which the girl had been in the workhouse, and she got her discharge, and took the child away into a quiet place where, having stripped it, she threw the child into a ditch of water. As in so many cases, she overlooked the fact that little things may attract attention. She had gone in an omnibus to a small village in North Devon, and had been noticed by the driver. When returning, she happened to meet the man, who had got off his 'bus in a side lane; she had a bundle but no baby, and giving him confused answers as to what had become of the child, her arrest followed. She showed great deliberation and forethought, but she overlooked the possibility of being met by the man who drove the omnibus. That was a case one would not say was due to insanity, although it had many of the apparent features connected with it, and he would like to ask Dr. Baker whether, at Broadmoor, they might not have the means of checking cases which had been passed as insane, and which afterwards at Broadmoor exhibited no trace of insanity. Such cases did occur, and he was not sure fuller justice would not have been done in the one he had mentioned, if she had met the full penalty of the law.

Dr. BAKER, in reply, said with regard to Dr. Weatherly's point about making an analogy between men and women, he did not think one could do that in this case because the fact of parturition came in. With regard to Dr. Goodall's remark about heredity, he had no doubt in a good many cases—in the greater proportion—heredity was present, but they had no means of ascertaining unless the relatives came to the asylum. The cases were tried, and the patients came to them from prison, and they had only the prison records for information, and unless, as he had said, the relatives came, they could not get information about their antecedents. With regard to the anthropometrical point, he had seen many of the measurements, but he could not say they were of any great value from his own experience, at all events so far as gauging the mental calibre. Of course in prisons there was a great majority of the ordinary type seen, but there was a residue of 2 or 3 per cent. which showed symptoms of congenital weak-mindedness, and he dared say the measurements would be different in those cases. He knew the case referred to by Dr. Deas, because she was a congenital imbecile, and his opinion was that justice had been done.

Crime in General Paralysis. By W. C. SULLIVAN, M.D., Deputy Medical Officer, H.M. Prison, Pentonville.

THE minute study of morbid organisation as a factor in the genesis of crime which has been extensively pursued in recent years has been for the most part concerned with conditions of arrested or distorted cerebral development, with the different forms and degrees of innate defect. Less attention has, on the whole, been given to the other large class of neuropathic criminals, those in whom the morbid aptitude for criminal acts is connected with deterioration of brain, where the mental defect is acquired.

It has appeared to me, therefore, that some relative freshness of interest might be found in a discussion of these conditions of acquired defect; and this the more because of the exceptional clearness with which their study illustrates certain essential points in the relation of organisation to conduct.

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One of these morbid states—perhaps the most important in our special point of view—that, namely, due to chronic intoxication by alcohol, I have discussed in some detail in papers published in the *Journal of Mental Science* and elsewhere.(1) The natural direction of our inquiry leads next to those conditions nearest allied to chronic alcoholism, chief among which are general paralysis and senility. The present paper, then, will deal with the former of these diseases, the term "general paralysis" being taken for the purposes of the discussion at its current value, as—to use Schüle's phrase—a convenient "clinical collective name" for a not very clearly delimited group of cases with more or less distinct, but nowise pathognomonic clinical and pathological characters.

Forms of crime in general paralysis.—The examination of conduct in chronic alcoholism showed a remarkable frequency of suicidal and homicidal impulse, and, in very much lesser degree, a tendency to certain forms of sexual crime, especially the defilement of children; offences of acquisitiveness, on the contrary, did not appear to be very importantly related to this condition.

Crime dependent on the senile involution to a great extent resembles alcoholic crime in all these points.

In general paralysis, on the other hand, the character of conduct is entirely different. A rough illustration of the contrast may be given in statistical form. During nine years (1888–96) among accused and convicted prisoners certified as insane in the local prisons of England and Wales there were 274 cases (261 males and 13 females) in which the form of mental disease was considered to be general paralysis.(2) Amongst the other prisoners found insane during the same period were 140 males aged sixty years and upwards. Comparing the character of the delinquency in this senile group with that in the group of male paralytics we get this result:

	G.P.	Senile.
(*a*) Crimes of violence—Homicide	4	5
Homicidal attempts	5	8
Assaults	21	24
Threats	8	6
(*b*) Suicidal attempts	8	24
(*c*) Crimes of acquisitiveness	144	30
(*d*) Sexual offences	13	4
(*e*) Other offences	58	39
	261	140

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Thus, while in the senile insane grave homicidal acts (first two groups of crimes of violence) and attempts to commit suicide amount respectively to 9·2 per cent. and 17·1 per cent. of the total delinquency, in the paralytics the corresponding figures are only 3·45 per cent. for homicidal acts, and 3·07 per cent. for suicidal attempts; and while impulses of acquisitiveness account for 55·17 per cent. of paralytic crime, they appear in only 21·76 per cent. of the senile cases.

