It must not be forgotten that it was not only in the realm of neuro-histology that Golgi was conspicuous; his researches on malaria were of extreme importance. In 1886 after he had returned to Pavia he noticed that cases of malaria were particularly numerous among the workers who cleaned rice—there being extensive rice-fields at no great distance from the city. His investigations on the blood of sufferers from malaria showed that in correspondence with the diverse phases of the acute attack there were changes in the malarial parasite, and that its evolution was intimately related to the varied rhythm of the fevers (quotidian, tertian, etc.).

Golgi attained the zenith of his fame in 1907 when, as the writer in *La Lettura* puts it, he had now reached the threshold of the Immortals. He was awarded the Nobel Prize at the same time as his friend Giosué Carducci, the great poet of the Risorgimento.

Previously Golgi had received the Thompson Prize from Boston and the Reinecker award of Würzburg. He had been created an honorary graduate of the Universities of Cambridge and Paris.

Though full of years and honours he carried out his research work to the end. His was a universal genius, humane in spirit, exalted in aim and character, and his passing in his 84th year was "*Non flebile quid, sed triumphale.*" H. C. M.

Part I.—Original Articles.

THE SEVENTH MAUDSLEY LECTURE.

The Prevention of Insanity—A Preliminary Survey of the Problem.

Delivered by GEORGE M. ROBERTSON, M.D.,

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At the Annual Meeting of the Royal Medico-Psychological Association, held in the Great Hall of the British Medical Association House, London, on Thursday, July 15, 1926.

INTRODUCTION.

My first duty is to express my thanks to the members of the Royal Medico-Psychological Association for the great honour they have conferred on me in asking me to deliver the Maudsley Lecture.

Sir Frederick Mott, whose recent loss we all deplore, was good enough to suggest that as I had made some practical experiments in the early treatment of mental disorders, I should lecture on

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that subject. I endeavoured to frame a lecture on the lines he suggested, but, as I proceeded, my thoughts on early treatment turned to an earlier and a still earlier stage of disease, then to the causes of mental illness, till finally I found myself contemplating, not the early treatment, but the prevention of insanity.

As it is not possible in the course of one lecture to cover the whole of this field of preventive medicine, I have limited my purview to a preliminary survey only of the problem.

The subject divides itself naturally into two parts. The first deals with those influences which go to the causation of insanity, a knowledge of which is a preliminary step to the solution of the problem. The second part deals with the theories and methods of prevention, in which the prevention of general paralysis of the insane is considered in some detail.

The statistics on which I have based most of my diagrams have been taken from the *Twenty-first Annual Report of the Commission in Lunacy of the State of New York*, dealing with a population of nearly 9,000,000 persons. These supply the unusual feature of recording the number of the insane at quinquennial age-periods in relation to the persons living at these age-periods. No statistics relating to these matters can be expected to be entirely free from error, but even though they be only approximately correct, valuable deductions can be safely made from them, if we avoid the pretence of exactitude.

Finally it is the desire of the Association that this lecture should be of a non-technical character, in order that it may be found of help to the general public.

PART I.

INFLUENCES AFFECTING THE CAUSATION OF INSANITY.

THE OCCURRENCE OF INSANITY.

The first chart deals with the occurrence of insanity and records the total admissions to the State mental hospitals in quinquennial age-periods, and only first admissions have been made use of. The exclusion of readmissions avoids many sources of error, as these are often a continuation only of the original attacks of insanity.

Insanity occurring under the age of 15 is quite negligible. This is not an insanity-producing period of life, and if included in statistics of insanity it has a most disturbing effect, as it comprises nearly a third of the population. If, for example, there is a high birth-rate and a low infant mortality this will increase the population at this period, and the effect of this proportionate

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increase will be to reduce the apparent amount of insanity in the total population, without any real diminution of insanity.

A fair number of admissions occur between 15 and 19, and a larger number between 20 and 24. The amount continues very high up to 40 years of age, after which it falls.

This chart appears to confirm the general impression gained by experience that the early years of life are the most liable to insanity, and that as one grows older, the occurrence of a mental breakdown becomes every year more remote.

Total Number of First Admissions (5,222) *in Quinquennial Age-Periods.*

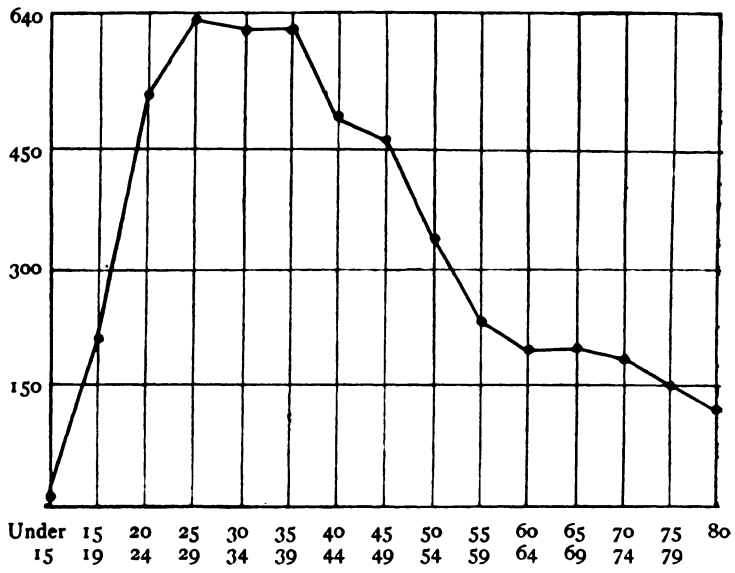


FIG. 1.

There is, however, an error lurking in these superficial views. While these statistics truly represent the number of cases of insanity occurring at the different ages, they do not represent the rate of incidence or the liability to insanity—that is to say, the frequency with which insanity occurs in proportion to the number living at the different ages. The large number of admissions recorded between the ages of 20 and 40 is mainly due to the greater number of young persons in the community, and the small number of admissions at 75 is due to the small number alive at that age.

THE RATE OF INCIDENCE OF INSANITY.

The next chart (Fig. 2) is of more value, as it gives the number of cases of insanity occurring at the different ages, in proportion to the number of persons living at these ages.

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Rate of Incidence of Insanity (calculated on First Admissions) per 100,000 *of the Population Living at Quinquennial Age-Periods.*



FIG. 2.

Graph of Total Number of First Admissions (5,222) *compared with Rate of Incidence of Insanity per* 100,000 *of the Population at Quinquennial Age-Periods* (*Ratio* 3 *to* 1).

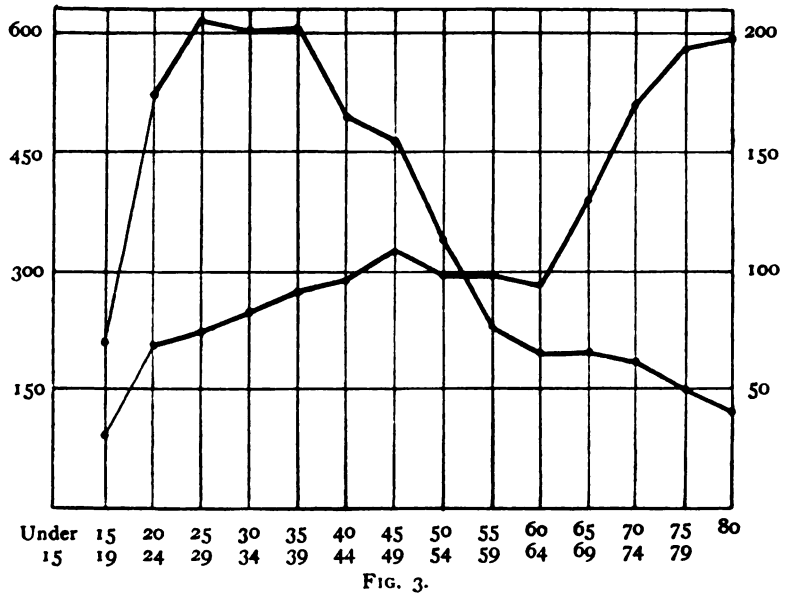


FIG. 3.

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The tendency to develop insanity first shows itself between 15 and 19, but it becomes much more pronounced between 20 and 24. This is followed by a steady rise year after year till the age of 50 is reached. There is then a short period of decline, after which an an extremely rapid rise occurs in old age.

This chart (Fig. 3) shows us that insanity begins to appear at pubescence and adolescence, but it also indicates, contrary to the impression given by the first chart, that adolescence and early adult life are not the periods when one is most liable to become insane. Quite the reverse is the case. There is less insanity at adolescence than at any subsequent period of life, and there is a general tendency for insanity to become more frequent as one grows older.

COMPARISON OF THE OCCURRENCE WITH THE RATE OF INCIDENCE OF INSANITY.

The difference between the number of cases of insanity occurring at the various age-periods and the rate of incidence of insanity at these periods is so very important, and is so inadequately realized even by experienced clinicians, that the two charts have been brought together for the purpose of comparison. It is scarcely possible to imagine two graphs more opposed.

INCIDENCE OF INSANITY AMONG MALES AND FEMALES.

Rate of Incidence of Insanity per 100,000 *of the Population Living at Quinquennial Age-Periods. Male and Female Admissions Separately.*

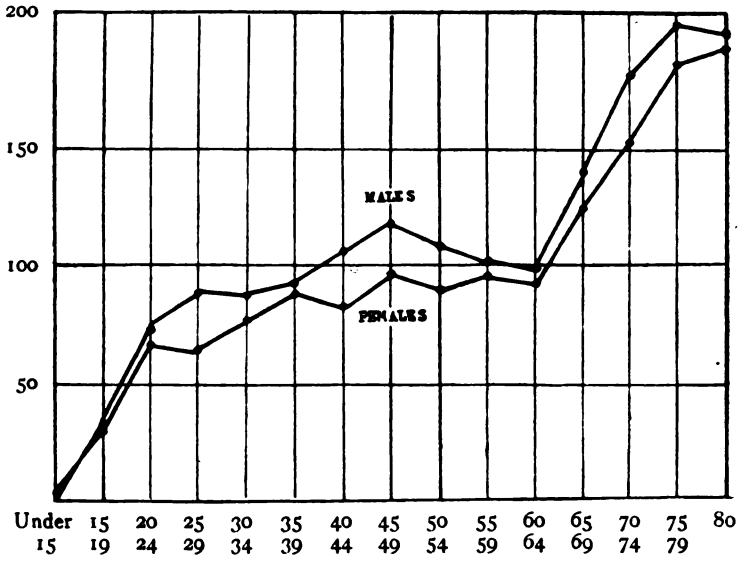


FIG. 4.

