TABLE III.—*Heredity of General Paralysis.*

M., 38; F., 1; Total, 39.

Recorded in Relatives:				
Insanity only	...	...	...	7
" and neurosis	...	...	...	2
" and paralysis	...	...	...	2
" and neurosis and alcoholism	...	...	...	1
" and neuroses, and paralysis and alcoholism	...	...	...	1
" and eccentricity and alcoholism	...	...	...	1
Eccentricity only	...	...	...	2
" and alcoholism	...	...	...	1
Neurosis only	...	...	...	6
" and paralysis	...	...	...	1
" and alcoholism	...	...	...	1
Paralysis only	...	...	...	5
" and alcoholism	...	...	...	1
Alcoholism only	...	...	...	1
No heredity of the above ascertained	...	...	...	7

Or, inheritance of insanity, 14; of eccentricity, 4; of neurosis, 12; paralysis, 10; and alcoholism, 7. In addition, the families of 9 were tuberculous, 3 rheumatic, and 2 gouty. Consanguinity was noted in 1 case, and consanguinity with bodily deformities in 1 case.

Admissions by Periods.

	M.	F.	Total.	Percentage.	Calculated on 886
First period, 1884	6	0	6	2.91	
Second period, 1894	8	0	8	2.62	
Third period, 1904	24	1	25	6.66	
	38	1	39	4.40	

Personal History of General Paralysis.

		Percentage.	Calculated on 39
Acquired syphilis	23	58.97	
Alcoholic	14	35.89	
Gout	2	5.12	
Severe influenza at onset	2	5.12	
Malaria	1	2.56	

TABLE IV.—*Showing the Incidence of Heredity in Patients Addicted to the Intemperate Use of Alcohol or Drugs.*

Heredity of:	Certified.			Voluntary.			Totals.			Percentage Calculated on 145.
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	
Insanity	33	8	46	9	1	10	47	9	56	38.62
Neuroses	6	1	7	1	0	1	7	1	8	5.51
Alcoholism	16	8	24	7	4	11	23	12	35	24.13
None ascertained	25	8	33	11	2	13	36	10	46	31.72
	85	25	110	28	7	35	113	32	145	100.00

	Certified.			Voluntary.			Totals.			Percentage Calculated on 886.
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	
By Periods:										
First to 1884	10	3	13	1	0	1	11	3	14	6.8
Second to 1894	22	5	27	11	0	11	33	5	38	12.4
Third to 1904	53	17	70	16	7	23	69	24	93	24.8
	85	25	110	28	7	35	113	32	145	16.3

not rise to Nature's standard. It is right here that understanding should take form. It is the plain duty of this great Association of medical men to investigate, to report, to advise.

I need not recapitulate the honoured names of those who have been deeply engaged in the solution of these problems of life and mind, but cannot conclude without having the pleasure of informing you that last year Dr. John Macpherson, Commissioner in Lunacy for Scotland, instituted an inquiry into the heredity of sane and insane persons. The results are as yet inadequate for the purpose, but they form a foundation for further operations. Dr. Macpherson's initiative merely requires development. He heroically undertook an investigation which required wide and willing co-operation and adequate financial support. It is a reproach that such labours and such expenditure should be relegated to blind chance. I have had the advantage of perusing the returns which Dr. Macpherson has secured, and feel assured that you will heartily approve of any scheme which is calculated to complete the survey which he has planned. I suggest that the Section of Psychological Medicine should pass a resolution asking the Central Council to appoint a committee for the investigation of hereditary forms of disease, and to place at the disposal of the Committee such funds as will enable them to report on the whole subject.

Finally, I must make grateful acknowledgement to the members of my staff, past and present—living and dead—who have so loyally and ungrudgingly assisted me in the preparation of this address, and to you, gentlemen, for your gracious and patient hearing.

[A discussion on this paper will be found in the SUPPLEMENT, p. 347.]

REFERENCES.

- ¹ *Journal of Mental Science*, 1864. ² *Guy's Hospital Reports*, vol. xxii.
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PROGNOSIS IN MENTAL DISEASES.*

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PROGNOSIS—pro (L.), gnosis (G.), prae-cognitio, prae-dictio, praescitio, praescientia—means generally to foretell, foreshow, forebode; to predict, presage, or to prophesy what is likely to take place, and the ability implies a power of foretelling something future by the correct interpretation of present signs. When applied to the principles of medicine it is the judgement formed by the physician regarding the future progress and termination of any disease, and this power can only be attained by the prolonged observation and comparison of particular symptoms. It is not essential to treatment, in so far as it relates only to the future, but of all aspects of disease (and especially is this true in mental disease) it is the one which causes most anxiety, and which confronts the patient and his friends more than any other. It is, moreover, the cause of several very definite and oftentimes embarrassing interrogatories being presented to the medical man, these being in substance, firstly: Is there danger to life? or Will the illness terminate in recovery or death? And again, Is the illness likely to be a long-continued one? also, likely to be any permanent mental weakness? It is of the utmost importance and significance that a correct answer should be given, for upon these, in cases of mental disease, depend the domestic and civil relations hitherto enjoyed by the patient, and such answers may probably save a family from serious financial and social difficulties, as well as from a possible tragedy which may cast a stigma upon many innocent dependents. It is therefore important for the family approximately to know how long the great expense of the care and treatment of an insane relative will have to be borne; for, of all ailments, insanity is the one which is most costly to nurse and to care for. In order to form a correct opinion, great skill and long experience are necessary, and the facts should be numerous, so that definite knowledge may be based upon them. Even the most skilful physician requires to speak with caution in the matter of prognosis, for no human sagacity can anticipate the numberless influences—either for good or evil, for better or for worse—that may come into play in the course of any particular disease, or upon any particular constitution. Considerations relating to the estimate of the constitution, the general vitality and powers of recuperation of the individual, or the stock from which he descends, also the duration of the illness, the liability to recurrence, and the mode of termination, enter more fully into the question of prognosis as to insanity than in regard to any other form of disease. Moreover, the age of the patient, the sex, and the form and stage of the mental disorder count for much in forming an opinion as to the course of the illness.