It is, of course, needless to point out that these figures are to be taken with large qualifications; they are quoted here merely to give a general view of the character of paralytic crime before entering on the detailed discussion of its varieties.

Crimes of acquisitiveness. — Offences of this class are notoriously common in general paralysis, and they have been so often described in this connection that a very summary account of them will suffice here. Their most typical form is petty larceny, but frauds, forgery, and embezzlement are also frequent.

Generally the circumstances and execution of the offence show a characteristic silliness. Exceptions to this rule, however, are met with; paralytics do sometimes commit robberies and frauds with an appearance of adequate motive and premeditation. In an observation, for instance, published by Maudsley,[3] a general paralytic in the prodromal stage skilfully robbed a number of railway passengers of their watches; he had provided himself for his expedition with a false beard and a dagger. And other somewhat similar instances of premeditation are on record.

Such relatively intelligent acts are linked by cases intermediate in complexity to the more simple expressions of acquisitiveness—the automatic theft and the rubbish-gathering of advanced dementia (Mendel).

The most important point to be noted about this tendency is that it occurs in exalted or at least optimistic paralytics, and not in those with the melancholic form of the disease. Ritti,[4] indeed, has seen some instances of theft by depressed paralytics; but such cases would appear to be quite exceptional.

This association of acts of acquisitiveness with exaltation has led some observers (Burman)[5] to suppose that the acts are *caused* by the delirious ideas. Clinically, however, it is very

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rare to see cases which would conceivably admit of this interpretation. Very often, on the contrary, the impulse precedes the delusions of exaltation by a long period of time—seven years in one of Brierre de Boismont's observations.(6) And acts of acquisitiveness are very common in the purely demential form of the disease where such delusions never develop; this is the form of paralysis most frequently seen in prison experience.

Corresponding with the purely impulsive character of his conduct is the paralytic's confused state of consciousness. Sometimes he will deny all knowledge of his action, or if he remembers it, he may profess amnesia of the motive. And very often, when he does not explicitly plead amnesia, but on the contrary endeavours to explain or excuse his conduct, his explanation is really nothing more than his personal theory to account for an action whose true motive entirely escapes him. This *ex post facto* origin of the paralytic's idea of his own motives is most apparent in the later stages of the disease, when the patient in the course of a few minutes' interview may assign three or four different and contradictory reasons for his action, his explanations varying with his moods. The following observation illustrates this point:

H. F— stole a piece of bacon from a stall outside a shop in a large thoroughfare; he simply picked the bacon up, hid it under his coat, and walked away; the shopman stopped him, he replaced the bacon on the stall, and waited till the police came and arrested him.

Prisoner is æt. 55, painter by trade, married, has three children. Marked lingual and facial tremor, blurred speech, exalted patellar reflexes. No special ocular symptoms. No signs of alcoholism. Very demented, *e. g.* blunders over the names and order of the months, cannot calculate his earnings over more than two weeks, etc. Facile, self-satisfied in mood; no obvious delusions; has had several congestive seizures.

Asked why, being an honest man, he committed a theft, says he was in drink and did not know what he was doing. Says later that he is hard-working and devoted to his family, that he has not taken liquor for years; becomes emotional on the subject of his children. Asked now why he stole the bacon, says it was to take it home to his children who had nothing to eat. Questioned about his work, says he is an excellent workman, gets good wages, has saved money, has £15 in the bank; beamingly optimistic. Asked now why he stole the bacon, says he did it for a joke. Reminded of his other explanations, says he does not know why he stole it, "it must have been for a joke."

Besides this impulsive origin, acts of acquisitiveness may

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also be more indirectly connected with general paralysis. Paralytics, for instance, who have blundered in their accounts or lost money, may in a more lucid phase embezzle to make good the deficit. This is a point of some practical importance in relation to the question of legal responsibility, because it may happen—and I have recently seen an instance of the sort—that the fraud has the appearance of intelligent execution, while the error it was designed to cover was stamped with the character of dementia.

Paralytics are also very amenable, through their *naïveté* to criminal suggestions by others. Magnan ([7]) quotes the case of a patient who was sent by his wife to steal in the Bon Marché; and Foville ([8]) mentions two instances where paralytics were used as tools to utter forgeries.

Suicide.—The frequency of suicidal tendency in general paralysis is a question regarding which opinion appears to be divided. The majority of authors consider it as very exceptional. Brierre de Boismont,([9]) however, speaks of it as a not uncommon initial symptom. And this is also the view of Mendel,([10]) who even suggests that an important proportion of suicides in middle life are to be attributed to this disease in its prodromal stage; in 180 patients observed by him, 12 had attempted to commit suicide, and in 7 of these cases the subsequent symptoms were of the exalted type. Kaes([11]) in a recent analysis of the anomalies of conduct in general paralysis found 33 cases of suicidal attempts in a series of 268 men, and 12 cases in a series of 69 women. Kaes and Mendel agree in assigning suicidal tendency in the early stages of the disease mainly to the sense of cerebral incapacity, and the consequent feeling of anxiety for the future; suicide in these conditions is not an impulse of directly morbid origin, but rather a last act of reason.