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The influence of sex, according to the chart (Fig. 4), indicates that the rate of insanity occurring among males is proportionately higher than it is among females. This is a somewhat unexpected result, as women are more emotional and excitable than men. It is mainly due, according to these statistics, to the greater number of admissions from general paralysis and alcoholic insanity among males.

THE INCIDENCE OF INSANITY AMONG THE MARRIED, WIDOWED AND SINGLE.

The incidence of insanity among the married is decidedly low. It is slightly higher among women under 35 than among men, which is contrary to the general rule, and this is no doubt connected with the risks of child-bearing.

Insanity in Relation to Marriage. Ratio per 10,000 *of Population of same Sex, Age and Condition as to Marriage of Yearly Average Number of Patients Admitted into Institutions in England and Wales from* 1898–1902 *inclusive, divided into Married, Widowed and Single, Males and Females.*

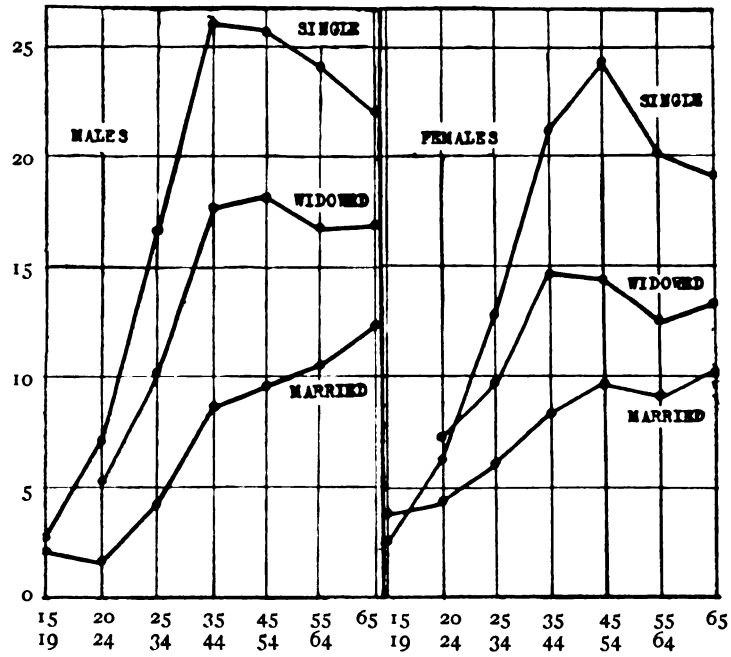


FIG. 5.

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Then as regards widows and widowers, it is found that the loss of a husband or a wife increases in a marked manner the incidence of insanity. Up to the age of 55 the prevalence of insanity among widows and widowers is almost double that among married men and women.

Comparative Annual Death-rate from 25 *to* 50 *Years of Age of Males Divided into Two Groups:* (a) *Single;* (b) *Married and Widowed.* (*Scotland*, 1920–21–22. *By courtesy of Registrar-General.*)

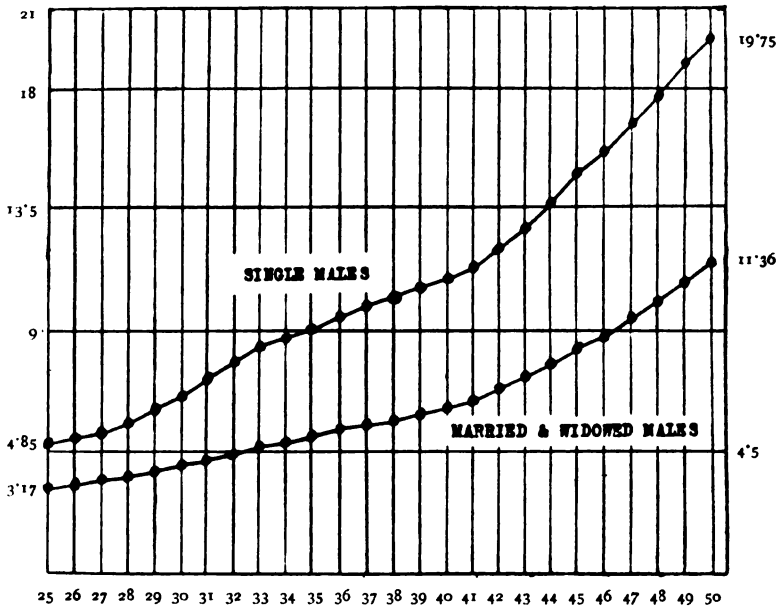


FIG. 6.

These two groups of persons, the married and the widowed (Fig. 6), are identical in all respects except in those consequences which result from the loss of a husband or a wife. These are numerous and important, and the decided effect they produce is not surprising. The symptoms of insanity are to a large extent a wrong method of adjustment to difficulties in life, and the increased amount of insanity among widows and widowers is both a sociological and a biological phenomenon.

Lastly, the prevalence of insanity among single men and women is decidedly high. Between the ages of 25 and 55 it is nearly three times as great as among a similar number of married men and women of the same age.

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The causes of this difference are more involved than those between the widowed and the married. The two latter groups are identical, except as regards their married state, but there are many other important differences between the single and the married. There has been a process of selection among the married, who may be regarded as a picked lot. Both husband and wife have at least selected one another from all others, and on the whole, for good reasons. The average health of the single, on the other hand, is probably lower than that of the married, for ill-health may be itself a reason for remaining single. According to Dr. Dunlop, the Registrar-General for Scotland, the expectation of life for a married man 25 years of age is nearly 5 years more than for a bachelor of the same age.

The cynic has said that the lives of married men are not really longer than those of the single: "They only seem longer." But from actual statistics it would appear that married men score off bachelors in both senses.

One may conclude from the very low incidence of insanity among the married that the condition of marriage and of family life, in spite of its greater responsibilities, nay, perhaps on account of them, is the most favourable mode of existence for men and women. We all know the advice given by a distinguished personage to "Those about to marry." With all deference I submit that this advice was probably wrong. Men between 25 and 35 years of age remaining bachelors die on the average 4 years sooner than married men, and run three times the risk of becoming insane.

THE THREE CRISES OF LIFE.

There are certain critical periods in life when constitutional changes having far-reaching consequences, both mental and physical, take place, and all these crises, of which three are recognized, seem connected in some measure with the function of sex.

At adolescence the balance of the internal secretions of the body is disturbed by the intrusion of those from the sexual glands, and during this transitional period of chemical, physiological and psychological adjustment, nervous instability may be present. For all practical purposes, insanity occurs for the first time during this period of life.

Leaving on one side the effect of heredity, which will be referred to later, insanity is seldom due to one cause, but is usually the result of the combination of several causes acting simultaneously. There is almost always a physical cause present, but it is usually combined with mental causes as well. The physical cause in adolescent insanity is the physiological disturbance produced by the internal

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secretions. The mental cause is the change in the social status of the adolescent or young adult. He is emerging from a state of pupilage and of protection to face the world. He has to adjust himself to the problems of life, and the most disturbing problems during these early years are those connected with sex. It is not surprising that a disappointment in love may help to produce mental disorder during this crisis.

Rate of Incidence of Insanity per 100,000 *of the Population, indicating the Three Crises of Life.*

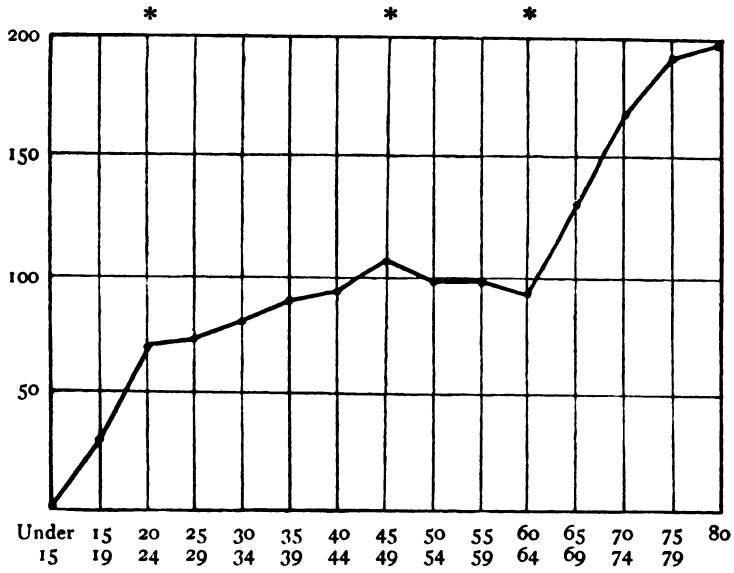


FIG. 7.

The next crisis is the climacteric, occurring between 45 and 50. The existence of this crisis in the lives of women has always been recognized, but nervous changes of an analogous character probably occur about the same time in men, judging by the high incidence of insanity during these years. The chart (Fig. 8) of alcoholic insanity illustrates this feature in men in the most striking manner. It is an age when the powers first begin to fail; an age when to keep abreast of younger competitors increased effort is needed; when in golf men are inclined to press, with disastrous consequences.

The climacteric having been surmounted, the incidence of insanity for 15 years falls slowly but steadily. This period, accompanied by a damping down of the fires of emotion, is most valuable. The mind has become stabilized. The energy, the enthusiasm and the

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originality of youth may have declined, but wisdom has increased with experience of life. The brilliant advocate now becomes the sound judge; the dashing soldier, the sagacious leader. Men of this dominant age guide the destinies of mankind.

At 64 another crisis occurs, known as the grand climacteric, for the period of senescence has begun. After this the rate of incidence of insanity mounts up year by year with extreme rapidity. Between 65 and 70 it is almost double that of the period of adolescence; over 75 it is almost treble. The connection of the period of adolescence with insanity is recognized by all. But it is not so close as that between senescence and insanity, which is more marked even than the chart shows, as many senile persons are cared for at home, and are never registered as insane.

The grand climacteric is not generally regarded as being so definite a crisis as the climacteric of middle age, but according to this chart (Fig. 7), it is quite well marked. It supports the regulation of the Civil Service that 64 is the age for retirement.

HEREDITARY, ACQUIRED AND SENILE INSANITY.

Each of the three critical periods of life is associated with the prevalence of a characteristic type of mental disorder.