Insanity is a generic term, having many species and varieties, some of these differing widely as to prospects of recovery, and also as to the occurrence, in their course, of life and death. Therefore, prognosis, in regard to mental diseases, may either be an opinion formed in the abstract as to the chances of life or death, or as to the actual duration of life after an attack of insanity generally, or it may be an opinion formed in regard to any particular case suffering from a definite form of insanity, and the sources of this information may, for convenience, be divided into three groups—(a) the study of the particular form of mental disease; (b) the study and knowledge derived from experience of the temperament or peculiarities of the patient, more especially the history of the stock whence he arises, and, therefore, of his heredity; the nature of mental evolution in, or the mental development of, the individual, especially in regard to changes which may

* Read in the Section of Psychological Medicine, Annual Meeting held at Leicester, 1905.

TABLE A.—Showing (I) Ratio per 1,000 of Deaths to Patients Living in Asylums during 1902, and (II) Ratio per 1,000 of Deaths in the Whole Population for the same Period, and Estimated for the Middle of the Year at Various Ages.

Ages:	Under 5.		5-9.		10-14.		15-19.		20-24.		25-34.		35-44.		45-54.		55-64.		65-74.		75-84.		85 & upwds.		Total.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
I ...	—	—	63.0	24.0	54.3	65.6	71.6	80.5	68.8	70.8	79.0	66.8	111.2	65.3	102.7	66.8	127.1	85.0	198.8	163.4	416.1	308.9	506.3	543.7	116.4	90.7
II ...	53.7	44.5	3.9	4.1	2.2	2.3	3.3	3.1	4.5	3.8	6.2	5.3	10.5	8.5	18.0	13.6	33.6	26.1	67.8	56.6	138.4	123.0	274.7	259.1	17.4	15.3

have occurred from one stage of mental life to another—for example, the change from childhood to puberty; the development of puberty, or the change from puberty to adult life; the occurrence of some neurosis such as hysteria, or any partial disintegration of personality in youth or early adult life, and the influence of this upon the question of mental breakdown during some of the periods described as “epochs,” namely, during pregnancy, at the puerperium, or about the climacteric. And thirdly (c) external influences which may modify the disease as well as the patient, and in this category are included access to pure air and sunshine, the opportunity for an abundant supply of good nourishment, and facilities afforded for good nursing, there being for the individual as well as for a group of individuals—for example, organized society—a law of relation of mind to environment. The necessity for early change in the environment will be pointed out in a later section of the paper.

To deal with the question of prognosis in a broad, comprehensive manner, and to reply to the first of the interrogatories already referred to—namely, Is there danger to life through an attack of insanity?—it must be borne in mind, as previously remarked, that there are different forms of insanity, each depending upon factors of causation, age, evolution, and pathology, and each with its own danger to life or life value. Insanity connotes, among other things, a higher mortality than occurs among the general population.

If we consult the comparative mortality returns in the Registrar-General's report and those of the Lunacy Commissioners, we find the proportion of deaths during 1902—which is the latest available year—to be 16.3 to every 1,000 living in the whole community, whereas in the asylums of England and Wales the proportion of deaths per 1,000 living was 103.2, a mortality which is between six and seven times higher than among the general population, even when allowances are made for infantile mortality, the various exanthemata later, and all kinds of accidents—causes of death rarely recorded among the insane. In European and American asylums the mean annual death-rate varies from 8 to 12 per cent. upon the average numbers resident in these institutions, so that death occurs among the insane at least six times as frequently as among the sane at corresponding ages, as seen by Table A.

The average age of 2,085 males admitted during 1903 into the London County Asylums was 42 years, and the expectation of life at this age, based upon actuarial tables, is 24 years, which would allow the average age at death of ordinary persons to be 66 years; but the average mean age at death of 721 males dying during 1903 in the asylums of London was 50.7 years, although seven of these were between 85 and 95 years of age—a life expectation of only 8 years at the age of 42—a shorter life by 15 years at least than would be the expectation among the sane. These asylum statistics, however, include deaths from general paralysis which is known to be a disease of not more than two years' average duration, so that apart from this disease, insanity has a slightly longer expectation of life than the mean average of 8 years recorded above.

The average deaths for all ages in England and Wales (and it may be remarked that these figures, of course, include not only the deaths of children up to 5 years of age, and all those that come under the designation “infantile mortality”—which amount to about 55 per 1,000 living—but they also include those in asylums which we separately analyse and present) during the 10 years ending 1901 was 17.6 per 1,000 living. The rate was lower during 1902, being 16.3 per 1,000 (males, 17.4; females, 15.2), and the tendency is still further to decrease; whereas deaths in asylums during the quinquennium 1898 to 1902 averaged 98.7 per 1,000 living, and during 1902 these deaths amounted to 105.15 per 1,000 living among the certified insane (119.0 males, 91.3 females), a ratio six times as high as that which occurs in the ordinary population, and as we know there are few certified insane under

20 years of age, so that the insane population is almost entirely above the age of highest mortality among the sane.