Regarding the later stages of the malady, there is practical unanimity that suicidal acts are very rare. As a rule, genuinely suicidal attempts are met with only in melancholic cases, and are of directly affective origin. It sometimes happens, however, in exalted paralytics that opposition to the patients' desires and pretensions leads, in the emotional instability of the disease, to more or less serious suicidal acts.

Generally the suicidal attempts of the paralytic, like their other actions, are marked by the essential dementia of the

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disease, and are clumsy, absurd, and liable to arrest by intercurrent impressions. Mendel ([13]) mentions a characteristic case where a patient with hypochondriacal ideas walked into the water with the intention of drowning himself, but was checked by the recollection that he suffered from rheumatism.

Suicidal attempts of a more determined and skilful character are very rare; and the number of actual suicides by paralytics recorded in medical literature is extremely small.

Voisin and Burlureaux ([13]) report the case of a woman who hanged herself in the prodromal stage of the disease; she had had systematised delusions of persecution for at least eighteen years previously, and these delusions persisted after the onset at the menopause of symptoms of general paralysis. Kaes ([14]) mentions (without details) that one of his paralytics committed suicide by hanging. In a very remarkable case reported by Sezaret *fils* ([15]) the patient, æt. 50, suffering from tabetic general paralysis, had hypochondriacal ideas and delusions of culpability, and after two abortive attempts, succeeded in killing himself by thrusting a piece of wood into the pericardium. Monestier ([16]) has recorded a case of suicide (hanging) by an exalted paralytic where the cause may perhaps have been the patient's irritation at the refusal of his liberty. I do not know of any other published cases.

Homicide.—Most of what has been said in reference to suicide applies equally to acts of violence in general paralysis. The only exception is that the reasoned suicide from the consciousness of commencing brain failure has no counterpart in homicide; and even this exception is not perhaps absolute, for at least one case of murder and attempted suicide by a paralytic is on record (see Fritsch's case below) where such a feeling may have entered into the causation. In other respects the parallelism is complete.

Acts of violence, like suicidal attempts—and very much oftener than such attempts—may be committed by paralytics when their expansive tendencies meet with opposition. In this way originate a good many assaults of more or less gravity, and sometimes, though rarely, offences of a more serious character (see cases of Marondon de Montyel and Max Simon below).

Occasionally, too, the paralytic dement may attempt murder under the influence of a simple suggestion; one of Kaes'

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patients,[17] for instance, nearly choked a child because he had read in a newspaper that death by strangulation only occurred after nine minutes, and he wished to verify the statement.

The large majority, however, of grave acts of violence depend on a primary homicidal impulse, and are related to more or less persistent states of emotional depression. This is the view of all writers on the subject, and it is fully borne out by the few observations recorded in medico-legal literature.

The following summary of a number of the recorded cases will give an idea of the conditions under which the impulse appears in paralytics. In one or two of the cases, it will be noted, the diagnosis is, perhaps, open to question.

1. *Ebers.*[18]—A soldier, æt. 47; chronic alcoholism and gout; placed in an asylum owing to an attack of hallucinatory delirium, was found to be suffering from general paralysis. Discharged on remission of symptoms, murdered his wife, of whose fidelity he had suspicions.

2. *Hagen.*[19]—Well-known case of Count Chorinsky, who, in prodromal stage of general paralysis, poisoned his wife. He acted in collusion with his mistress, whom he desired to marry; had also a pecuniary motive. Crime cleverly planned and executed.

3. *Sisteray.*[20]—A man, æt. 43; as a result of head injury had developed persecutory ideas, in connection with which he made well-planned attempts to murder, on one occasion, a relative, and on another a neighbour. The mental symptoms existed some ten years prior to the crime. The grounds for diagnosis of general paralysis appear very slight.

4. *Kraft-Ebing* (quoted by).[21]—A man, æt. 46; history of alcoholism. Had mixed delusions of exaltation and of persecution by his wife, and had often threatened to get rid of her. Strangled her, and tried to represent her death as natural. Typical *délire des grandeurs* developed subsequently.

5. *Lotz.*[22]—Policeman, æt. 50; history of alcoholism. Murdered a woman by shooting her with a revolver, subsequently firing on people who attempted to arrest him. Wanted to marry the woman, whose family opposed the union. Stated that the woman had agreed to a double suicide; this assertion was not in accord with her letters. Diagnosis of probable general paralysis rested on symptoms of increasing dementia, ataxic speech, paresis of right side, oscillatory emotional state.