The Characteristic Forms of Mental Disorder during Adolescence, Middle Age and Senescence; the Hereditary, the Acquired and the Senile Insanities per 100,000 *of the Population; Dementia Præcox, General Paralysis and Alcoholic Insanity, and Senile Insanity.*

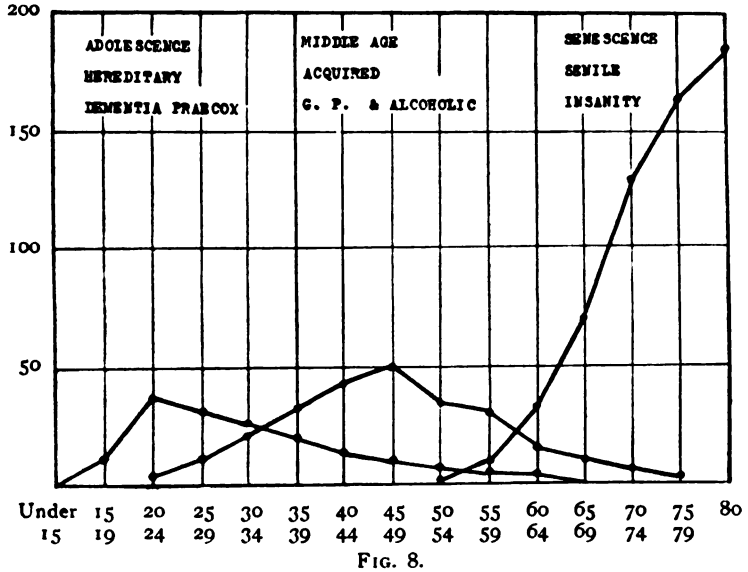


FIG. 8.

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During adolescence and the early years of adult life the most prevalent and characteristic form of insanity is dementia præcox. This is an hereditary insanity, and external causes play a minor part only in its causation.

During the middle period of life the most prevalent forms of insanity, at least among males, are general paralysis of the insane and alcoholic insanity. These are both acquired insanities. The hereditary or constitutional element plays a minor *rôle* in their occurrence, which is mainly due to an external and avoidable agent.

During old age senile insanity is responsible for at least a half of the mental breakdown that occurs. It is mainly due to decay of the body and to the wearing out of the machine through age.

These three characteristic types of insanity—the hereditary, the acquired, and the decadent—are associated with these three age-periods, namely, early adult life, middle age, and senescence, although not limited to them. They will now be referred to in detail.

THE HEREDITARY INSANITIES.

Maudsley says in his *Pathology of Mind*: "A person does not inherit insanity, but a predisposition or tendency," and the unsound strain may declare itself in many ways. There are two forms of hereditary insanity that we will consider, namely, dementia præcox and manic-depressive insanity.

DEMENTIA PRÆCOX.

Dementia præcox is most prevalent between 20 and 24 and in the early years of adult life. The early or precocious occurrence of this form of insanity may be taken as evidence of its strongly hereditary nature. Further evidence of this is its malignant character, for only 15% of those afflicted with it recover.

As in the population young persons greatly predominate, the number of admissions of dementia præcox is large; and as the majority of patients suffering from it do not recover, they become permanent residents and fill our mental hospitals. The impression has thus been created that the early period of life is the most liable to insanity. If we refer to insanity in general, adolescence is actually the least dangerous period, as it is not liable to any forms of insanity excepting those that are hereditary. If, however, we refer to the hereditary insanities alone, in the prevention of which the patient is comparatively helpless, then adolescence is undoubtedly a most dangerous period. As the individual grows older the danger of a breakdown from dementia præcox fortunately grows less, and

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between 40 and 45 it is only a half of what it is between 20 and 25. This increase of safety is, however, not suddenly acquired after 25 or even after 30, as is assumed by many clinicians when giving advice to those with a hereditary tendency who desire to marry. The advice to delay marriage till 25 or even 30 is quite sound, but the diminution of the risk is not a sudden, but a gradual process, as may be clearly seen from the graph (Fig. 9) of the total number of cases.

Total Admissions of Dementia Præcox in Quinquennial Age-Periods per 100,000 *of Population.*

Male and Female Admissions of Dementia Præcox per 100,000 *of Population.*

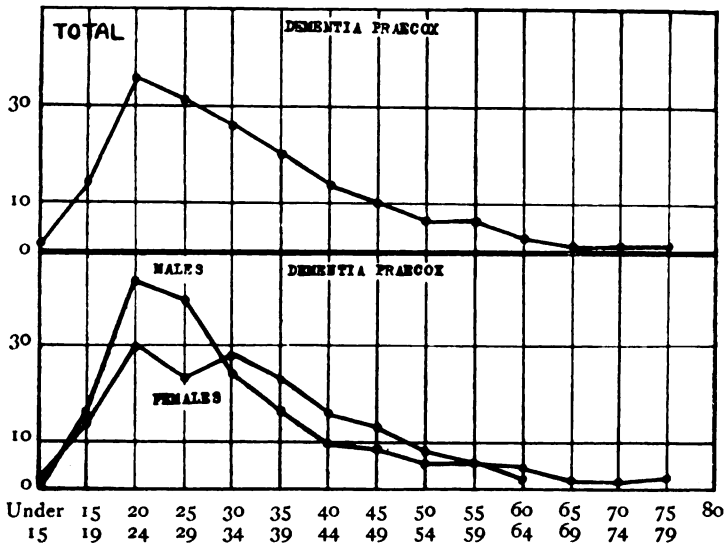


FIG. 9.

Dementia præcox is at first more prevalent among males than females. This feature is confirmed by Kraepelin's statistics, but what it signifies can only be surmised. It may be due to the fact that the sexual problem is felt more severely by males than by females, and that between 20 and 30 the struggle for existence is harder on males than on females, as many of the latter still continue to lead protected lives at home during these years.

MANIC-DEPRESSIVE INSANITY.

Manic-depressive insanity is the other important form of hereditary insanity. It is not restricted to early adult life, and its prevalence then is not so marked a feature as is the case with dementia

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præcox, but its hereditary character is displayed by its tendency to recur. It forms by far the largest proportion of the readmissions to mental hospitals. It is the benign type of hereditary insanity, as the vast majority of patients suffering from it, who are in good bodily health, make excellent recoveries.

Its rate of incidence is fairly high at the later periods of life, owing to the occurrence of involution or climacteric melancholia.

Incidence Rate of Manic-Depressive Insanity per 100,000 *of the Population, Male and Female First Admissions Separately.*

The Hereditary Insanities: Total Incidence-Rate of Dementia Præcox and Manic-Depressive Insanity in Quinquennial Age-Periods, Separately.

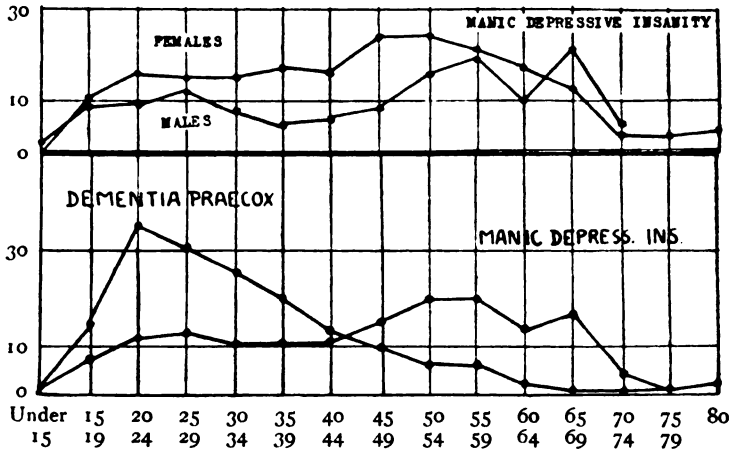


FIG. 10.

The anxieties of life may at last tell at this period on those with hereditary tendencies, but the occurrence of insanity for the first time at the climacteric or presenile period denotes in individual cases that the hereditary predisposition has not been strong.

Manic-depressive insanity is a disorder of the emotions, and consequently it is more frequent among females than among males. The rate of incidence among females is uniform from 20 up to 40 years of age, and a maximum is reached at the climacteric period. The rate as shown on the chart (Fig. 10) is particularly low in males between 30 and 50, and this may possibly be due to some cases of this disorder being wrongly diagnosed as alcoholic insanity because they had taken to drink. In the elated phase of the disorder the patient drinks because of his high spirits and his loss of the power

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of self-control, and in the depressive phase in order to drown his sorrow or to raise his spirits. This explanation cuts both ways; it is so easy to find an excuse for drinking.

READMISSIONS.

Readmissions have been excluded hitherto from our statistics, but they may be conveniently referred to here. Out of a total

Diagrammatic Representation of Twenty Years of a Patient's Life to Illustrate the Recurrent Tendency and the Irregular Periodicity of the Relapses of Manic-Depressive Insanity.

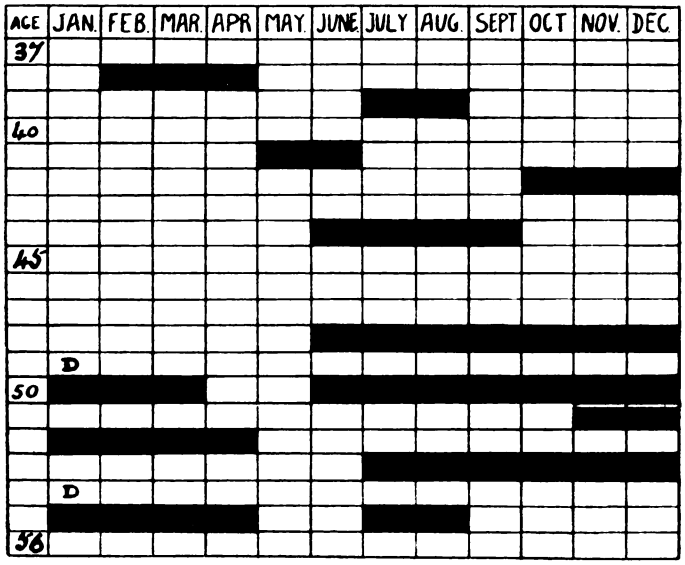


FIG. 11.

of 6,625 admissions there were 1,403 readmissions, or more than a fifth of the whole.

By far the most prevalent form was manic-depressive insanity. It constituted about 30% of the male and 48% of the female readmissions. As it is essentially an emotional disorder it is more prone to occur among women. As it is also recurrent and periodic, relapses are favoured by the functional periodicities of the female sex.

