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Part I.—Original Articles.

Amentia and Dementia: a Clinico-Pathological Study.

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PART III.—DEMENTIA (*continued*).

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Mental Confusion and Dementia.

In the present section the writer proposes to deal at length with the symptomatology, which is the psychic equivalent of those physical states of the cerebrum which are the necessary precursors of dissolution of the cerebral neurones. There being no suitable word in use for the description of this symptomatology, and it not appearing desirable to coin a new one for the purpose, the term "mental confusion" will be employed to connote, in the broadest sense, the mental symptoms which occur in association with certain pathological states of the cortical neurones which may be followed by the recovery or by a more or less extensive dissolution of these elements.

In the introduction to this part of the paper (pp. 221–224) the writer has already indicated the types of case in which the latter of these sequelæ ensues, and it is sufficient for the present to state that the former sequela occurs in cases in which the cause of the pathological state of the neurones is of a temporary or removable nature, and has been neither so prolonged in duration nor so severe in degree as to cause irreparable damage to more than a negligeable number of the nervous units of the cerebrum.

Patients suffering from mental confusion may thus recover, or, at any rate, may recover sufficiently to pass as "sane" individuals. If, however, the mental confusion is profound, more or less weak-mindedness is probably an invariable sequela; and in cases where neuronic dissolution is the result of a normal process of involution, or is due to a progressive or irremovable cause, the ensuing grades of dementia are each preceded by a degree of mental confusion the duration and severity of which bear a direct relationship to the amount of dementia which follows.

As has already been pointed out in dealing with the subject of amentia (*Journal of Mental Science*, 1905, p. 665), the aberrant symptomatology manifested by cases of ordinary high-grade amentia or of recurrent insanity does not pass beyond a psychic stage which might be mistaken for mental confusion, but which is really allied, on the one hand, to the inability to think which occurs in some persons owing to nervousness—*e.g.* a student at a *vivâ-voce* examination—and on the other to the thoughtless remarks of children or persons who happen to be "talking

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through the backs of their heads." This mental state may be conveniently referred to under the term "psychic resolution"; there is no reason to suppose that it is associated with other than functionally aberrant neuronic activity; and recovery occurs sooner or later.

The phenomena to be described in the present section under the term "mental" or "psychic confusion" differ from those just referred to in being the result of definite pathological states of the cortical neurones. If the neurones recover, the mental confusion disappears; if irreparable damage to an appreciable number of the cortical elements has ensued, a proportionate degree of permanent psychic disability, or "psychic dissolution," is the necessary consequent.

The types of mental disease described in Part II under the term "Amentia" therefore differ fundamentally from those to be considered in the present and final division of the paper in that the symptomatology of the former is due to subnormal or aberrant neuronic activity of developmental origin, and that of the latter is caused by aberrant or defective cerebral processes which have their basis in primary or secondary pathological states of the cortical neurones.

CAUSES OF MENTAL CONFUSION.

The major proportion of cases of mental confusion are examples of natural involution of the cortical neurones, which occurs in the reverse order to that of their evolution, and ensues at such individually diverse periods of life as are determined by their inherent capacity of resistance to the process of decay. In such cases, whilst it is usual for both the actual point of time at which the process of dissolution commences, and also the extent and degree to which it at any particular time proceeds, to be largely influenced by extraneous factors, a well-marked grade of dementia is the invariable final sequela.

It is, nevertheless, common to meet with cases of mental confusion which are directly produced by extraneous causes at a time prior to the period when normal involution of the cortical neurones is imminent. If such cause be temporary or removable, more or less complete recovery of the cerebral neurones (and from the mental confusion) may ensue, or more or less wide-

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spread destruction of the cortical units (with for the time being a stationary amount of dementia) may follow. If, on the other hand, the extraneous cause be of a permanent and progressive nature, the ensuing neuronic dissolution and consequent dementia progress until death occurs.

It is thus evident that foremost amongst the causes of mental confusion must be placed what is, in at any rate a very large proportion of the cases in which it occurs, the necessary precedent to this psychic state, namely a subnormal durability of the higher neurones of the cerebral cortex.

It is true that a general toxæmia of sufficient intensity is able to produce a temporary state of mental confusion even in normal cerebra—*e. g.* the deliria of infectious diseases, of certain organic and inorganic poisons, etc. In these cases, however, the neurones of the cerebrum suffer from pathological changes which are similar to those occurring in the other vital units of which the body is composed; and the exact incidence and intensity of the lesions differ in different cases according to the special selective action of the particular toxine under exhibition.

In the types of mental disease which are at present under consideration, influences to which normal cerebra may be without injury subjected frequently produce widespread dissolution of these elements with a corresponding degree of permanent mental enfeeblement; and in a considerable number of cases a rapid or slow premature dissolution of the cerebral neurones occurs in the reverse order to that of their evolution and in the apparent absence of any extraneous causative agent.