6. *Schmidt.*[23]—Woman, æt. 45; insane heredity; always eccentric; symptoms of general paralysis dated from childbirth three years before crime. Murdered her husband with an axe, and buried his body in

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garden. Pleaded that she acted in self-defence, her husband in a state of drunkenness having attempted to kill her.

7. *Fritsch.*[24]—Shoemaker, æt. 43; head injury twenty years previously; alcoholism. Murdered his wife and four children during their sleep, and attempted to commit suicide. Had been worried about work for some time. Alcoholic symptoms marked at time of crime. Exaltation appeared a little later with characteristic physical signs.

8. *Baume.*[25]—Symptoms of general paralysis did not appear until fourteen years after the crime—the murder of a friend—committed under the influence of systematised delusions of persecution.

9. *Marondon de Montyel.*[26]—Workman, æt. 45. Made a murderous assault on a girl with the object of robbery. Clumsy defence. General paralysis of exalted form.

10. *Marondon de Montyel.*—Man, æt. 39, in early stage of exalted general paralysis, made a well-planned attempt to murder one of his friends. It appeared that the murderer had offered to his victim, who was about to be married, the loan of his penis, to which he attributed very exceptional qualities; losing the power of erection soon after, he suspected that his friend had kept possession of the organ.

11. *Villard.*[27]—Farm labourer, æt. 45; history of alcoholism. Entered a farmhouse where the people were at supper, saluted them in a friendly way, and a few minutes later made a sudden attack on one of them with a bill-hook, after which he ran away. Went next day to the doctor's house to ask about his victim's state; spoke very ill of the man, accusing him among other things of being the author of a fire in a neighbouring village thirty years previously; when it was pointed out that the man had not then been born, said "Well, it was his grandfather." A few weeks later his ideas were exalted, he was quite unable to suggest a motive for his action, and was unwilling to believe that he had been guilty of it.

12. *Ballet.*[28]—Female, with hereditary taint, always eccentric, and with vague persecutory ideas, committed a cleverly planned murder in the prodromal stage of general paralysis.

13. *Camuset.*[29]—Magnan quotes without details an observation of Camuset where a general paralytic committed a murder in a phase of automatism resembling that of epilepsy.

14. *Max Simon.*[30]—A general paralytic in the advanced stage, annoyed by the groans of the patient next him, crawled out of bed, and beat out the disturber's brains with a wooden shoe.

It is interesting to note that in nearly all these cases where the homicidal act was not incidental to an acquisitive intent, there existed some special circumstances apt to modify the

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emotional tone. Several of the patients, for instance, were alcoholic; others had a history of antecedent persecutory ideas; others (*e. g.* Marondon de Montyel's second case) acted under the influence of a disorder in visceral sensation. This point will be discussed more fully later on.

Sexual offences.—In the early stages of general paralysis, particularly in the optimistic form, genital excitement is frequent, and leads not uncommonly to criminal acts.

All varieties of sexual crime—rape, defilement of children, sodomy, bestiality, minor offences against public decency—have been observed in paralytics; but there is not sufficient statistical information to show what is the predominant form of the sexual impulse in the disease, and in what way differences in the direction of the impulse are related to differences in the emotional state. It is, however, interesting to note that in several recorded instances of defilement of children by paralytics ([31]) the disease was of the melancholic type. If this association is a general rule, it shows another striking correspondence between the depressed form of paralysis and the dementia of alcoholism and senility, in which the same variety of sexual crime is particularly common.

Other offences.—Of offences not included in the foregoing classes, malicious injuries to property are most frequent.

Paralytic dements, particularly in the lower classes of the population, frequently incur punishment through *quasi*-criminal offences—drunkenness, vagrancy, and various social sins of omission. These do not call for special remark.

It remains now to consider the causes which determine the special directions of the will in general paralysis, and to explain the contrast in conduct between that disease and the dementia of chronic alcoholism and of senility. The discussion will be confined to acts of acquisitiveness, acts of violence, and suicide. Sexual offences, which form the only other important group, will be treated apart.

Restricting our attention, then, to the forms of conduct just mentioned, and considering only the nature of the primary impulse, we recall, as the chief result of our inquiry, that acts of acquisitiveness are almost always related to the optimistic form, or to optimistic phases of the disease, while acts of violence to self or others are generally related to the melancholic form of the disease. Impulses of acquisitiveness are, in

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fact, the expression in the will, as the delirium of exaltation is the expression in thought, of the optimistic emotional tone. And here, as always, the impulse is the earlier and more constant expression of the emotion, of which, indeed, it is rather a constituent, while the corresponding thought is later in appearing, or may not appear at all.