It is estimated that out of every 100 persons attacked for the first time with insanity, 30 recover and remain well, 20 recover, but relapse and die insane either during the first or subsequent attacks, but in my opinion this estimate is too high. If the admission rate of the insane persons for any one year into the county asylums of London be enumerated—say for 1903—when 4,502 (2,085 males, 2,417 females) were received, 378 of these (234 males, 144 females) died during the year, yielding a percentage of 8.3 deaths upon the admissions (10.2 per cent. males, 5.9 per cent. females).

If the same test is applied over a number of years—say from 1893, the year of opening the Claybury Asylum, to 1903 inclusive, a period of eleven years—a much higher mortality is demonstrated. During this period 41,274 patients (18,962 males, 22,312 females) were admitted into the London asylums, and during the same period 9,920 patients (5,341 males, 4,579 females) died—a proportion of deaths, calculated upon the admissions, of 24 per cent. (28.1 per cent. males and 20.5 per cent. females), and a proportion of 7.1 per cent. (9.4 per cent. males, 5.5 per cent. females) when calculated upon the average numbers resident.

Take, further, the total number of insane persons who have been received into the asylums of London since the year 1831—the first year in which any records were made—and up to and including 1903, and it is found that 96,846 patients (45,804 males, 51,042 females) have been admitted.

Of these 32,258 deaths (17,165 males, 15,093 females) are recorded in the asylums, a proportion of 33 per cent., but the mortality has occurred in a greater degree among the males (38 per cent. males and 29 per cent. females), although during the period referred to 5,238 more females were admitted than males.

These figures show that the death-rate among the insane in institutions is greater among men than women, and also that during certain age periods it is exceedingly high when compared with the corresponding age periods in the general population. We are thus justified in looking upon insanity as a diseased state which shortens life, and upon the insane as a class which is marked by considerable physical inferiority and lowered vital resistance to disease, and this is significantly demonstrated by the statistics quoted, which show that the chances of survival in any particular case, speaking in an abstract and general way, are at least six times less than if insanity had not occurred.

Now, let us take the length or duration of the illness, and here it may be stated that insanity has more extreme time limits than any other malady, for it may last a lifetime; also that the life of a sane person is six times better as to duration than of persons who have suffered from certifiable insanity. In further proof of the statement that insanity is dangerous to life, let us consider the duration of residence in some of the deaths. Of the 12,772 (6,506 males, 6,266 females) who have died (Table I) in the asylums of London during eleven years, 1893 (date of opening of Claybury Asylum) to 1903 inclusive (and some of these had been in the asylums for sixty years), 5,569 (3,234 males, 2,335 females), a proportion of 43 per cent. of the total deaths, died within the first year, and of those dying within the first year of residence, nearly one-fifth died within the first month; moreover, only 21 per cent. of all the deaths (males and females) occurred after five years, residence, or from the fifth to the sixtieth year of residence in the asylums. It is significant that of the 6,506 total male deaths, 3,234, or nearly 50 per cent., died within the first twelve months, and 1,138, or a proportion of 16 per cent., died between the first and second year (a high death-rate, probably due to general paralysis), whereas only 15 per cent. of the total male deaths occurred after the fifth year of residence.

Then, again, as to those who have recovered. During the same eleven years, 1893-1903, there have been 12,400 patients who have recovered (Table III), and of these 26 per cent. recovered within the first three months, 28.6 per cent. from the third to the sixth month, and 27.2 per cent. between the sixth and the twelfth month. It is seen, therefore, that 82 per cent. of all cases which recover do so within the first year, and that twice as many recover during the first six months of the year of residence as during the second half, whereas after the fifth year only 1.6 per cent. of the recoveries occur, and some of these, of course, relapse. This shows that neglect of treatment not only postpones recovery, but renders it less complete. It also shows how absolutely essential it is to obtain early treatment for insanity, and that the chances of recovery dwindle out of all proportion by delay. It is therefore not too much to say that insanity is curable in inverse ratio to its duration, and that if actively and skilfully treated within the first month, more than 70 per cent. of the recoveries are sent out cured (using this word in the sense ordinarily employed for the recovery of mental cases), whereas after the first year only about 10 per cent. recover, after the second year 3 per cent. after the third and up to the fifth 2.6 per cent., and after the fifth, recovery is exceptional. It is thus seen that the duration of mental disorder is an indispensable element in the prognosis, for recovery and curability are directly influenced by it. Unfortunately, however, most cases of insanity do not come under treatment during the early manifestations of mental disorder, but the reasons for this and the remedies therefore need not be discussed here. There are other factors upon which prognosis also depends, such as the form of insanity, the long-continued action of the same determining cause (such as alcohol, lead, dissolute living, years of misery or worry, etc.), which also enter into the question of prognosis, and to which reference will be made later.

As to ultimate recovery, the meaning of the word "cure" should, in a case of mental disease, be more definitely considered. Is there likely to be any permanent mental weakness when recovery is stated to have taken place, or are the so-called recoveries permanent? It is to be feared the answer is not a satisfactory one, for one attack increases the probability of a subsequent one, and there is a tendency to recur in all forms of insanity; still the possibility of a recurring attack grows less as time elapses, and the longer the subsequent attack is deferred the better are the chances of absolute freedom. Of all cases admitted into the London asylums an average recovery-rate of 30 per cent. is recorded upon the total admissions.

As may also be seen in the statistics when taken for a term of years—for example, from 1893 to 1903 inclusive, so as again to include the whole history of Claybury, in regard to which only I am personally familiar—the proportion of recoveries, calculated upon the admissions for these years averages 29 per cent.; but if the total recoveries be calculated for London since the year 1831, the proportion per cent. is 30 upon the total admissions. This computation, however, takes no notice of relapses, and of all the relapsed cases—7,896 in number (3,681 males, 4,215 females), calculating each separate relapse as a separate case and not as a separate person—an average of nearly 28 per cent., based upon the total recoveries—namely, 29,323 (13,083 males, 16,240 females), have relapsed since 1831. Of the 4,502 (2,085 males, 2,417 females) persons admitted into all the asylums of London during 1903 only 636 of them recovered during that year—an average of only 14 per cent. when calculated upon the admissions; but as against this might be rejoined the fact that many cases admitted during this year would recover in the next or subsequent years. The long series of years given above should, however, tend to correct any errors made for the limited period of a year.