This inherent durability or capacity of resistance to the process of decay, which varies so greatly in the case of the cerebral neurones of different individuals of the race, is not peculiar to the cerebrum, though, owing to the great complexity and consequent instability, and to the relatively recent evolution of the higher elements composing this organ, it is probably much more variable in degree in the case of the cerebrum than in that of any of the other tissues or organs of which the body is composed.

It is therefore necessary amongst the causes of mental confusion to place first the physical basis, which in at least all severe cases is the necessary precedent to this psychic state, namely a *deficient durability of the higher cortical neurones.*

Next on the list of causes, owing to the fact that, though

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secondary or exciting causes only, they are not pathological in nature, may be placed the *various forms of physical and mental "stress"* which, especially at the "critical" periods of life, often excite morbid changes in cortical neurones of deficient durability, although they would be relatively or absolutely without prejudicial influence on normal cortical neurones.

Lastly, the chief exciting or secondary causes which are pathological in nature must be detailed. These may be classed into two groups, namely:

(1) *Direct action of toxines.*—Of these the most important, and also the most common, are alcoholic excess, which produces the symptom-complex described as "Korsakow's disease" and the toxæmia which frequently follows childbirth, and which is responsible for the "confusional" varieties of puerperal insanity. The different toxæmias and infections, when acting on suitable cerebra, are probably equally capable of producing pathological changes in the neurones of the cortex, but such causative agents act more rarely than do the two first cited.

Whether the cases which arise in consequence of the action of one or more of these causative agents recover or develop dementia depends on the resistance of the affected neurones and on the extent and severity of the pathological changes which are produced.

(2) *Indirect action of toxines* resulting in deficient nutrition of the cortical neurones and, therefore, tending to interfere with their vitality and functional activity.

(A) *By vascular and neuroglial* (and chiefly secondary neuronic) *changes, which follow prolonged action of the toxine,* and which are probably largely of the nature of secondary proliferation after, or of reaction to, the injury produced by the toxine, or by adverse influences occurring at any subsequent period of life.

The chief variety under this heading is the dementia paralytica (general paralysis) which is a frequent sequela of systemic syphilis in degenerates, and which rapidly or slowly passes on to a fatal issue.

The course taken by cases of dementia paralytica depends largely on their respective degrees of degeneracy.

In the under-developed and poorly constructed neurones of the imbecile variety of juvenile general paralysis the process of dissolution is slow, and the neuronic changes, as has been

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shown by Watson, are proportionately more extensive than are the vascular and neuroglial.

On the other hand, in the better developed cerebra of the ordinary juvenile general paralytic who is infected with syphilis at birth or thereabouts the process of dissolution is more rapid and vascular and neuroglial proliferation is more pronounced.

Further, in adult cases of general paralysis the course is usually chronic in degenerates, who readily break down under the influence of external "stress," and who, therefore, require early segregation, with the consequent relative absence of this factor; and it is commonly more rapid in the less degenerate subjects who, before break-down occurs, are frequently subjected to the severest forms of mental and physical "stress," and whose neurones are therefore strained to the utmost before asylum *régime* becomes necessary. In both these types, as the syphilitic infection at the time of its occurrence had acted on already developed neurones and therefore had not induced still further developmental disabilities in these, vascular and neuroglial proliferation is pronounced.

Finally, in senile cases of general paralysis, in which reparative reaction is naturally more feeble, the course of the process of dissolution is variable, and the general type of the symptomatology and of the morbid anatomy and histology approximates towards that which exists in senile progressive dementia.

Though previous syphilis, as has been stated, is usually the important extraneous factor in the production of (secondary) presenile dissolution of the cerebrum, other influences, particularly certain of the slowly-acting metallic poisons—*e.g.* lead—produce a progressive cerebral dissolution of similar character; and about 25 *per cent.* of the insane who are the subjects of epilepsy suffer from a similar progressive disintegration of the elements of the cerebrum. The pathological changes which exist in the cerebra of such epileptic cases have recently been elaborately detailed by Turner.

It may be added that such devitalising factors as prolonged alcoholic excess, etc., play an important secondary part in the development of many of the cases referred to under this heading.

(B) *By the vascular degeneration accompanying senility or premature senility*, which similarly results in secondary toxic and nutritional affection of the cortical neurones. In cases of this

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type also the dementia which supervenes progresses rapidly or slowly until death ensues.

It is perhaps unnecessary to remark here that, as has already been shown at length both in Part I of the present communication and also in previous contributions, vascular degeneration, even when extreme, has relatively little influence on cerebral neurones whose durability is within normal limits.

SYMPTOMATOLOGY OF MENTAL CONFUSION.