Of course, in the large majority of cases of general paralysis, the affective tone is constantly or predominantly optimistic. This is obvious in the exalted paralytics of the classic type; it is evident, too, though less obtrusively, in the more numerous cases of simple dementia, most of which exhibit a facile, contented mood, and show in conduct the acquisitive tendencies which we have seen to be characteristically related to that mood. Only in a small minority of cases—27 per cent. in the highest estimate that of Kraepelin ([32])—is the prevalent mood one of depression.

It is, then, because the affective tone in general paralysis is most usually optimistic that impulses of acquisitiveness are frequent, suicidal and homicidal impulses rare. In senility and in chronic alcoholism, on the contrary, where the affective tone is generally pessimist, impulses of violence are relatively common.

The explanation, therefore, of the character of conduct and thought in general paralysis enters into the larger problem of the origin of the affective state in the disease.

Many solutions of this problem have been suggested. In the limits of this paper it is not possible to give more than the briefest summary of them.

The earlier observers, who regarded the delirium of exaltation as characteristic of the disease, appear to have had no hesitation in connecting this symptom in all its elements with the cerebral lesions. In this view the difficulty was to account for the occurrence of melancholic cases. The first mode of explanation was to attribute the hypochondriacal delirium to special visceral disorders. Bayle ([33]) suggested this origin in a case where the depressed form of delirium occurred in a patient with chronic gastritis. The theory was elaborated by Michéa ([34]) and others, and it has been accepted as at least a partial explanation by most subsequent writers.

Others have tried to meet the difficulty by supposing a difference in the site of the cerebral lesion, or in its nature in

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melancholic cases. Mairet,[35] for instance, held that exaltation accompanied meningo-encephalitis of the vertex, and depression the same lesion affecting the base. Austin[36] attributed the melancholic form to visual hallucinations depending on congestion of the optic thalami. Luys,[37] assuming a localisation of visceral sense in the ventricular region, regarded congestion of that region as the cause of the hypochondriacal delirium. These views, however, to say nothing of the fallacies of their psychological analysis, are entirely unsupported by pathological evidence; their interest is now purely historic. And the same may be said of such theories as have yet been put forward to connect the emotional tone of the delirium with peculiarities in the intimate nature of the brain lesion.

The origin of affective depression in paralysis has also been looked for in the influence of painful moral impressions acting as the exciting causes of the disease. Voisin,[38] to a certain extent, leans to this view; but most observers have failed to discover any confirmation of it. Lunier,[39] for instance, out of 65 cases of general paralysis developing during, or soon after, the Franco-Prussian War and the Commune, and attributed to the stress of these events, found only six which at any stage of the disease presented melancholic symptoms.

These various hypotheses, it will be noted, set out with the assumption that the optimistic delirium at all events is directly connected with the cerebral lesions; and this position is still taken up by some authors, who regard the delirium of exaltation as the "psychic equivalent of a cortical hyperæmia," the "psychic function of a nutritively over-stimulated thought-cell" (Schüle).

In the more radical theory of Baillarger,[40] on the contrary, it was admitted that there was no better warrant for attributing the optimistic delirium directly to the brain lesions than there was for so attributing the delirium of depression. Whatever value may be attached to the constructive part of Baillarger's theory—that concerning the *folie paralytique*—it is certain that criticism has not hitherto in any way weakened the fundamental proposition that the known cortical changes cannot account for any psychic symptom except the dementia.

And the same statement will apply to the other organic dementias.

The recent researches in cerebral pathology which have

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added so much to our knowledge of the minute anatomy of the paralytic, the alcoholic, and the senile brain, have shown nothing to connect the active psychic symptoms in these diseases with the visible cortical changes, even when these latter are eked out with fanciful hypotheses. There is no evidence to suggest that the cerebral lesions in melancholic paralysis differ from those in paralysis with exaltation. There is nothing in the pathological changes in the brain in chronic alcoholism or in senile degeneration to explain why the affective tone is as ordinarily depressed in these diseases as it is exalted in general paralysis. In short, whatever be the nature of the cerebral conditions which underlie the different affective moods, there is no reason to suppose that any of the visible brain changes in the organic dementias can be regarded as morbid reproductions of these conditions.

So far, then, the assumption of special brain lesions to explain the varieties of feeling and thought in general paralysis is unsupported by direct evidence. And we may go beyond this negative position, and maintain that such an assumption is unnecessary. What is pathological in the exaltation or depression of the paralytic—the quality of excess—is a character of dementia, a result of the brain dissolution, and does not at all imply that the emotional tone, as such, arises otherwise than in normal conditions,—that is to say, from the state of the organic life. This simpler explanation can be, to a certain extent, tested by clinical evidence.

Take first the melancholic form of the disease. The chief conditions under which depression appears in general paralysis may be classed thus:

(*a*) *Age.*—Kraepelin ([41]) has pointed out that general paralytics of the melancholic type are usually above the average age for the disease, and frequently show signs of premature senility. Cullerre,([42]) in his observations of general paralysis with diffused atheromatous disease, notes the constancy of emotional depression in such cases.