Another interesting record has been made for London during nine years ending December 31st, 1903, and may be quoted in regard to the relapsing of recovered cases. This shows that an average of 25.72 per cent. of cases discharged recovered had been readmitted during the period referred to. A parallel record shows that an average of 12.22 per cent. of cases discharged from the asylums as recovered relapse and are brought back under treatment during the same year they are discharged in. In estimating the chances of recurrence, the danger of a relapse must not be lost sight of. Child-bearing is a case in point, when the original cause may again become operative. If this can be evaded, a subsequent attack may be kept off. A second attack of puerperal insanity may be prevented by avoiding a second pregnancy, or, at any rate, lengthening the period between two confine-

ments. Another example of danger of the original cause is the frequent recurrence in cases of alcoholic insanity owing to the too easy access to stimulants.

What is the usual termination of an attack of insanity? It may be stated generally that, when the case does not end either in recovery or in death, there may be a partial improvement, so that the person may be able to live at home or under mild supervision, otherwise the case deteriorates, so that life is on a lower mental and social plane, the habits become defective and self-respect is lost, the person being indifferent to all environmental stimuli, and leading what may almost be described as a vegetative life.

If the statistics of the London asylums are again drawn upon they show that there were admitted into these asylums from the year 1831 to 1903 inclusive, 96,846 patients (45,804 males, 51,042 females), of these at the end of 1903, 4,858 (2,384 males, 2,474 females) had been discharged not improved, and 13,718 (males 6,206, females 7,512) had been transferred elsewhere or discharged relieved, which means not cured—a proportion of 23 per cent. of the admissions. Moreover, 16,689 (6,966 males, 9,723 females) still remained under treatment—a further proportion of 17 per cent.—and possibly this represents the actual remnant when statistics are taken over a long number of years. Briefly summarizing these totals, 30 per cent. recover (of whom possibly more than 10 per cent. again relapse), 33 per cent. die in the asylums within a definite time, and approximately 40 per cent. remain incurable and eventually die insane.

These statistics prove the sad and significant fact that there is probably always some mental weakness after an attack of insanity, and that there is no such happy issue as a complete and permanent recovery. Complete recovery is certainly infrequent and is not the rule; more, however, will be stated upon this aspect when dealing with the individual varieties of mental diseases.

Of the actual causes of death in insanity, tuberculosis in its various forms has been credited as one of the most frequent. It has been customary at Claybury, since 1902, to report monthly to the Pathologist the cases of suspected tubercle among the patients and staff. These are about 3 per cent. of the average number resident of the male patients, and about 4 per cent. of the females—a low enough proportion. About 20 per cent. of the phthisical males recover bodily in the asylum, and about half this proportion of the females. The result of *post-mortem* examinations made during the last three years by the Pathologist reveals the presence of active tubercle in 21 per cent. of the total male deaths, and 27 per cent. of the total female deaths, but tubercle is not necessarily the cause of death. Obsolete tubercle, as evidenced by fibrous scars, or depression at the apex, by calcareous bronchial or mesenteric glands—but not by adhesions, which may be due to pleurisy—are found in 37 per cent. of the total male deaths, and in 30 per cent. of the total female deaths, and it is safe to assert that this is not a much higher proportion than occurs among the sane outside the asylum. It is stated in the Registrar-General's report that the mortality-rate for phthisis in the general population is about 8.3 per cent. of all deaths. This is probably much too low, and Osler gives the proportion as 14.3 per cent. of all occurring deaths, and during the year 1903 phthisis was responsible for 16.3 per cent. of all deaths in institutions for the insane, but the rate varies much in different asylums, being higher for some and lower for a few others.

The cases of insanity most prone to tubercle are those of the depressed type, and those of adolescent dementia, otherwise called "dementia precox," and it is concluded that tubercle probably appears in them simultaneously with the onset of mental symptoms, and therefore mostly before their admission into the asylum. I think it cannot be too strongly laid down that the tendency to phthisis indicates a degeneration of the constitution, and therefore of a lowered resistance to disease. I believe it is true to affirm that the tendency to phthisis may almost be looked upon as a tendency to insanity, and conversely that insanity is a condition which tends to phthisis. Phthisis in one parent, and a neurosis—such as a previous attack of insanity—in another, appear to be convergent factors which constitute a powerful force towards deterioration, and the definition of insanity as a "vicious organization" is one which well harmonizes with facts as known to those of great experience.