The next commonest form of insanity was dementia præcox, which constituted fully 25% of the readmissions. These two forms of hereditary insanity thus accounted for more than a half of the

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male readmissions and three-fourths of the female. There was, however, a striking difference between the benign and the malignant types. Whereas two-thirds of the cases of manic-depressive insanity were readmitted on account of a fresh attack of insanity after complete recovery had taken place, only 15% of the cases of dementia præcox had recovered. The rest were not genuine recurrences, but a continuation of the original attacks.

The chart (Fig. 11) illustrating the recurrent tendency of manic-depressive insanity is taken from Kraepelin. During 20 years the patient whose case has been depicted suffered from 12 distinct attacks of insanity, of which 10 were maniacal and 2 depressive. During the first decade there were 5 short attacks, varying in duration from 2 to 4 months. But during the second decade there were 7 attacks and 4 of these lasted 6 or 7 months. As the patient grew older, therefore, the attacks became more numerous and longer, and 2 of them were depressive in type. More than a half of the attacks began in the months of May, June or July, the onset of insanity being more frequent during the summer than the winter months.

THE ACQUIRED INSANITIES OF MIDDLE AGE.

The two most important forms of insanity in middle life are alcoholic insanity and general paralysis of the insane, and both occur more frequently in men than in women (Fig. 12). They account for more than a half of all the insanity that occurs among men between the years of 35 and 55. Both of them are acquired forms of insanity, and therefore preventable. If this object were attained, the graph (Fig. 13) of the incidence of insanity during the middle period of life in males would be very different.

ALCOHOLIC INSANITY AND THE INFLUENCE OF HEREDITY.

The diagnosis of alcoholic insanity is uncertain, and depends largely on the personal equation of the observer, as the part played by heredity creates uncertainty in every case.

Mercier pointed out that there were always two factors in the causation of alcoholic or any form of insanity—an internal and an external. The internal factor represented the hereditary tendency; the external, some exciting cause in the environment, such as alcohol, influenza or worry. These factors are always inversely proportional. If the internal factor or hereditary tendency to insanity be strong, then the external or alcoholic factor may be weak, and only a small quantity of alcohol may cause insanity (patient "A"); if the hereditary predisposition to insanity be slight, then the external cause is strong and severe, and to become insane, such a patient must drink a large amount of alcohol (patient "B") (Fig. 14).

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The Acquired Insanities (General Paralysis and Alcoholic Insanity), Male and Female Admissions Separately, per 100,000 *of the Population, with Total Admissions.*

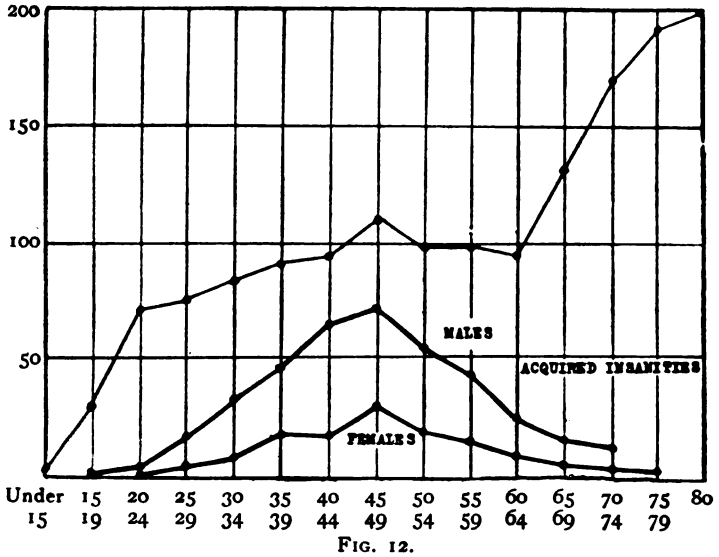


FIG. 12.

Total Male Admissions in Quinquennial Age-Periods, and Male Admissions from which all Males suffering from Alcoholic Insanity and General Paralysis, Acquired Forms of Insanity, have been deducted. (*Prevention.*)

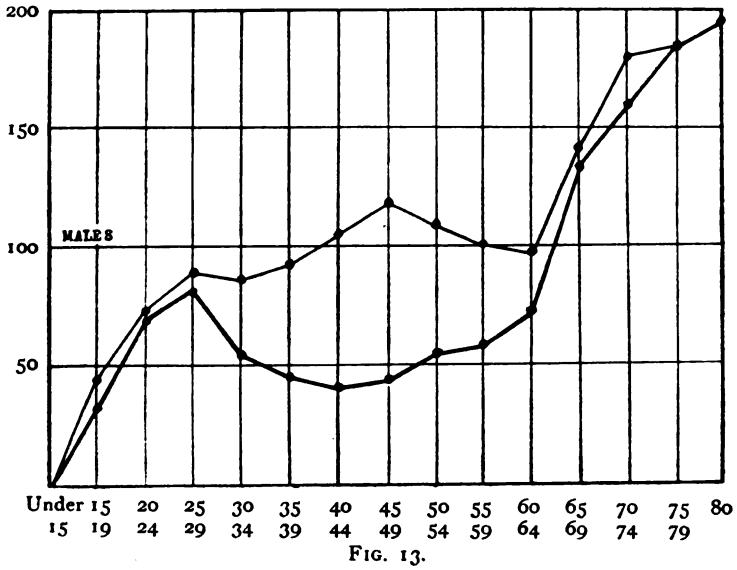


FIG. 13.

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It is thus we account for the fact that some persons become unbalanced by a small quantity of alcohol, while the potations of others are deep and strong, but seemingly harmless. To suffer from alcoholic insanity, therefore, one must first be alcoholizable by hereditary predisposition, and apparently some are very slightly so. Alcohol, according to Féré, is the "touchstone of mental

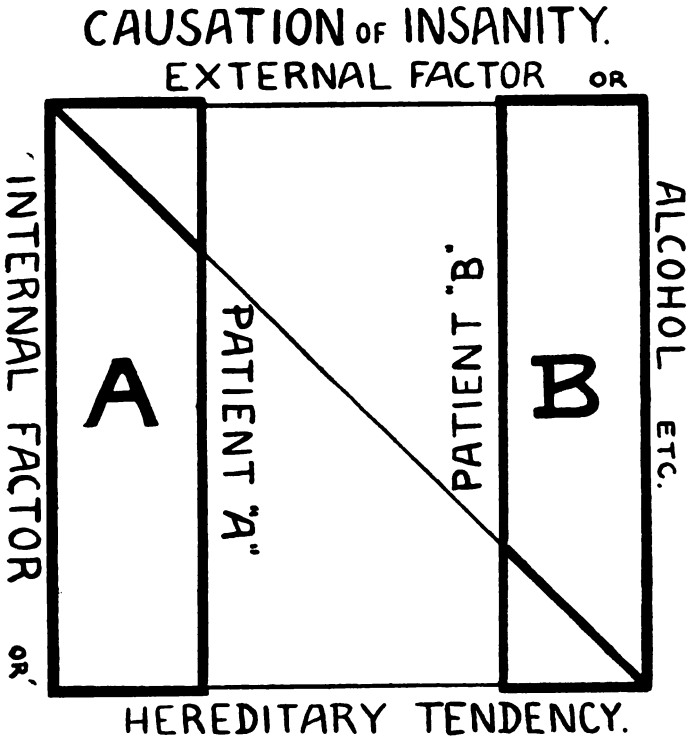


FIG. 14.

equilibrium," and to be able to resist its toxic effects betokens a well-controlled mind and a sound brain.

The graph (Fig. 15) of alcoholic insanity in males is as regular and perfect as the outline of Fujiyama, and one cannot fail to accept it as embodying some important truth. The sharp apex of the cone is between 45 and 49 years of age, and this would seem to indicate that there is in the male a climacteric which corresponds to the female menopause. Such a critical period might either make men more susceptible to the effects of alcohol, as has been suggested by Sir Frederick Mott, or may induce them to drink more.

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Alcoholic Insanity and General Paralysis. Male and Female Admissions Separately, per 100,000 *of the Population.*

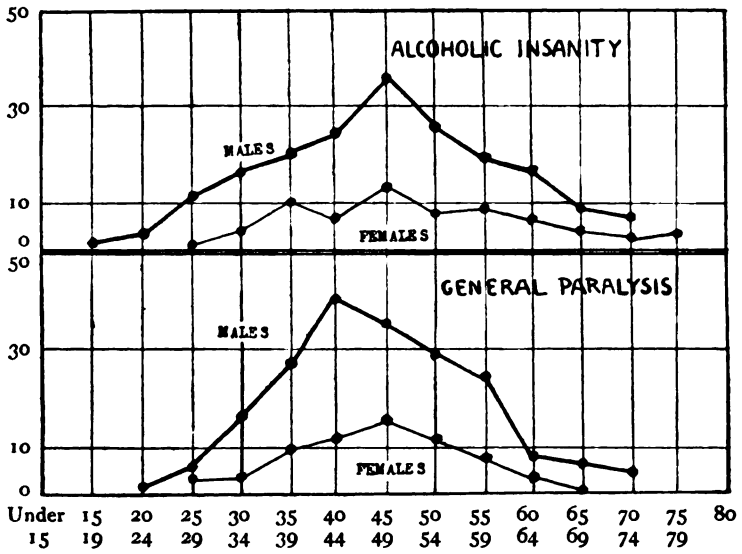


FIG. 15.

GENERAL PARALYSIS OF THE INSANE.

The other outstanding insanity of middle life, at least among men, is general paralysis of the insane (Fig. 15). Its incidence in both sexes resembles that of alcoholic insanity, but it begins later, terminates sooner, and it reaches its period of maximum incidence 5 years earlier than is the case with alcoholic insanity. Its onset is probably determined by the date of infection by syphilis.

At the International Congress held in Paris in 1922 to commemorate the centenary of the discovery of general paralysis, it was affirmed that no cure for it had yet been devised. We are now in possession of two promising forms of treatment, and if it cannot yet be affirmed of them conclusively that they cure the disease, they at least often stay its course and produce a remission of the symptoms. These remedies are benign tertian malaria and tryparsamide. In early cases after malarial treatment about a third are able to return to work and another third are distinctly improved. Apparent recoveries have also been effected by tryparsamide alone, which is by far the most potent arsenical preparation for the treatment of this disease. There is no reason why the action of these two remedies should not be combined.

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While the International Congress of 1922 was engaged in lamenting the absence of a cure for general paralysis, the number of deaths from this disease in England and Wales was found to have fallen in the three years 1919–20–21, as compared with the three preceding years, over 28% in the case of men and 30% in the case of women. Such a decline in a disease deemed incurable was an astounding and unexpected phenomenon that will be referred to later.