(*b*) *Intoxications.*—Depression is the rule in general paralysis with a history of alcoholism. Talon ([43]) in 100 alcoholic cases of the disease, found only 12 with expansive delirium.

Similarly, when general paralysis develops in patients suffering from lead-poisoning, Devouges ([44]) has pointed out that lypemania is constant in the early periods, and Régis ([45])

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indicates the pessimist and malevolent temper as a distinctive character in saturnine general paralysis.

(*c*) *Visceral disease.*—As already mentioned, hypochondriacal delirium is often related to visceral disorders. Clouston ([46]) says that his "belief and experience is that in almost all these cases with melancholic symptoms there is some organic visceral disease or disturbance, which transmits to the convolutions sensations which are disagreeable and depressing." He notes that nearly all his paralytics who had tubercular disease were melancholic. Mendel,([47]) in several of his observations, found the delirium of depression associated with heart disease. Voisin and Burlureaux,([48]) Mickle,([49]) and others, express similar views. The frequency of depression in tabetic cases is a fact of the same order.

(*d*) *Vesanic antecedents.*—We have seen that even intense emotional states, arising as normal reactions to external stimuli, do not influence the affective tone when general paralysis subsequently develops. It is otherwise when such states are of morbid origin. For instance, when general paralysis supervenes in a patient with chronic persecutory delirium, the ideas, the affective tone, and the impulses of that delirium, are likely to persist until late dementia. Several of the homicidal cases quoted above are instances of this influence.

And, further, as Magnan ([50]) has proved, where there is merely a latent aptitude to persecutory delirium in a degenerate subject, the onset of general paralysis is likely to hasten its development, and its symptoms will then colour the paralytic dementia. This is probably the origin of the melancholic tone in a good many instances, since it has been latterly shown, especially by Nacke,([51]) that the disease is very frequently related to the degenerate organisation.

With the possible exception of the last group, we see accordingly that the ascertainable causes of depressed affective tone in paralytic dementia are those that influence unfavourably the state of the organic life. Of course, the clinical method can only detect the grosser and more obvious of these causes, but the evidence it gives is strong enough to suggest that the undetected causes which generate that tone in other cases are probably of the same nature. There is a perversion of the chemical or mechanical processes which cause the internal

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sensations—a perversion probably similar to that which occurs in the organic decadence of age or in general intoxications; and therefore the affective tone is depressed, and the emotions, impulses, and thoughts of these paralytic dements are like the emotions, impulses, and thoughts of the chronic alcoholic or of the senile.

Conversely, when these special conditions are absent, and the state of the organic life is healthy, the emotional tone will be optimistic. And this optimism will be manifest in impulses and ideas, more or less intense, more or less extravagant, according to the organic energy which inspires them, and the degree of the dementia which allows their development.

This optimistic form is that which general paralysis more usually takes, because it is typically a disease of the years of fullest vital activity; the period 30—55 is given by most authors as that of its maximum incidence.

It follows from this hypothesis that similar optimistic symptoms should attend other forms of dementia with sound organic functions, and this is, in fact, what occurs.

When, for instance, by exception, chronic poisoning by alcohol, instead of producing general visceral disorder, limits its action mainly to the brain, dementia with optimism will ensue, and the clinical features of exalted general paralysis will be more or less exactly reproduced. At all events, if I may trust my personal experience, exaltation in chronic alcoholism is regularly associated with a relatively healthy state of visceral function; and though observations bearing on the point are scanty in medical literature—reference to the visceral condition being usually omitted—such information as is accessible tends in the same sense. Régis,[52] for instance, has published a remarkable case of a chronic alcoholic who presented typical physical and mental symptoms of exalted general paralysis, including the impulses of acquisitiveness; at the *post-mortem* none of the appearances of that disease were found; there was atheroma of the brain-vessels, and "no lesions in the thoracic or abdominal organs." An almost parallel observation has been recorded by Camuset.[53]

And a somewhat similar interpretation suggests itself in those cases where chronic drunkards presenting at first the normal depressed delirium of alcoholism, develop exaltation when they have been for some time under treatment. In such

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cases the graver incidence of the poison on the brain leaves a lasting dementia; the damage to the viscera is slighter and transitory, and when it passes away and normal function is restored, the affective tone changes correspondingly from depression to exaltation. A case published by Bonville Fox ([54]) is a good example of this evolution; a chronic alcoholic on reception was suffering from chronic gastritis, and had a delusion that the stomach of a corpse had been put into him; after four years' treatment this delusion disappeared and was succeeded by ideas of exaltation.