Age, which is a relative term, distinguishes the periods of infancy, childhood, puberty, adolescence, the adult stage, and senescence. The period of development of the individual from one stage of the above to the other is marked by definite

psychological characteristics, and the gradual unfolding of the mind through the different "epochs" enumerated may be variable, for each or any stage may be arrested or be precocious, being characterized either by strivings, exaltation, impulses, hopes, doubts, or depression, each of which may be considered definitely morbid according to their prominence, or their influence upon conduct, or according to the response by the individual on their account to objective environmental stimuli. The period relating to the awakening of the sexual functions is, for many individuals, one of much concern if not of anxiety and danger; and age in a special measure affects the prognosis of cases of insanity. In regard to it a high authority has recently declared somewhat axiomatically that "Youth is not on the side of the neurotic," meaning that insanity is not favourable in the young. It is certain that "youth" is a period of compensation and youth is also favourable to survival, and, according to my experience, to recovery (in its modified meaning) from insanity. That youth is a period of compensation was recently well shown by Sir Victor Horsley in cases operated upon for cerebellar tumours—children having regained equilibrium and co-ordinated movement, yet half the cerebellum had been removed, results which did not follow in the adult. Age, in the sense of growing old depends upon the nature of the involutional changes in the vascular system, and the adage that "a man is as old as his arteries" is doubtless a true test of senility. If large numbers of cases of insanity are tabulated in respect to age, as is shown in the following table of statistics of the London County Council asylums, we find (see Table II) that in the two age quinquennia, 10 to 14 and 15 to 19 years, the death-rate is only 7 per cent. of the admissions, whereas after these ages the death-rate rises progressively up to between 60 and 70 years, when the proportion of 54 per cent. of deaths upon the admissions is reached. Moreover, as to recovery the percentage upon admissions between 15 and 19 years and between 20 and 24 years is 40 and 41 per cent. respectively, and is higher than for any other age period, after which it gradually declines until in senescence it is less than half this proportion, that is, to a recovery-rate of only 18 per cent. of those admitted between 60 and 70 years of age.

It is interesting, further, to compare results in the two sexes as to the insanity of youth. A higher percentage of girls under 25 recover than boys for each of the quinquennia (10 to 14, 15 to 19, and 20 to 24), but a higher percentage of deaths occurs in boys than girls for each of these periods, showing that insanity up to the age of 25 years is more recoverable in girls and more fatal in boys. Below the age of 7 years prognosis is absolutely bad, and it is worse the younger the patient. The more the insanity of boys approximates in type to that of girls—for example, the hysterical type—the better the prognosis.

In cases of insanity under 20 relapses occur with much greater frequency than above this age, and the prognosis is therefore unfavourable as to ultimate recovery. In my own experience there have been 220 cases admitted into Claybury between the ages of 10 and 20 (9 between the ages of 10 and 14, 211 between 15 and 20 years). Of these, 96 were discharged recovered (a proportion of 43 per cent.), but 24 of these (a proportion of 25 per cent.) relapsed, and had a second attack

TABLE II.—Ages of Male and Female Patients in all the Asylums of London from 1893 to 1903 inclusive.

Years.	Admissions.	Recoveries.	Deaths.
		%	%
5-9 ...	14	1 = 7.0	3 = 21.5
10-14 ...	164	38 = 23.1	11 = 6.7
15-19 ...	1,737	699 = 40.2	123 = 7.1
20-24 ...	3,364	1,378 = 41.0	317 = 9.4
25-29 ...	4,088	1,456 = 35.6	576 = 14.1
30-34 ...	4,855	1,659 = 34.1	794 = 16.3
35-39 ...	5,212	1,648 = 31.5	1,368 = 26.2
40-44 ...	4,719	1,460 = 30.9	1,404 = 29.7
45-49 ...	4,193	1,308 = 31.2	1,255 = 29.9
50-54 ...	3,744	1,101 = 29.6	1,213 = 32.4
55-59 ...	2,821	703 = 24.9	1,074 = 38.0
60-64 ...	2,516	566 = 22.5	1,141 = 45.3
65-69 ...	1,764	288 = 16.3	1,115 = 63.2
70-74 ...	1,158	137 = 11.8	972 = 84.0
75-79 ...	653	57	718
80-84 ...	230	13	332
85-89 ...	66	1	124
90-94 ...	9		24
95-upwards ...	14		
Unknown ...	49	11	7
	41,370	12,518	12,571

TABLE III.—Showing the Ages in the Admissions, Recoveries and Deaths, and the Percentage upon the Admissions in each Class During the Years 1893 to 1903 inclusive, of Patients under 25 Years.

Years.	Admissions.		Recoveries.		Deaths.	
	Males.	Females.	Males.	Females.	Males.	Females.
			%	%	%	%
5-9 ...	11	3	—	1 = 33.0	3 = 27.0	—
10-14 ...	91	73	18 = 20.0	20 = 28.0	4 = 4.0	7 = 9.0
15-19 ...	823	914	302 = 37.0	397 = 43.0	74 = 9.0	49 = 5.0
20-24 ...	1,522	1,842	496 = 32.0	882 = 48.0	155 = 10.0	162 = 9.0
	2,447	2,832	816 = 33.0	1,291 = 44.0	236 = 9.6	216 = 7.0

within a period of from one to ten years after discharge; a higher proportion still would therefore ultimately relapse. Of these 24 cases, 8 (a proportion of 33 per cent.) of the recovered relapsed a third time, and were again readmitted into Claybury. It is thus seen that insanity during the period of adolescence, even when recovery takes place, interferes with the growth of the nervous system and with the due unfolding of the mental faculties, which may thus be permanently damaged; and it is beyond doubt that one attack, more especially in youth, greatly predisposes to future ones.

Let us now briefly consider the different forms of insanity as to prognosis, and of these there are certain types that bear the stamp of incurability *ab initio*. Such are the forms accompanying general paralysis, cerebral tumours, advanced tuberculosis, or malignant disease; those accompanying diabetes mellitus or diseases necessarily fatal and attacking the great internal organs (heart, liver, kidneys, etc.), epilepsy, paralysis from embolus, thrombus, or haemorrhage; also those conditions described as paranoia or chronic delusional insanity, alcoholic insanity with hereditary predisposition, and senile dementia. All these have a prognosis which may be described as absolutely unfavourable. The same may be affirmed of congenital mental defects of all kinds, varieties twice as often met with among the poor as among the rich; and although these cases are capable of some amelioration under specific treatment, yet I think it will be admitted that cures or recovery do not take place in congenital weak-mindedness. As to survival, imbeciles have a better expectation of life than normal persons if cared for in institutions, as the statistics of such places as the Earlswood Asylum will confirm.