SENILE INSANITY.

Every human being, if he lives long enough, will suffer at last from the mental decay of old age. The period of involution begins insidiously after 50, but by 65 senescence has definitely set in. There is, however, no physiological process that shows more extreme variations than the time of onset of senectitude.

Incidence-Rate of Senile Insanity per 100,000 *and Death-Rate per* 1,000 (*Scotland,* 1924) *in Age-Periods.*

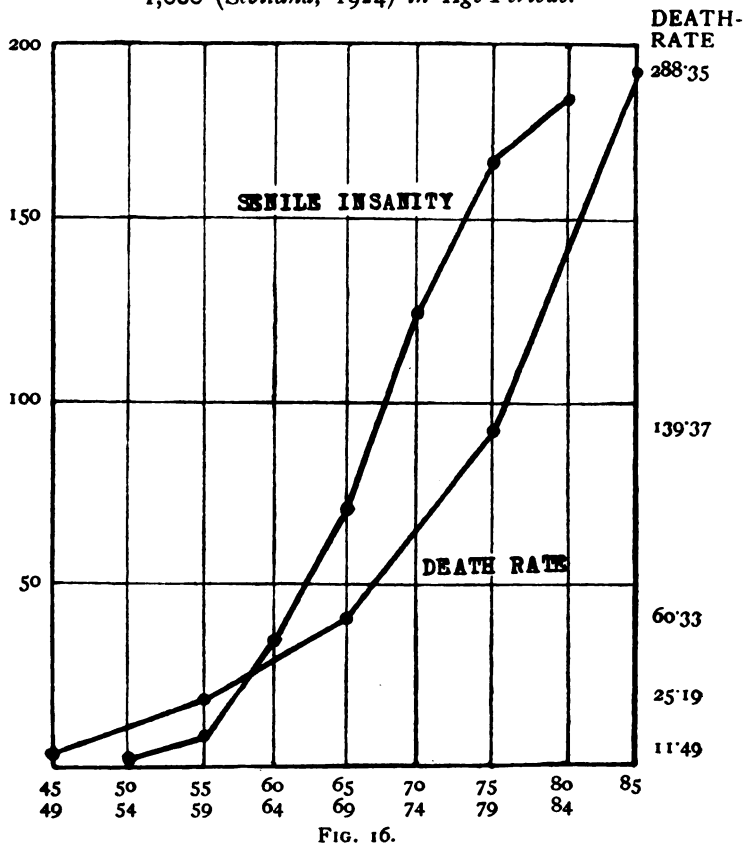


FIG. 16.

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About the oldest man I ever saw, broken in body as well as in mind, was a little over 50, and his senility had developed with great rapidity. Yet there are many who retain a surprising degree of physical and mental vigour when nonagenarians.

Senile insanity is closely related to the waning of the bodily functions and to the physical decadence that accompany old age, as well as to those diseases to which the aged are liable. It occurs when the death-rate is high, and if its incidence be compared with the death-rate after 45 years of age it will be found that the correspondence is close. The death-rate (Fig. 16) in Scotland in 1924 at 45 was 11·5 per 1,000, and it more than doubled every 10 years till it reached 288·35 per 1,000 at 85 years of age:

Ages	45–54	55–64	65–74	75–84	85 and over.
Rates	11·49	25·19	60·33	139·37	288·35

THE DEATH-RATE AND SENILE INSANITY.

Dr. John Carswell has made some interesting observations on the relation between the death-rate and the occurrence of insanity.

He selected 10 wards in the City of Glasgow with a combined population of nearly 400,000, and divided them into two practically equal groups, the one with a death-rate below and the other with a death-rate above that of the whole city. These may be called for convenience the healthy and the unhealthy groups. He also subdivided each group into two sections, the one consisting of persons between 15 and 44, and the other of those above 45 years of age—in other words a younger and an older section. No estimate was made of the proportionate numbers in each section.

The Occurrence of Insanity in a Group of Areas in which the Death-Rate was Above the Average of the Whole City of Glasgow, and in another Group in which it was Below the Average.

Group.	Population.	First attacks of insanity.	
		Ages 15–45.	Ages over 45.
Unhealthy . . .	199,000	186	149
Healthy . . .	198,000	165	91
Difference in number of attacks		21	58

Dealing first with the younger sections, and making use of first attacks only, he found that in 3 years there were 165 cases of insanity in the healthy group and 186 in the unhealthy group. This difference was slight, so he concluded that health of body was probably not the main factor in the production of insanity in the

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early period of life. From a detailed analysis of the causes of insanity in these cases he ascertained that 67% were due to constitutional or hereditary influences.

Dealing next with the older sections he found a very different state of affairs. In the unhealthy group 149 cases of insanity occurred as compared with only 91 in the healthy group, being an increase of 61%. He therefore concluded that ill-health of body was an important factor in the production of insanity in the later period of life.

Improved social conditions do not apparently lead to any marked diminution in the amount of insanity during early adult life, as the forms of insanity are then mainly hereditary. They apparently reduce the amount of senile insanity, and their influence may be twofold. They may act directly on the health of mind and body of the aged, or the diminution in the amount of senile insanity may be the result of good social conditions enjoyed in early life.

PART II.

PREVENTION.

"The first duty of medicine," according to Sir George Newman, "is not to cure disease, but to prevent it." The preventive aspect of this survey falls naturally into a consideration of the measures to be taken to deal with the three types of insanity I have described, namely, the hereditary, the acquired and the senile.

PREVENTION OF THE HEREDITARY INSANITIES.

EUGENICS.

It is sometimes alleged, on the original authority of Morel, that when insanity makes its appearance in a stock, it arises at an earlier age and in a more severe form in every subsequent generation, so that in the third or fourth generation it is represented by imbecility and idiocy, and the stock comes to an end. This progressive degeneration was described by Sir Thomas Clouston as Nature's method of killing off a bad stock. There are errors as well as false suggestions in these statements.

When insanity first makes its appearance in a stock there is no necessity for it to continue, far less to arise in an earlier and more severe form in each successive generation. If bad stock marries into bad, the offspring are naturally less fit than either parent, and if this policy be continued for two or three generations the family ultimately comes to an end. But, just as insanity may appear in

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a family previously sound, owing to unfortunate mating, so it may also disappear, when it has once occurred, owing to propitious unions. Maudsley was clearly of this opinion. He writes, " There appears to be at work a silent testimony in nature to restore an insane stock to a sound type, if regeneration be possible." Also, " The two principal modes by which an insane strain in a family is worked out of it are, first, propitious unions in marriage, with sound stocks, whereby it is attenuated, neutralized, perhaps

The Ages in Percentages at which Insanity Developed in the Offspring of Insane Fathers and the Ages at which Insanity Developed in the Fathers. Effect of Increased Hereditary Predisposition. Precocity. (*After Mott.*)

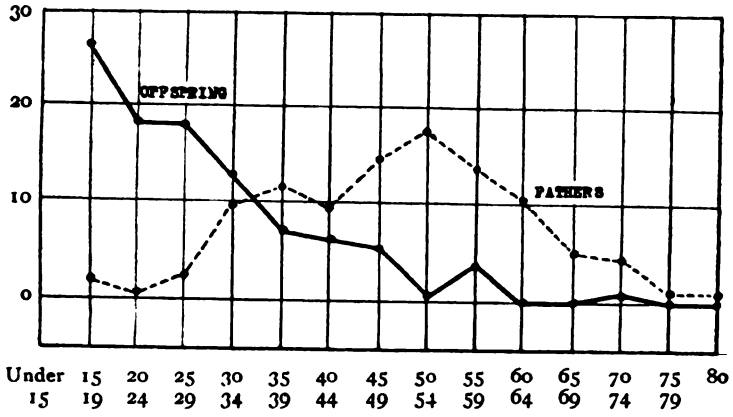


FIG. 17.

ultimately extinguished; and secondly, propitious dispositions of the circumstances of life." Of these methods he remarks that without doubt the first is most effective.

A process allied to progressive degeneration frequently occurs, to which Sir Frederick Mott has given the name " antedating or anticipation." In this condition an hereditary form of insanity, usually dementia præcox, appears in the offspring at an earlier age than an attack of insanity in the parent.

These precocious attacks of malignant insanity are, I believe, the result of unpropitious unions, for they indicate that the hereditary tendency in the offspring is greater than it is in either parent. The attacks of insanity in the parents, as will be seen in the chart (Fig. 17) occur at an age when the acquired forms are most prevalent and when the hereditary influences do not predominate.

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It is clearly a social duty on the part of those inheriting a neuropathic strain to avoid marriage into stocks with a similar weakness, if offspring be expected. In the case of those with obvious mental defect, or subject to a severe psychosis, marriage should not be contemplated. Many will, however, be prepared to risk much, provided the question of offspring can be excluded.

Belief in the evil effects of the marriage of cousins has sunk deep into the popular mind, but in itself consanguinity does no harm, provided the stock be good. Cleopatra, whose beauty and whose intelligence attracted the attention and interest of two such famous men as Julius Cæsar and Mark Antony, was the descendant of a much closer union. In six generations of her immediate ancestors, there were three marriages between full brother and sister.

As for the question of sterilization, I am not convinced by the theoretical arguments in its favour. I believe the bulk of the medical profession regard the proposal as such an outrage on their traditional ideals of duty towards their patients, that its adoption is impracticable in this country. I cannot imagine a board of physicians calmly sentencing a victim to this cold-blooded and superfluous insult.

Enthusiasm has overstepped the bounds of reason when a writer declares that "if sterilization should be permanently prohibited, it will be impossible to prevent a slow but steady deterioration of all such civilized races as are so strongly endowed with human sentiments as to prevent infanticide from becoming a permissible practice."

Our knowledge of the hereditary element in the causation of insanity must be incomplete, seeing that the amount of mental instability actually existing in the general population is still unfathomed. The following little-known inquiry into this subject by so eminent an authority as Sir Thomas Clouston is rescued from the obscurity of an annual report, and if pondered over may temper the zeal of enthusiasts for extreme measures.

AN ENQUIRY INTO HEREDITARY PREDISPOSITION.