In dementia due to other forms of organic brain disease, the dependence of the affective tone on the visceral state appears in exactly the same way. Diseased conditions of various kinds affecting the prefrontal lobes, for instance, when extensive enough to cause mental symptoms, give rise to a state of enfeeblement, which is accompanied sometimes by exaltation, sometimes by depression. Jastrowitz([55]) found that in such cases the dementia was associated with gay excitation (moria); while Burzio,([56]) Voegelin,([57]) and others have published observations where the emotional tone was melancholic. These differences in the affective tone cannot be traced to differences in the character of the brain lesion; they are, on the other hand, easily explicable as reflections of differences in the conditions of the organic life. Thus, in Burzio's case—softening of the left frontal lobe with dementia, melancholia, and epilepsy—the patient was a chronic alcoholic, with cirrhosis of the liver and general visceral disease, and to these conditions one may safely attribute his melancholia. In Voegelin's case, again, where a tumour growing from the hypophysis produced cortical changes in the frontal and, to a less extent, in the occipital lobes—other parts of the nervous system being normal—the melancholic symptoms were associated with the onset of the menopause.

In senility one finds the same thing; usually the dementia of age is accompanied by emotional depression, the reflection of the failing organic life; more rarely the affective tone is optimistic, and in these cases there is, as a rule, a remarkable retention of visceral health.

So far, then, as it goes, the clinical evidence from these various sources leads to the same conclusions. In all these conditions—general paralysis, alcoholism senility and the

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rest—the dementia is the only direct result of the brain lesions, and is proportionate in degree to their extent. The active psychic symptoms in impulse and in thought, which colour the dementia, are not direct effects of these lesions; they are the expression—thanks to the dementia, a greatly exaggerated expression—of the influence of the organic life "in which the emotions and the will are rooted" (Maudsley).

That is to say, the simpler conditions of dementia only make plainer and more gross the same relation that governs at least a great part of the normal operations of the mind. "It is the association of the emotions, and, with the emotions, that of the impulses, that determines the association of ideas." On the cœnæsthesis depends the grouping of the memories which go to constitute the delirious impulses and ideas. When the organic stimuli which make up the cœnæsthesis are normal, pleasurable, as they are more usually in general paralysis, exceptionally in alcoholism and in senility, then the emotional tone is optimist, the impulses of acquisitiveness, the ideas of exaltation. When, on the other hand, the stimuli are of disordered function, as they mostly are in the senile and the alcoholic, and sometimes in the paralytic, then the emotional tone with its accompanying impulses and related delusions is pessimistic.

(1) *Journ. of Ment. Sc.*, April, 1898; *ibid.*, April, 1900; *ibid.*, Oct., 1900. *Comptes rendus du Congrès pénit. de Bruxelles*, 1900.—(2) *Reports of Commissioners of Prisons.*—(3) *Lancet*, 1875.—(4) *Ann. médico-psych.*, 1875.—(5) *Journ. of Ment. Sc.*, 1873.—(6) *Ann. d'hyg. publ. et de méd. lég.*, 1860.—(7) *La paralysie générale*, Paris, 1894.—(8) Art. "Paralysie générale" in Jaccoud's *Dict. de méd. et de chir.*, Paris, 1878.—(9) Op. cit.—(10) *Die progressive Paralysie*, Berlin, 1880. (11) *Allg. Zeitschr. f. Psychiatrie*, 1896.—(12) Op. cit.—(13) *De la mélancolie dans ses rapports avec la paralysie générale*, Paris, 1880.—(14) Op. cit.—(15) *Ann. méd. psych.*, 1892.—(16) *Ann. méd. psych.*, 1900.—(17) Op. cit.—(18) *Die Zurechnungsfähigkeit*, Glogau, 1860.—(19) *Chorinsky*, Erlangen, 1872.—(20) *Ann. méd. psych.*, 1873.—(21) *Méd. lég. des aliénés*, édit. franç., 1900.—(22) *Arch. f. psych.*, 1877.—(23) *Arch. f. psych.*, 1881.—(24) *Wien. medis. Presse*, 1881.—(25) *Ann. méd. psych.*, 1881.—(26) *Ann. d'hyg. pub. et de méd. lég.*, 1888.—(27) *Ann. d'hyg. pub. et de méd. lég.*, 1889.—(28) Ref. in *Arch. d'anthropol. crim.*, 1891.—(29) Quoted in *Magnan et Sérieux*, op. cit.—(30) *Crimes et délits dans la folie*, Paris, 1886.—(31) *Ann. méd. psych.*, 1879.—(32) *Psychiatrie*, ed. 5, Leipzig, 1896.—(33) *Traité des mal. du cerveau*, Paris, 1825.—(34) *Ann. méd. psych.*, 1864.—(35) *De la démence mélancolique*, Paris, 1883.—(36) Quoted in Voisin et Burlureaux, op. cit.—(37) *Traité des mal. mentales*, Paris, 1881.—(38) Op. cit.—(39) *Ann. méd. psych.*, 1874.—(40) *Recherches sur les mal. mentales*, vol. ii, Paris, 1890.—(41) Op. cit.—(42) *Ann. méd. psych.*, 1882.—(43) Ref. in *Ann. méd. psych.*, 1883.—(44) *Ann. méd. psych.*, 1857.—(45) *Ann. méd. psych.*, 1880.—(46) *Mental Diseases*, ed. 5, 1898.—(47) Op. cit.—(48) Op. cit.—(49) *General Paralysis*, ed. 2, 1886.—(50) *Leçons sur les mal. mentales*, 1897.—(51) *Neurol. Centralbl.*, 1899 and 1900; *Allg. Zeitsch. f. Psych.*, 1879 and 1899.—(52) *Ann. méd. psych.*, 1881.—(53) *Ann. méd. Psych.*, 1883.—(54) *Journ. of Ment. Sc.*, 1884.—(55) *Deut. med. Wochenschr.*, 1888.—(56) *Archivio di Psichiatr.*, 1900.—(57) *Allg. Zeitschr. f. Psych.*, 1897.