As to general paralysis of the insane, which occurs mostly in men (82 per cent. of all cases occur in men), and which forms 11 per cent. of all cases of mental disease among males who are admitted into asylums, it may be interesting to record that the duration of residence in Claybury of 331 male general paralytics admitted and dying therein (there have been admitted possibly 800 such cases), a proportion of about 10 per cent. males and 4 per cent. females (in whom the diagnosis was verified by the pathologist at the *post-mortem* examination), was one year four months and a

TABLE I.—Duration of Residence of Patients who have Died in all the London Asylums During the Years 1893 to 1904 inclusive.

	Males.	Females.	Total.
Under 1 month ...	583	505	1,088
1-3 months ...	317	551	1,368
3-6 " ...	840	562	1,402
6-9 " ...	562	394	956
9-12 " ...	432	383	755
1-2 years ...	1,138	863	2,001
2-3 " ...	542	601	1,143
3-5 " ...	560	761	1,339
5-7 " ...	309	454	763
7-10 " ...	241	373	614
10-12 " ...	90	173	263
12-15 " ...	98	147	245
15-20 " ...	125	226	351
20-25 " ...	83	153	236
25-30 " ...	34	72	106
30-40 " ...	27	71	98
40-50 " ...	13	28	41
50-60 " ...	3	9	12
Total ...	6,506	6,256	12,772

few days, and the total average duration, including the time from the onset of the first mental symptoms and prior to asylum treatment, cannot, I think, be more than about two years. There are cases diagnosed as general paralysis of the insane which may linger on for many years, but I am inclined to question the diagnosis in these. I have one case which has already survived twelve years, but I think the similarity to general paralysis is on the whole less than to some cases of cerebral syphilis. General paralysis hitherto has proved to be peculiarly unyielding to medical treatment, and it causes in certain territorial asylums (especially those receiving patients from cities, ports, or densely-crowded areas) no less than 33 per cent. of the deaths. In 1903, in all the asylums of England and Wales, nearly 25 per cent. of the total deaths were due to general paralysis, the age of greatest incidence being the decennium from thirty-five to forty-four years.

As to the prognosis in the different varieties of general paralysis, the disease is more chronic in the melancholic and in the tabetic than in the ordinary forms with typical grandiose delusions, the duration in the tabetic variety being from two to five years, and the proportion of tabetic cases being about 2 per cent. of the whole. Tabetic cases also occur further, in point of time, from the original syphilitic infection than the ordinary form of general paralysis, and all forms seem to occur when the original infection has been slight and the treatment neglected or shortened. Pupils fixed to light are met with in fully 33 per cent. of cases, and the duration is shorter in these than when the pupil reacts to light and accommodation, as in exceptional cases it does so react. Much variation occurs in regard to the pupils; they may be fixed at one period and react to light at another. The fixed pupil may be a definitely syphilitic lesion, whereas others of the symptoms may be para-syphilitic in their nature.

As to some of the other varieties of insanity, those forms based upon a hallucination of the senses are unfavourable; such is the form called "delusional insanity," characterized by systematized delusions, that is, by a tendency to argue and to reason out a cause for the persecution, which is based upon some unaccountable plot or prejudice; or cases of "fixed ideas" which are amenable to no reasoning or persuasion—the so-called "cranks"—these cases do not tend to recover. This form of insanity is four times more common among the private than among the poorer class, and this is a form which is rarely followed by weakness of mind or dementia—the patients remain insane cranks or "headstrong" persons all their lives. They are the most ingeniously-minded of all who suffer from insanity and they always have an excuse for their delusions. This form, as a rule, is an insanity of men, often of able men, and mostly between the ages of 25 and 35 years, the period of greatest mental activity. As to recovery, it may be described as hopeless, but as to actual survival such an insanity does not *per se* shorten life, and every asylum includes a large number of these among its chronic cases. As to epilepsy, when this is associated with insanity—and this combination is three times more frequent among the poor than among the rich (also about 1 in every 18 cases of epilepsy requires asylum treatment)—I believe they are better lives in institutions than when they are cared for outside, for the risks from accidents, choking, suffocation at night during a fit, serious falls, and the results of low inflammation from impaired circulation after repeated fits, are all thus reduced to a minimum. In England and Wales male epileptics constitute 9.9 per cent. of all cases annually admitted into asylums. We may safely state in regard to survival that epilepsy shortens life. Of all male deaths in asylums during 1903 epilepsy was the cause in 5.2 per cent., but in the general population during the same period it was the cause of death in only 4.7 per 1,000. The average age at death of all males in asylums during 1903 was 50 years, but the average age at death of males suffering from epilepsy and insanity was only 40.5 for 1903—nearly ten years lower. Out of 373 epileptics admitted during ten years into Claybury Asylum, 32 per cent. have died, one-third of these directly from epilepsy, and the average age of these at death was 38.5 years. Dr. Alexander has very kindly given me the experience of Hanwell in this respect for the last 50 years, during which period he records the death of 171 males from epilepsy at an average age of 37.7 years, and we are, therefore, justified in giving an unfavourable prognosis both as to recovery and to life in cases of epilepsy with insanity.