"Nothing is more common than the boast that 'our family at least is quite free from insanity.' It might make the world more pitiful and tolerant, and a little humbler, if the plain fact were more fully realized that few families indeed are free from either mental disease, or those brothers and first cousins of the disease, which may, by like marrying like, be easily transmuted into insanity in the next generation. It would surely tend toward more sympathy and less false shame if it could be shown that in every second family in the kingdom, either mental disease,

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congenital imbecility, idiocy or epilepsy, which are all most closely allied diseases of the same part of the brain, could be shown to have occurred in the past three generations. That, at least, is the result I have arrived at from my investigations into the matter. One of the most striking proofs of this was afforded by an inquiry I made into the family history of 83 families, taken at random, in a country parish in Scotland, all the members of which were personally known to me for three generations. I took every family I really knew, and no others. I made no selection. They were all country people, decent folks, hard-working, thrifty, few very poor, indeed mostly money-loving, with scarcely any drunkards. Vice in its grossest forms was unknown. Intermarriage of cousins was no doubt common, for the district is rather isolated. But of bodily degeneracy there is little. At kirk and market the people look a fine healthy race. The mental disease did not always consist of those marked and unmanageable forms of it that have to be sent to asylums for treatment. I took advantage of my intimate knowledge of the people as a doctor, to count in the lesser attacks of melancholia, the milder delusional states and the milder degrees of imbecility, that would not have gone into any public statistics of lunacy or census schedules. Still, they were all mental diseases or defects, just as truly, from a scientific point of view, as our acutest case in Morningside. The result was this, that of those 83 families, I knew that in 41 of them one or other of those four diseases had occurred. And I have no doubt whatever that, if my information had been quite perfect, a few more families would have been found to have produced those diseases. When we consider that three generations do not nearly give a complete field for the investigation of any family tendency, for I have known insanity skip four generations and then reappear in the exact form in which it existed a hundred years before, we see how little room there is for boasting, and how much for manful commonsense and sympathy. Above all, the lesson of this study in heredity is to show how much room there is for the practice of mental hygiene, of moral control, of abstinence from deteriorating agents, of cultivating good health, and of arranging marriages on right principles, to counteract, and in time perhaps to eradicate, those morbid nervous and mental tendencies. Of course there were in those families very strong and very slight tendencies towards those brain diseases in different cases. In many of them there was just one idiot, or one epileptic, or one slight melancholic in the three generations, while in other instances there were many cases in each generation." (*Annual Report of the Royal Edinburgh Hospital, Morningside*, 1893.)

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MENTAL HYGIENE OF CHILDHOOD AND ADOLESCENCE.

To eradicate "morbid nervous and mental tendencies" is the avowed aim of eugenics, and, stripped of excrescences, it may one day help to lay the foundations of a healthier and a more efficient race. That goal achieved, it must still be remembered that the task of producing healthy-minded men and women does not end. The mind of every human being is a developing organism, bound by its nature to react to the influences of its environment, which produce the most profound modifications. This is especially so if they are brought to bear during the most plastic phase of life, namely during childhood and adolescence. Even the least promising material of all—the defective child—shows the influence of discerning management and an environment adapted to its responsive capacity. That consideration alone goes far to justify the large expenditure of public funds in the provision of special institutions and schools for this class. The pity is that we squander the advantages so laboriously acquired in these by making indifferent provision for lifelong care, and the rectification of this failure is one of the necessities of our time. One might add to it the need for the earliest possible recognition of mental defect, and for a closer study of the ante-natal as distinguished from the hereditary conditions of defect. One authority, Dr. Clarkson, of the National Scottish Institution at Larbert, has expressed the view that anything up to 50% of the defectives under his care owe their impairment, not to the transmission of inferior qualities, but to ante-natal conditions and injuries at birth, many of them avoidable or remediable.

It is with the normal child that the best results are achieved. The mind of man is not born—it is made, and to the making there goes a long succession of agencies, each one leaving its own peculiar imprint. Herein lies the inspiration of psychological medicine. For, as time passes, the inner significance of these agencies emerges more clearly, and with increasing knowledge of them there comes greater ability to control and direct them.

At the outset all these forces are combined in the personality of the mother, and practical hygienic measures must be concentrated on her rather than on the child; the relationship between them is one of absolute dependence on the one side and of almost exclusive devotion on the other. The subsequent development of the child involves the transition from this state of dependence to comparative freedom. The advance is gradual, and many of its steps are taken unconsciously. The social instincts have to be developed through contact with the other members of the family, and later in ever-widening circles with the community at large. During the

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pre-school period unlimited opportunities for moulding the character present themselves to the understanding parent. The child must learn to face difficulties with courage and resource, and to clip the wings of soaring fancy. Such a habit of life makes large demands on patience and sympathy, but the results are well worth all the trouble involved. Home influences have subsequently to be tempered by the discipline of school life. Through such experiences the primitive, self-seeking tendencies are subordinated to the higher self, and their latent energy set free for the achievement of social ends. Happy the child whose parents and teachers recognize the need for this sublimation, and ensure its success by the provision of appropriate channels. When a real crisis emerges, the capacity to surmount it will be largely measured by the results of past training and experience.

The danger inherent in this long travail is lest in the end the primary instinctive tendencies should prevail over these educative influences. The former will inevitably fail in the stress of adult life when brought into contact with society, though they do afford an immediate, if transient, satisfaction. Out of the failure to master these temptations is born the type of temperament in which the seeds of dementia præcox and other forms of mental disorder find a congenial soil. Without doubt, the mental hygiene of childhood and of adolescence plays a most important part in the prevention of insanity.

PROPHYLAXIS.

A great deal more can be done by means of prophylaxis than has been done in the past. It may be defined simply as the prevention of an attack of insanity when it threatens, but before definite symptoms have appeared. It, however, goes further than this, as it includes the taking of measures to avoid conditions arising which would favour an attack, for hygiene of the mind and of the body is prophylaxis in a general way. The term is applied here to particular steps taken with the immediate object of protecting the mind when actually threatened by danger.

There are certain persons for whom prophylaxis is almost essential. For example, those with a known hereditary predisposition who have already suffered from an attack, and more especially those in whom the attack has been of a recurrent type, such as manic-depressive insanity. When such a case occurs the family physician should also bear in mind that the other members of the family inherit a similar predisposition.

What are the indications or warnings that should be attended to?

First among these is loss of sleep. The neuropathic individual

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is usually a bad sleeper, so every time he loses a night's sleep, it must not be assumed an attack of insanity is impending. But extreme or prolonged insomnia is a danger and precautions should then be taken.

Sleep should be sought in natural ways and encouraged by avoiding everything that might prevent it, but a time comes when hypnotics administered with knowledge and under strict medical supervision are of the very greatest value. The public hear much of drug addiction or mania, though happily less frequently now than formerly; the general physician is familiar with the craving for "tonics" and other medicines, but only the psychiatric physician comes in contact with the layman's horror of hypnotic drugs, which, despite its manifest advantages, interferes occasionally with prophylaxis.

Running insomnia close as a warning is prolonged anxiety that cannot be dislodged. The evils that follow in its train are many, and at the climacteric and presenile periods of life they may culminate in a mental breakdown. Its causes may be real, and how to ease the tension before matters grow worse may be very difficult. It may be possible to make only a choice of the less of two evils.

The victims of the strain of anxiety may complain of many symptoms, of restlessness, of irritability, of being unable to settle down to work, of having difficulty in fixing the attention and of insomnia.

Another danger-signal is mental and physical exhaustion. While rest alone will benefit those cases which are simply due to overwork and want of sleep, in other cases, unless the primary cause be discovered and removed, the improvement will be only temporary. The functions of the nervous system may be lowered in tone, and a state of neurasthenic fatigability produced by prolonged poisoning from a septic focus. Mental depression alone is also accompanied as a secondary symptom by a failure of energy, both mental and physical.

A change of character, not amounting to actual insanity, is another important sign, particularly in those who are subject to manic-depressive insanity. In this form of insanity there are periodic phases of variable duration in which the patient is morbidly elated and others in which he is morbidly depressed. In addition many people, including some of the most able and brilliant, are subject to similar moods, not amounting to insanity, who are said to suffer from cyclothymia or to possess the cyclic temperament. These changes of mood can be controlled only to a limited extent, but much can be done to prevent them developing into something definitely morbid.

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The measures employed in such prophylaxis are of the simplest kind—change of surroundings, new interests, congenial occupation, life in the open air, relaxation, rest, sleep, moderation in all things, and attention to the bodily health.

The one important rule for the predisposed is not to ignore danger-signals or warnings. A sign may be a simple, even a trivial affair, yet it may mean much.

EARLY TREATMENT.

It is a commonplace that the earlier treatment is begun, the more hopeful are its results, but early treatment implies a recognition of the early symptoms of disease. There is still much difference of opinion as to the early symptoms of insanity. It is believed by many that some of the cases receiving treatment for the prevention of insanity would not develop insanity were they to receive none. They believe that these cases of the psycho-neuroses, which others regard as exhibiting the early stage of insanity, suffer really from a definite type of mental disorder of a different kind. It is even alleged by them that the presence of a psycho-neurosis is a protection against insanity. This is a point of some importance, as patients and the friends of patients may be alarmed unnecessarily by those who have had little experience of true insanity.

At the International Congress of Mental Medicine held in Paris in 1889, when this question was considered (*Comptes Rendus*, p. 36), it was agreed that psychasthenia, consisting of obsessions accompanied by anxiety, hesitancy in thought and action, and physical phenomena, preserves the same psychic character throughout the whole life of affected individuals, and does not change into other forms of mental disease. In rare instances it may be complicated with delusions of persecution, with anxious melancholia and with hallucinations.

I am inclined to agree that once a psychoneurosis has assumed a definite form, although it varies from time to time in its severity and in the details of its symptomatology, it does not tend to alter its character, or to assume that of insanity, any more than one definite form of fully developed insanity tends to alter into another. To this extent the treatment of the psycho-neuroses is not the early treatment of insanity, nor can such treatment claim to prevent insanity from developing when that danger does not exist. To this extent also the existence of a definite type of psycho-neurosis may be said to protect the individual from the occurrence of actual insanity, except in rare instances. I, however, qualify this opinion by the observation, that at an early stage it is impossible to foretell whether transient, vague and disorderly mental phenomena will

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develop into a typical psycho-neurosis or into a definite form of insanity. There are thus two stages—an initial stage when anything is possible, and a later stage when the type is fixed.

PREVENTION OF THE ACQUIRED INSANITIES.