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Discussion

At the General Meeting, London, November 21st, 1901.

Dr. Robert Jones said the paper dealt with very valuable material in the field of medico-psychical research in which the majority of those present had no experience, *i. e.* those who came to asylums from the prisons. Dr. Sullivan had touched upon the relation of exaltation and depression. Bevan Lewis endeavoured to explain that, physically, a process of reduction took place in the nerve-cells, which was described as a dissolution of a greater depth in the exaltation of mania than took place in the depression of melancholia, the difference in the nerve-cells being essentially one of degree. He was interested in hearing that those forms of general paralysis which came under Dr. Sullivan's care were of a mentally depressed type. Such had been his own experience. He had had several cases transferred from Broadmoor to Claybury, and his experience agreed with Dr. Sullivan's. He thought very little was known about the relation of insanity to organic life. Ford Robertson had worked at the subject of the condition of the intestinal mucous membrane in cases of general paralysis, and it was interesting to see that he accounted for digestive abnormalities and diarrhœa as being probably caused by the same toxæmic changes which caused general paralysis itself. At Cheltenham, that gentleman showed beautiful preparations of lesions in the intestinal canal dependent upon toxic changes in cases of general paralysis of the insane. With regard to the emotional character of senility, it was somewhat difficult of explanation. So much depended on the balance between action and inhibition, and when that was disturbed, the slightest stimulus, otherwise insufficient, was likely to give rise to some fleeting effect. One found that particularly so in old people, in whom there were marked senile arterial changes. Such persons were irritable, and would be pleased or irritated momentarily by trivial causes. Possibly at the root of these changes was an abnormal involution in the arterial system. He said, in conclusion, that he felt very much interested in Dr. Sullivan's paper, for it suggested the necessity for further investigation into a fertile field hitherto but little worked upon, viz. the psychology of the emotions as bearing upon action, normal and abnormal.

Dr. Seymour Tuke said he would like to mention one case which he thought might interest Dr. Sullivan. That gentleman mentioned fifty-five years as being the limit of age, and he referred to depression in people who were of a certain age as being a special attribute of the general paralytic. He, Dr. Tuke, last year had a very interesting case, that of an old gentleman who was the most magnificent type of old man that he had ever seen. He was, and always had been, very keen on athletic exercises and massage. He was in the habit of massaging himself thoroughly every morning, from the head downwards. He was sixty-two years of age, and had a typical attack of general paralysis, with the most extraordinary exaltation. He was exalted from the commencement, and even in his dementia he was not known to be once really depressed. He was always full of the idea of driving a four-in-hand, and going about in steam launches. He had done a good deal of that sort of thing in his earlier years. He went through all the typical stages of general paralysis, and throughout his optimistic delusions persisted, as well as his idea of his own youth.

Dr. Sullivan, in reply to the observations of Dr. Robert Jones, said he gathered from Bevan Lewis's account of his work, that in his endeavour to explain the mental symptoms related to alcoholism by reference to the brain, he had appealed to certain facts of autopsy and conditions of the brain-cell, about which there was a lack of absolute unanimity. Some others, who had also endeavoured to explain emotional states by the condition of the brain, notably Dr. Turner, had mentioned similar conditions, but they explained the influence of those conditions on the emotional tone in an opposite manner. There must, no doubt, be an underlying cerebral condition for the affective tone, but that was still a matter of pure speculation. He thought one could sufficiently explain impulse and thought in conditions of dementia without supposing that impulse and thought depended on changes in the brain; that all the changes in the brain did was to allow the ordinary emotional conditions to develop in a more exaggerated form than they otherwise would, and that consequent upon those emotional changes was the condition of thought in the disease.

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