As to prognosis in acute insanity, there is one form which is most fatal—that is, acute delirious mania. In this form the risk to life is great. The condition, so far as my experience goes, is exceedingly rare. I have met with less than

20 in nearly 10,000 cases of ordinary insanity—namely, a proportion of 1 in 500. They probably die before they reach the asylum stage. Sixteen (7 males, 9 females) were decided cases, and the percentage of deaths, especially among the males, was exceedingly high—namely, 70 per cent.—death occurring in from two days to one week after admission, in spite of the greatest effort to save life. The death-rate in American asylums is similarly high, being estimated at over 70 per cent., or about the same proportion as in this country. Other forms of acute insanity are acute mania and acute melancholia, the latter being more frequently met with among the rich than the poor (in the proportion of 30 to 23), and the age of greatest incidence being from 25 to 34—the age, as has been described, of greatest mental development and expansion. I believe that all acute insanity implies some secondary dementia or weakening of mental powers.

More cases of melancholia than mania—246 to 153—were admitted into Claybury last year (1904), and a greater number of melancholia cases recovered—111 to 62 of mania—also a greater percentage of women recovered than men (41 per cent. to 30 per cent. upon the admissions). It used to be advanced that melancholia involved a greater and deeper reduction of mental power than mania, and that the latter was more recoverable. I am now disposed to question both these assertions. It is not often to-day that we meet with many cases of acute mania, a melancholy form of insanity tending to dementia having apparently taken its place; and there may have been in this respect a gradual change in the type of insanity during the last quarter of a century, probably depending upon the pressure of civilization.

Now, there are certain signs in the course of mental disease which are favourable to recovery, and the first of these is normal sleep, which can be graphically indicated in hours by means of the "sleeping chart," those cases reported as sleepless upon admission gradually increasing the period of sleep to the normal within the first few weeks of treatment, if recovery is to take place. Another symptom and one of great import is a return to the normal mean average bodily weight when the acute mental symptoms have passed off. Of the 195 cases (76 males, 119 females) which recovered during 1904 at Claybury, 38 males gained an average of 14 lb. each in weight, and 70 females gained an average of 13 lb. Nine males lost an average of 5 lb., and 11 females lost an average of 7 lb., the men gaining a mean average of over 12 lb., and the females a mean average of over 11 lb. In adolescent insanity a gain in weight not accompanied by mental improvement is of bad augury, and indicates chronicity and possibly confirmed dementia. A return of the facial innervation and the restoration of the natural expression and appearance is a favourable symptom, as is also the revival of natural affections which in insanity so frequently become perverted. An interest in friends and in the patient's own personal appearance and the consciousness and recollection of having been ill are all favourable signs and indicative of returning sanity.

There are some symptoms, on the other hand, of bad prognosis, and these are, defective habits, what is by some called "gatism." Patients often become faulty in their habits from want of attention, or from an inhibition of voluntary control as well as from the retardation or dullness of the ordinary reflexes. Sometimes from this cause—that is, dullness of the reflexes—there is no diarrhoea in the insane although there may be extensive dysenteric colitis, and some bolt their food and may get choked in consequence of an impairment of the laryngeal reflex; cough may also be absent owing to a loss of the bronchial reflex. Similarly, with a full bladder, the afferent stimulus is either not conveyed, owing to spinal sclerosis, or when conveyed is not responded to, owing to some cortical affection. The absence of the patellar reflex is an unfavourable symptom, as are also myosis, tremor of speech, wasting, the accumulation of rubbish, extravagances in dress or personal adornment, the coining of new and peculiar words, together with systematized delusions. All these are, speaking generally, unfavourable symptoms.

The cause of insanity not infrequently has a direct bearing upon prognosis. A brief accidental exposure to a single toxic cause is favourable to recovery, such for instance are the puerperal cases with confusional insanity, and the acute delirium which follows one bout of alcoholic indulgence. If a single and powerful cause be operative—such as a disappointment in love to a sensitive woman—the prognosis is better than if several causes, such as poverty, anxiety, and domestic bereavement acted in conjunction. Also, one great cause, acting for a short time, is more favourable to the patient than a long-continued

one. The course of the attack also bears upon the prognosis, for a short convalescence is bad, and so is a sudden recovery after an attack. The presence of severe bodily disease is certainly an unfavourable accompaniment.

The appearance, however, of an acute inflammation may sometimes cause the recovery of a chronic case—for example, erysipelas faciei, and carbuncle or pneumonia, by bringing about some constitutional alteration of the trophic functions, possibly by inducing artificial leucocytosis. An attack with a long incubation, and with eccentricity, oddity, perversity, etc., is of bad augury. Tubercle, indicating a poor resisting power, is also an indication of an unfavourable prognosis. It cannot be too much impressed that insanity is the result of a vicious organization, and is due to neglect of the rules of health, and through attempts to override or to disregard the laws of Nature, and such may be taken in a very wide sense; for example, it may be favoured by a dissimilarity in the age of the parents, in their temperament or race; too much similarity, such as the marriage of cousins—which produces convergent characters—and drink in the parents may also involve a regression of the offspring. Such neglect of the laws of development and production involves a lowered vigour and vitality, a diminished resistance to disease, and a general deterioration if not a degeneration of both mental and bodily energy, whereby not only the output of work is diminished, but also any given stress approaches nearer the breaking-point. A lowered vigour is caused not only by tubercle in its various forms, but also by alcohol, syphilis, and various other toxins; also, poverty, vice, and crime become the indirect causes of insanity through an environment which tends directly to impair the general health. Speaking generally, causes which favour and conditions which perfect a high standard of health among a community tend also to prevent insanity. I therefore maintain that the environment of the germ plasm may be a most potent influence, and may be most pernicious, far more so, in my opinion, than the direct evils of hereditary tendencies, influential as no doubt these are in the production of mental diseases.

