been well until the birth of her first baby a fortnight before admission. There was no family history of instability and her previous personality was sound although she was always inclined to be anxious. Three years before her marriage she had an affair with a man and feared she had acquired venereal disease, though the tests were negative. During pregnancy she remained very well. Her labour was uncomplicated and her infant, though slightly underweight at birth, was full-term. She attributed her illness to her experiences in the maternity hospital.

On arrival at that hospital, she was put in a waiting-room, where she remained for more than an hour, and it was not until her husband rang to enquire how she was getting on that her presence was remembered and she was taken to the ward. She was put next to a woman who said she had been in labour for nineteen hours and was suffering terribly. All the nurses seemed to be in a great hurry. They said to her, "Don't have your baby yet, we're not ready for it." She could hear screams coming from the labour room and one woman was howling and crying in a hysterical manner. When she was on the labour bed, a nurse kept listening for the baby's heart-beat and seemed to be very worried about it. After the baby was born, a nurse said, "It's a girl," but shortly afterwards another said, "No, it's a boy." Next day a nurse said her breasts were terribly swollen and that something must be done about them because of misshapen nipples. The baby did not feed well at first, and a woman in the next bed, who had said she had not wanted her own baby, kept telling her she was doing it all wrong and would kill the child if she was not careful. A woman in the next ward, whose baby had died, had a blood-group card of the same colour as her own, and this worried her as she knew about the Rhesus factor. Moreover, there were printed cards bearing the patients' names on the doors, and while most of these names were in black type, some were in red; it was generally supposed by the patients that red cards were used to indicate the serious or complicated cases. The patient's own card was in red. She wanted to tell the doctor about her fear of having passed syphilis on to the child, but there was no privacy. There was a continual noise and banging of doors in the ward. She could hear the nurses talking under her window about the patients in the hospital. Voices echoed up and down the corridor and she gradually came to believe that her name was being mentioned by everyone. She became confused and felt she was being "driven out of her mind" by all these worries. According to the ward report, "she says she heard the nurses talking about her baby, saying it had a disease. She told the ward sister that she had syphilis and that the baby was infected. She is unstable and has delusions of persecution and guilt."

On admission to the psychiatric hospital she was emotionally labile but did not appear to be hallucinated. Although over-talkative, she was rational and gave a clear account of herself. The noisy patients in the admission ward frightened her, and she discharged herself against advice on the fourth day. Subsequent reports indicated that she made good progress and recovered uneventfully at home.

Comment.—This history suggests that factors in the environment of the maternity hospital played a part in precipitating the patient's psychosis, and that of these factors, the sense of isolation—of having no one to confide in and of feeling different from the others—was the most important. It is interesting that the patient had never been in hospital before and had therefore had no opportunity of becoming accustomed to the peculiar social climate of a hospital ward.