In the middle period of life, when the acquired insanities are prevalent, the benefits of prevention are more noticeable because they are more immediate. Alcoholic insanity and general paralysis have been referred to as occurring at this period, but there are many other forms. There are, for example, the confusional insanities, called from their causation the infective-exhaustive-toxic insanities. Although in these, as in all forms of insanity, hereditary predisposition plays its part, they are largely acquired and can often be prevented. Among these are the insanities following infection, such as influenza, typhoid, malaria, etc., including syphilis; mental breakdown due to nervous and physical exhaustion, the result of ill-health, overwork and prolonged and harassing anxieties; toxic insanities due to the ingestion of chemical poisons, such as alcohol, morphia and cocaine; insanities, also toxic, resulting from a concealed source of poison, such as a focal inflammation or a catarrh of a mucous surface; and lastly toxic insanities, called endogenous, due to disturbance of the chemical processes of the body, as in diabetes and myxœdema.

Nothing need be said about these forms of insanity excepting that due to myxœdema. This is caused by a deficient secretion from the thyroid gland, and it can now be treated with success by providing the body with that secretion artificially. Myxœdematous insanity has, therefore, in consequence diminished almost to the vanishing point since the discovery of its cause was made.

Just as heredity is a factor to be reckoned with to a greater or less extent, in every case of insanity, so we are beginning to recognize that disturbance of the internal secretions plays a more or less important part in all forms of mental disorder. I venture to predict that if the future holds for us a great therapeutic discovery in the domain of mental disease, it will be found in a greater knowledge and control of the internal secretions.

A good example of this is the power we now possess of preventing goitre and cretinism, the latter being a form of mental defect. These diseases are due to the absence of iodine in the food and drink of the victims, and this iodine is prepared for the body in the secretion of the thyroid gland. By the administration of minute quantities of iodine in the water or salt to people in affected regions these diseases can be prevented. We thus have an example of a severe mental disease or defect traced to its source and prevented

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by the removal of the cause. The cause is infinitesimal, its action is insidious, and it operates through the agency of an internal secretion, yet its effects on the mind are very marked.

ALCOHOLISM AND TEMPERANCE.

As regards the prevention or abolition of alcoholic insanity, there is a very simple way of effecting this, provided it is voluntary. But even if alcohol were prohibited, not in the legal, but in the real sense, the total number of cases of insanity would not be diminished by the full number of cases diagnosed as alcoholic insanity. Many of these, owing to inherent instability, would break down from other causes in the absence of alcohol. On the other hand, alcohol is a contributing factor, but not the principal cause of insanity in many other cases, and in these abstinence might be the means of averting insanity altogether.

Alcoholic insanity is diminishing, though not so rapidly as most people desire. Statistics on this subject are open to criticism, nevertheless I give the records of the Royal Hospital at Morningside from 1907 to 1920, after which date the figures are not comparable.

Percentage of Admissions, Males and Females separate, Suffering from Insanity in which Alcoholic Excess was believed to have been the Exciting Cause, during the Seven Years before and after the Outbreak of War.

Year.	Male.	Female.		Year.	Male.	Female.
1907	13·6	9·2	.	1914	16	4·6
1908	15	7·5	.	1915	10	2·5
1909	16·4	9·8	.	1916	10·8	4·1
1910	13·9	11·2	.	1917	15·5	3
1911	28·9	9·7	.	1918	10·5	2·4
1912	14	8·6	.	1919	12·6	1·2
1913	12·5	11·5	.	1920	13·3	1
Average	16·3	9·6	.	Average	12·6	2·6

The trend of these statistics is confirmed by the Report on Temperance presented this year to the Church of Scotland, which states that a great deal had undoubtedly been achieved during the last 20 years. The number of "dry" areas remained nearly the same as formerly, but there was evidence that the drinking customs of the people were surely, if slowly, changing for the better, and that the habit of drinking was on the decline. It was no small boon that drunkenness was on the decrease, and in some places had entirely disappeared.

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GENERAL PARALYSIS, EDUCATION AND SALVARSAN.

The other important form of acquired insanity is general paralysis. It has already been mentioned that there are two promising remedies for its treatment after it has actually appeared. It was further stated that an astounding fall in the number of deaths had been recorded in 1919, which has continued, and this is of supreme interest from the point of view of prevention.

The following is a table recording the annual number of deaths in England and Wales from general paralysis:

Year.	Male.	Female.	Year.	Male.	Female.
1907	1,775	557	1916	1,727	368
1908	1,713	504	1917	1,940	422
1909	1,817	546	1918	1,729	341
1910	1,723	490	1919	1,336	272
1911	1,751	435	**1920**	**1,270**	**234**
1912	1,799	458	1921	1,245	283
1913	1,724	399	1922	1,398	300
1914	1,820	423	1923	1,402	305
1915	1,818	428	1924	1,257	287

From 1907 to 1918 inclusive the number of male deaths was steady. For 8 years the biennial numbers did not vary more than 10. In 1919–1920 there was a sudden drop of 26% in the number of deaths, and the following (Fig. 18) appears to be the probable explanation of this unexpected result.

General paralysis may develop within 3 years after syphilis has been contracted, but it is not till 7 years have elapsed that it occurs with any frequency. It attains its maximum rate of incidence in the tenth year after infection. Of those attacked, more than a half die within 2 years after the first appearance of the symptoms, which are usually present for a year before the patient is admitted to a mental hospital. If, therefore, persons develop general paralysis 7 years after infection, and if a half of these die within 2 years, we require to go back 9 years to find an explanation for any variation in the death-rate. In other words, to explain a sudden fall in the number of deaths in 1919 we require to investigate conditions in 1910. If this be done an explanation is found in the employment during that year of salvarsan, and the cure by its use of those males who contracted syphilis. As the fall in the number of deaths in 1919–1920 is 26%, it is certain that many who had contracted syphilis previous to 1910 and 1911 also took advantage of the discovery of the new remedy and thus did not develop general paralysis and die. The annual incidence of the development of

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general paralysis never exceeds 8% of the total except in the tenth year after infection, when it reaches 11%. This exceptional frequency in the tenth year is no doubt fallacious and is due to ten being a round number.

A chart (Fig. 19) has been designed from the numbers given in the table which illustrates the deaths in biennial periods, and as the

Diagram to Illustrate the Number of Years that Elapsed after Infection by Syphilis before General Paralysis Developed in 610 *Patients, with the Number of Cases each Year and the Approximate Percentage of the Total Number each Year. Compiled from Kraepelin, Junius and Arndt, and Fournier.*

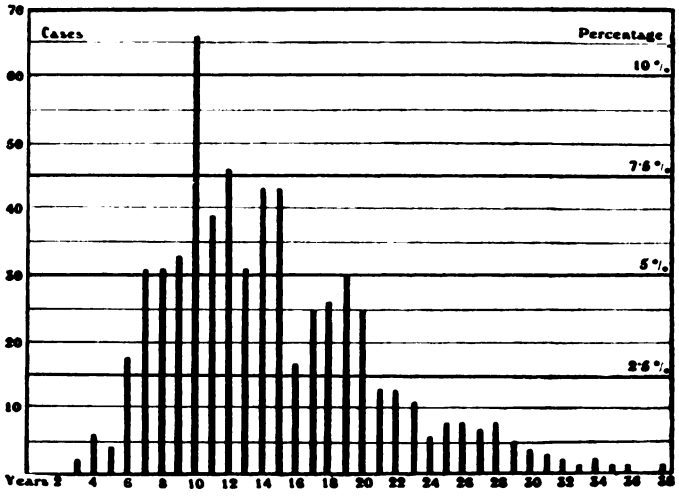


FIG. 18.

proportion of deaths of males to females is about 4 to 1, the graph for females has been enlarged four times to make its variations comparable.

The graph for females is remarkable, as there is a steady fall from 1907 to 1918, which amounts to 28%. Great as this reduction is, it cannot be attributed to the treatment women received, as comparatively little was done for them till venereal clinics were established in 1920. The explanation of this fall is believed to be as follows:

Syphilis is infectious, and in dealing with infectious diseases the treatment of the individual case is of less importance than the prevention of the spread of the disease. During the first decade of the century treatment by mercurial inunction was employed,

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and this form of treatment was a long one. The opportunity was taken of instructing male patients regarding the nature of the disease they were suffering from and of appealing to them to avoid

Numbers of Deaths from General Paralysis in England and Wales in Biennial Periods from 1907 *to* 1924, *Males and Females Separately. Graph of Females Four Times Enlarged as Compared with Graph of Males.*

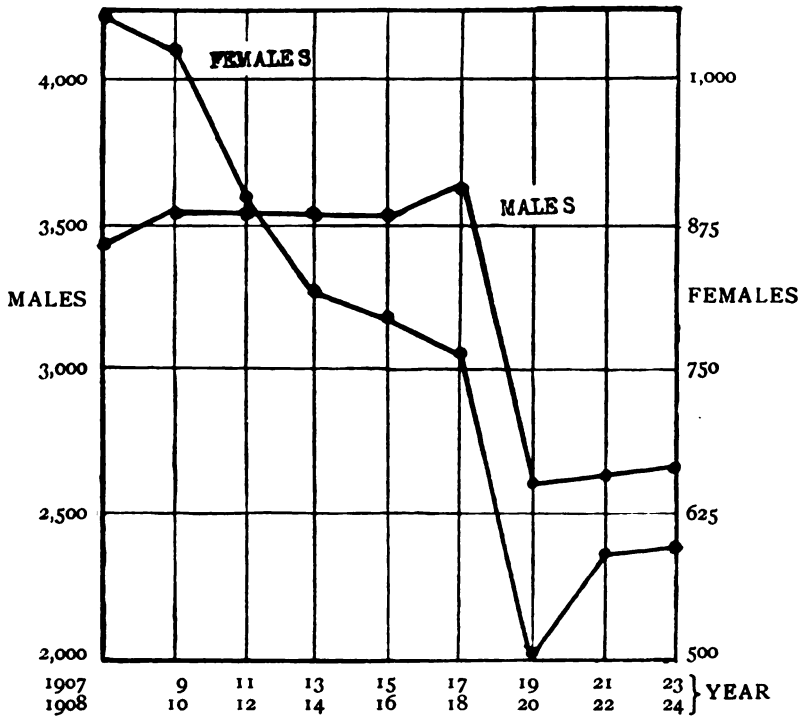


FIG. 19.

infecting others. Many men, it would seem, had the good sense and the good feeling to act on this advice, but the result was strangely one-sided. In other infectious diseases, when precautions against infection are taken, benefit is received by all alike. Syphilis, however, is exceptional, as it passes from one sex to the other, and if one sex only adopts measures to avoid spreading infection, the whole benefit of these preventive measures is received by persons of the opposite sex, who have taken no precautions themselves. It is thus that we account for the continuous fall of the female

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death-rates of general paralysis from 1907 to 1918, while the deaths of males remained stationary or even tended to rise.