It has been frequently asked, "What do you mean by heredity?" and it does appear that we are not quite agreed as to the precise meaning of the term. It is variously employed by different persons, for in speaking of heredity in relation to insanity some signify the transmission from parent to offspring of certain distinguishing characters of structure, whereas others intend the term to apply only to function, and they fail even to consider the organism as a whole, but they regard single organs only and their function alone to be subject to hereditary variations. We know for certain that some characters are inherited, those termed instincts are definitely transmitted, but it may be pointed out that precisely as there is no inheritance of genius, so there is no inheritance of insanity.

The tendency of modern interpretation has been to transfer discussion from the organism to the cell, which, according to Virchow—*Omnis cellula e cellula*—implies a continuity, and this continuity is maintained by the nuclear chromatic substance of the cell—otherwise called the germ plasm. In the sexual cells it is assumed that there are representatives—Darwin's gemmules—of all parts of the adult, and in the germ plasm of Weismann these are represented in the "biophores" and "determinants." This continuity of the germ plasm implies absolute resemblance between parent and offspring, but we know that protoplasm is an unstable compound, and that it is acted upon by a complex environment, in consequence of which variations are normal, but these variations do not proceed by leaps and bounds—that is not Nature's method, and it is altogether against the law of evolution—for great strides do not occur in Nature, it is only the small and definite little adaptations to environment that are transmitted, not the affections of one organ alone, but the disposition of the whole in so far as characters appertain to the special need of the individual in its environment. Hallucinations—for they suggest the reaction of the organism to its environment—are fundamental, and upon these hallucinations grow delusions; these, again, influence and guide conduct. By this is meant that an inheritance of neurosis is only a danger under certain conditions, namely, whether the neurosis is essential and fundamental; that is, in certain forms of insanity is an inheritance possible. If there be parental insanity it may be only an indication of instability in the offspring, in whom, when affected with insanity, the unexpected as to prognosis may ever happen. Acute cases with a hereditary history of insanity often make rapid so-called recoveries, and such recoveries are sometimes

sudden and may apparently be complete; on the other hand, the recoveries may be partial and incomplete, or there may be frequent relapses. It is the experience of the majority of physicians that acute cases of insanity with a similar parental history may recover quickly; but if in addition there are present hallucinatory disturbances of the senses the prognosis is bad. Parents who have suffered from hallucinatory insanity with fixed delusions—cases of paranoia—often have children who grow up to be "cranks," "eccentrics," "oddities," etc., and they appear to transmit the characters which they themselves possess. In any long asylum experience such cases are met with, and possibly of all abnormal mental states, this form, and depression with suicidal tendencies—a pleasure-pain reaction to environment—these appear to be the most heritable. I have experience of grandparents, parents, and offspring who have committed suicide at about the same age, and even if the children of such parents do not themselves become suicidal, there is often a premature senile decay and a hopeless progression of the mental symptoms.

In regard to heredity, it is essential for the complete study of insanity that "family tendencies"—a sufficiently distant perspective of the organism—should be studied, for the organism needs to be considered in its descent, both as a whole and in its relation to its environment. In these investigations we obtain much information as to the incidence of cancer, phthisis, epilepsy, and paralysis, and as to tendencies in regard to drugs, such as alcohol, etc., the liability to toxins, such as uric acid, phosphates, and others, also as to the tendency to vascular degeneration, and generally as to the habit of body or of the particular temperament of the individual.

It has been truly stated that "fortunately we are not only the children of our parents, but of our grandparents, and also of our great grandparents and remoter ancestors," therefore whatever harm or damage may have occurred to the parents, such may be much lessened in the descendants.

It must be remembered that the tendency of Nature is to the average or normal type. The children of very tall parents are less tall and those of short parents are taller; also, the children of one insane parent, and possibly of two insane parents, may be not only healthy but sane.

I have taken the histories of 230 male cases admitted during twelve years into Claybury, whose father or mother were known to have been insane. In 10 of the cases both parents were insane; 3 of the 10 patients died of general paralysis. Of the total 230 male cases the high proportion of 27.4 per cent. had previous attacks; 30 cases died from general paralysis, a proportion of 13 per cent., a slightly higher proportion than occurs in the admissions as a whole, and it is thus seen that general paralysis not only may but does present a hereditary history of insanity. The number of deaths was 87, a proportion of 38 per cent., which is abnormally high, and demonstrates that hereditary insanity tends to extinction. The recovery rate is the same, namely, 38 per cent., which is also higher than among the general admissions. Of those who recovered 13.8 per cent. relapsed during the twelve years, again a slightly higher ratio than occurs among the total recovered of all classes (13.2 per cent.). These facts tend to show that cases with a hereditary neurosis (taking an attack of insanity to indicate this) recover quicker, that they relapse sooner, and that the others die sooner. This is epigrammatically foreshadowed by a high authority, who states that hereditary cases are easier broken down but are easier reset, and that as to recovery, "if a man is to become mad, he had better have a mad ancestry," meaning that the prognosis as to recovery is better when a hereditary taint is recorded.

Gentlemen,—In these remarks, which I fear have been set forth at undue length, I have based many of my calculations upon the arithmetical argument, and I trust, although I may have wearied you with figures, that I have succeeded generally in dealing with the chief symptoms which, when interpreted, may give us some definite information as to prognosis in mental diseases.

[A discussion on this paper will be found in the SUPPLEMENT, page 348.]

REQUESTS TO MEDICAL CHARITIES.—Ex-Provost Alexander Hay Moncrie, of Dundee, in addition to many other charitable bequests, left £5,000 to the Sidlaw Sanatorium for Consumption; £3,000 to the Bannatyne Home of Rest, Newtyle; £1,000 to the Royal Victoria Hospital for Incurables, and £500 each to the Dundee Royal Infirmary and the Poor Sick Nursing Society, Dundee.