It is proposed in the following description to deal with the subject of mental confusion from the psychological rather than the purely symptomatological aspect, and therefore neither the mode of presentation nor the actual subject-matter under consideration will be found to conform to the standard description of the symptom-complex which is usually referred to under such various names as "confusional insanity," "Korsakow's disease," etc.

This mode of treatment is adopted as it is the writer's purpose to demonstrate that mental confusion is not a special symptomatological feature of a certain type of mental alienation, and that it occurs, not only in many recent cases of insanity which terminate favourably, but is also the necessary precedent to the onset and progress of dementia in all cases which eventually suffer from cerebral dissolution.

The subject will be discussed, for purposes of convenience, under certain headings, and descriptive cases which illustrate the special psychic disturbances under consideration will be introduced into the text. The general description will fall under two main subdivisions: (1) psychic phenomena due to pathological conditions of the centres of association, and (2) psychic phenomena due to pathological conditions of the regions concerned with the evolution of sensation and recognition, together with allied products of aberrant mental association.

Under the former heading simple mental confusion will first be referred to; the description of this psychic state will be followed by an account of the symptoms usually spoken of as "confabulation" or "pseudo-reminiscence," and reference will then be made to the more aberrant processes of (lower) association which result in the production of "delusions."

Under the latter heading the nature and mode of develop-

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mental "illusions" and "hallucinations" will receive consideration, and certain more complex psychic products which occur under the local influence of the latter phenomena will also be referred to.

(A) *Psychic Phenomena due to Pathological Conditions of the Centres of Association.*

(1) *Simple Mental Confusion.*

In profound mental confusion, whilst the subject takes no voluntary notice of his surroundings and pays no attention to the calls of nature, if he be able to exhibit any evidence of mental activity whatever, a simple question is obviously understood. Unless such a question requires a familiar reply and this reply is made with reasonable rapidity, the impression produced fades, and the patient forgets that the question has been asked. Sometimes a question, though understood, is forgotten before the reply is forthcoming, and the patient responds with such remarks as "What do you say?" "I don't know," etc. It is hardly necessary to remark that such an extreme abeyance of psychic function even for a short period of time naturally results in an entire loss of such fundamental perceptions as those connected with time and place, which in the normal individual depend upon his cognisance of sequence of sensations, and permanence or change of position, respectively.

If the confusion be less profound, the patient may, apart from his ignorance of time and place, converse in an apparently normal manner for a considerable period. He is, however, largely or entirely unable to retain recent impressions for any reasonable period of time, and he frequently forgets different pieces of information almost as soon as he has acquired them. He may, for example, be repeatedly told where he is, the time of day, etc., at intervals of a few minutes, and at the end he is as ignorant on these particular points as he was at the beginning. Whilst the rapid fading of mental impressions is especially obvious with reference to time and place, it exists, in well-marked cases, with regard to all varieties of new information.

It is hardly necessary to add that in severe cases the patient confines himself to the giving of replies to questions or to

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the acknowledging of information, and makes no attempt at voluntary conversation, for the rapid fading of new mental impressions entirely bars the formation of further associative combinations.

In the following case of profound confusion the patient was successful in giving his name and age, but further questioning caused him to be unable to do so, probably through the rapid onset of fatigue, though it was quite obvious that he still understood the question. When later, after an interval of rest, he was again able to give his name, he voluntarily followed this by a statement of his age, which demonstrates that a remnant of the power of association by contiguity was existent. To other questions he replied "Yes," "No," or "Don't know," but a question concerning syphilis, which so commonly induces an indignant denial, made a sufficiently lasting impression to obtain a definite response of "Never had it."

CASE I.—*Admitted November 18th*, 1904 (Hellingly Asylum). Father insane. Cause, intemperance.

Male, married, licensed victualler, æt. 57. Present notes taken on admission.

A pale, miserable-looking man. He gives his name and says his age is forty. To questions of day, date, month, year, etc., he says "Don't know, sir," and he makes the same reply to that of the time of day. He knows no one here and doesn't know where he lives or where he is. Then he tells me that he doesn't know his name, and when I say that he has already told me he says "Have I, sir?" After an interval of rest he is able to give his name, and then he voluntarily adds his age is forty. He then to all questions says "Have I?" "I don't know," and "No," and "Yes." He "doesn't know" what anything is that is shown him. He denies alcoholic excess. When asked his business he "ain't got one." ("Ever had?") "No." ("Married?") "No." ("Ever been?") "No." ("Children?") "No." ("Ever had?") "No." ("How long ago syphilis?") "Never had it!" He looks dull and sleepy, but replies readily enough. He understands, as far as can be made out, all that is said to him and does as he is told in every way.