There was a further fall of 33% in the number of female deaths from general paralysis in 1919–1920, as compared with the two previous years. This corresponds exactly with the fall in the deaths of males in time and proportion, but it was not due to the treatment of females directly by salvarsan as was the case with males. It may, however, be traced to the introduction of a rapid

Total Male Admissions in Quinquennial Age-Periods and Male Admissions from which all Males Suffering from General Paralysis have been Deducted, per 100,000 *of the Population.*

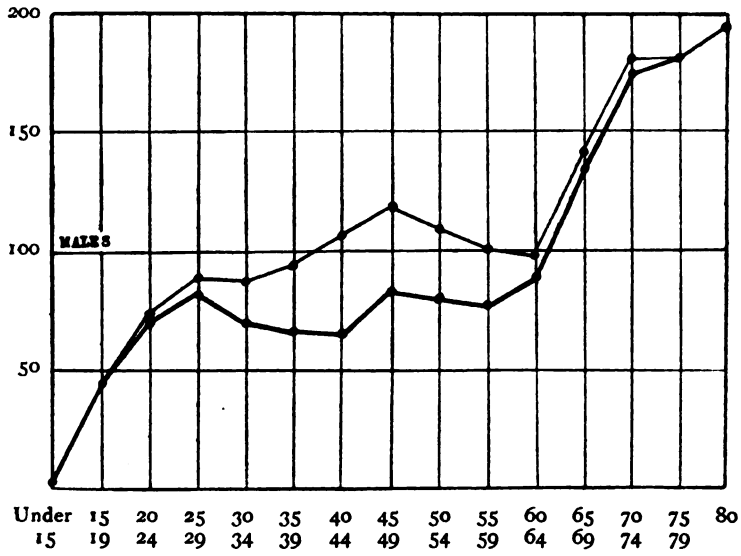


FIG. 20.

method of curing males of syphilis, with the result that the infectious stage of their disease was cut short by salvarsan, and fewer women became infected by them.

These observations teach us two lessons. The first, the success of modern scientific methods in preventing the most terrible malady to which man is subject. It attacks him in the prime of life, it obliterates every human attribute, it degrades him below the brutes, and it finally kills him. The money spent on clinics for the treatment of venereal diseases will in a few years be amply repaid by the prevention of this disease alone. In Edinburgh, one clinic out of many, about 1,000 cases of syphilis are cured every year. As 3 to 5% of those infected with syphilis develop general paralysis,

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30 to 50 cases of this disease are now being prevented from developing every year in this city alone. Similar results are being obtained all over the country. The practical abolition of general paralysis would make a decided difference to the incidence of insanity among males in the middle period of life (Fig. 20). It is a consummation that may be attained within a generation.

The other lesson is the effect of educational propaganda and publicity. I attribute the whole fall in the number of deaths from general paralysis among females up to the year 1918 to the instruction given to infected males. I believe also that those who have mainly benefited by the knowledge thus imparted have been the innocent wives of the less educated classes. Among these the proportion of women to men suffering from general paralysis is about 1 to every 4, but it may be as high as 1 to every 3. Among patients of the richer and better educated classes, for example, among those who are treated at Craig House, Morningside, the proportion is very different; during the last 24 years there has been only one lady admitted to Craig House suffering from general paralysis as compared to 73 men. This poor woman, a member of a wealthy and philanthropic family, married a drunkard; her only child is now insane.

It must not be concluded that a similar appeal to women will be followed by as striking results as have followed the appeal to men. The majority of women, being innocently infected, do not at present spread infection. An appeal to these is unnecessary, and would result in little good. There is, however, an active minority of immoral women, forming the human reservoir of syphilis, who broadcast disease, and to these appeal has hitherto been made in vain. Nevertheless this source of deadly danger must be swept away; this supply of virulent poison suppressed. Such women may be induced to come for treatment in their own interest; but they must come.

PREVENTION OF SENILE INSANITY.

As to measures for the prevention of insanity during senility, we are guided by the knowledge that the later in life insanity begins, the less important is the factor of hereditary predisposition in its causation; and, that in all forms of insanity occurring during senility, the influence of the bodily health, if not paramount, predominates.

The margin of bodily resistance to mental breakdown is less in old age than at any other period of life, but senescence is a period of retirement, of a withdrawal from the fierce zone of life's battle.

There is then not only decreased alertness of mind and diminished

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vigour, but a lowering of the sensibility which softens the effects of the harsh blows of fate. Sickness benefit, old age pensions, improved housing, better sanitation and a higher standard of living may also be expected to have a direct effect in reducing the amount of insanity during this period of life.

For the prevention of insanity during senility, we must begin to interest ourselves in bodily and mental hygiene at a much earlier stage. The diseases of old age are usually insidious in origin and gradual in development, and their seeds have been sown in middle life or even earlier. Syphilis and chronic alcoholism may not lead, for example, to any form of insanity in the early or middle periods of life, but owing to a progressive degeneration of the blood-vessels of the brain, and to a general lowering of the vitality, they may induce premature and marked senility and be the essential agents in the causation of insanity late in life. Prevention then is too late. Preparation for a healthy old age by careful living during the middle period of life is the best insurance against senile insanity, just as the avoidance of unpropitious unions is the best method of preventing the hereditary forms of insanity in succeeding generations.

In the population of Scotland the senile period of life has relatively increased in recent years. The general death-rate in this period has not fallen in spite of the advances made in public health. It would, therefore, seem as if in the past there had been in operation a process of weeding out of the less fit, before old age was reached, whereas at the present day there was an opposite process for their preservation so that more attained to old age. There is some reason to believe that, like the death-rate, there has been no reduction in the rate of incidence of insanity during the senile period. It is difficult, however, to give a decided opinion on this question.

The measures employed to prolong life increase both the number of the aged in proportion to the rest of the population and the total amount of insanity, for senility is the greatest insanity-producing period of life. If this be associated with later marriage, a falling birth-rate, and emigration of the young and fit, so that there is a proportionate diminution of the non-insanity-producing period of life, then in spite of all the efforts of mental and physical hygiene—indeed, partly on account of them—the amount of insanity in proportion to the total population will show a marked increase. These statistical fallacies have to be eliminated before the relative amounts of insanity from year to year, or in different areas, can be compared with accuracy. The alarmist, naturally, does not trouble to do this.

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IS INSANITY ON THE INCREASE?

All nations seem to pass through periodic phases in which fears arise that among them the occurrence of insanity is on the increase. Esquirol, the greatest psychiatrist of modern times, said he was sick of hearing the question asked. In 1824 he read a paper in Paris, before the Royal Academy of Medicine, entitled, "Is there more insanity to-day than there was forty years ago?" in which he endeavoured to reassure the people of France. In 1788, during the reign of George III, the people of England passed through a similar phase of anxiety, and such fears have at times obsessed Germany and Italy.

So far as can be judged the outlook in this country at the present time is distinctly favourable. In support of this I submit a table dealing with the registered insane population of Scotland during the last 15 years. The total number of insane persons has fallen from 390 per 100,000 in the first quinquennium to 369 in the last; and the number of insane persons registered annually for the first time has fallen from 2,828 in the first quinquennium to 2,731 in the last, although the population has increased in number. In these statistics there is no cause whatever for alarm, although the apparent decrease of insanity may be partly due to the operation of different methods of dealing with the insane.

Years.	Population of Scotland.	Total registered insane at 31st December.	Number of registered insane per 100,000 of population.	Number of insane registered annually for first time.
1910	4,751,000	18,059	381	2,643
1911	4,741,300	18,419	387	2,827
1912	4,733,700	18,552	391	2,715
1913	4,747,167	18,682	394	2,908
1914	4,785,598	18,971	399	3,048
Average of 5 years .		**18,537**	**390**	**2,828**
1915	4,824,308	18,842	394	2,972
1916	4,854,738	18,661	387	2,772
1917	4,886,274	18,125	373	2,520
1918	4,894,100	17,601	360	2,678
1919	4,864,396	17,432	356	2,867
Average of 5 years .		**18,132**	**374**	**2,762**
1920	4,882,288	17,665	363	2,925
1921	4,907,900	17,893	366	2,837
1922	4,915,500	18,122	369	2,840
1923	4,869,100	18,266	372	2,512
1924	4,881,637	18,276	375	2,544
Average of 5 years .		**18,044**	**369**	**2,731**

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CONCLUSION.

In conclusion it must be apparent to everyone that the problem of preventing mental disorder is not a simple one. It resembles the analogous problem of the prevention of tuberculosis, and from the campaign for the prevention of that disease much can be learned. The possible causes of mental derangement are legion, and the possible combinations of these, in individual cases, beyond counting. It is clear that the prevention of mental disease cannot be attained by any royal road.

The claims of the individual sufferer are in the first place paramount and must be studied, for every case of threatened breakdown presents a unique problem. It may have features in common with others; it certainly will present features peculiar to itself. Intensive study, therefore, of individual cases, so as to disclose these causative factors, is the primary duty of the psychiatrist. If that duty be not discharged, treatment will be confined to a few rule-of-thumb precepts, and its results will be disappointing.

Secondly, what can be done in a more general way for prevention is well illustrated by the case of general paralysis. By disseminating, as widely as possible, information as to its mode of attack and the methods of prevention, a real contribution has been made to the mental hygiene of the community. Encouraged by that success, let us see to it that our knowledge of the origin and development of other disabling mental conditions is as effectively applied.

In the opening up of purely preventive channels a great responsibility rests on practising psychiatrists. It is futile to lament that those of unstable equilibrium turn elsewhere for help—to the quack, to the charlatan, to the barren ritual of the latest cult. The blame for this state of affairs is shared by the psychiatrist. Far too long has he sulked in his cave; now he must come out into the market-place. His interests are not confined to his duties within the mental hospital. He must co-operate with the general practitioner, and get into touch with the outer world through the agency of out-patient clinics and social service workers. He must prevent as well as treat insanity.

An expert body of psychiatrists, trained in every device of medicine and psychology, and diligently applying themselves to part of those in mental difficulties or about to be overwhelmed. these clamant needs, will avert much needless suffering. Let none be daunted by the magnitude of the enterprise that is envisaged, but rather find in it an incentive to persistent and co-ordinated effort, and the hope of a great reward.

[NOTE.—An appendix containing tables of figures will be published later.—EDS.]

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