After physical examination he says: "You've been very good to me." ("You are a funny customer!") "I am?" ("You weren't born yesterday?") "Wasn't I?" ("No!") "I

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thought I was." When he is got to laugh, he laughs in a most fatuous and uninterested manner.

Pupils equal, 1 mm., and absolutely immobile. Ears very plain. Palate very long and large. Tongue catarrhal and finely tremulous. Plantars dull. Knee-jerks absent. He lifts and moves his legs freely. There is no apparent sensation of any kind in his legs, and yet there is no inco-ordination. When told to put the left heel on the right great toe, he crosses the left leg over the right. When asked to repeat it, he crosses the right leg over the left. He can at once touch together the big toes and the heels. He shows Romberg's sign well, but there is no marked stamping when walking, and no wide base. Abdominal reflexes present. Severe double aortic disease, with much hypertrophy and dilatation of heart.

Patient died three and a half months after admission.

In contrast to the above case is the following, which, however, still exhibits such marked inability to retain recent impressions that though the patient had only had his dinner a few minutes, he thought that "it is getting on to dinner-time." He was almost unable to originate remarks of his own, but he replied readily enough to questions, and paid a certain amount of attention to his surroundings, as he asked for a light for his pipe and tried to look at the writer's note-book. He had no idea how long he had been in the asylum or even of the time of the year. In spite of his advanced age and general feebleness, he was anxious to go out to work, and he believed that it was his custom to work every day.

Though not a single one of these symptoms affords definite evidence of present dementia, they indicate, in a man of seventy-eight, that dementia is (almost) certain to supervene, even though they should have been directly produced by alcoholic excess, of which there was no evidence in this case.

CASE 2. *Admitted November 30th,* 1903 (Hellingly Asylum).—Previous attack of unknown date. Duration prior to admission stated to be about two years.

Male, æt. 78, labourer, admitted five days ago.

Patient smiles pleasantly and asks me for a light for his pipe. He tries to see what I am writing. He gives his name, and his age as "getting on for eighty." He "cannot say justly when I

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came here, but I have been here a tidy while." He thinks he is in a "union." He doesn't know the day "as I have been here so long." When asked the time of year he replies that "it is getting on to the back end of summer" (beginning of December). He had his dinner a few minutes ago but still thinks that "it is getting on to dinner-time." He tells me that he works here every day.

He frequently asks to be allowed to work out in the garden. He wanders about the corridors and endeavours to find his way outside. He dresses himself but is slow over it. As a whole he acts quite intelligently, but owns that at times he "gets a bit lost and wants to go away."

Patient died thirteen months after admission.

The following case also exhibits much mental confusion, but the patient is better able to originate remarks and can also perform simple acts of mental association, which, however, are concerned chiefly with the events of long ago. She cannot, however, state her age correctly, and does not appreciate that her eldest daughter is nearly as old as herself if her information is correct. She also states at different times that she has had six children, that she has buried five, and that she has brought up twelve.

These features of the case, as will be pointed out later, demonstrate that considerable mental dissolution has already occurred. That she suffers from illusions of identity points, on the other hand, as will be shown later, to the existence of recent pathological changes in the cortical neurones.

CASE 3. *Admitted November 16th*, 1903 (Hellingly Asylum).—Mother died in an apoplectic fit. Duration prior to admission stated to be three years.

Female, æt. 74, admitted twenty-four hours ago.

Patient gives her name and states that her age is "one or two and twenty." She has had six children; the eldest is about eighteen and the youngest "just runs alone. She's a picture, and she'll run after any man. Her brothers learned her to run after 'em." She laughs heartily and childishly after this remark. "Yes, I've buried five. That's a good many, wasn't it?" ("Married?") "It is in the book, I know. I couldn't tell you." ("Who is that?") "I don't know her. Oh!

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Yes, I think I do! Of course I do. How are you?" Sits up and shakes hands. "I'm pleased to see you, quite pleased. I keep on cough, cough, cough, cough. It's such a jarring complaint for your head, ain't it?" She does not know the day, and when asked the time of year replies, "My girl could directly, I dare say, only she's gone out." She thinks she is at "Mount Pleasant." Later on she says that she has brought up twelve children, and that the head nurse is the youngest of them. She is garrulous and volunteers such remarks as "Like herrings? I'll bring you up some."

Patient died eleven months after admission.

The next case exhibits an equal amount of mental confusion but shows less signs of dementia. The patient is thus better able to appreciate her condition, and shows *consciousness of confusion* by the remarks: "I forget, poor old wretch that I am. I'm good for nothing," and "Blessed if I can tell you. It confuses me when I get two or three things on my mind at once, but I shall remember." She exhibits illusions of identity and is lost to time and place. It is noteworthy that her attempts at mental association, as would be expected, deal with recent experience rather than with the events of long ago, and thus differ somewhat from those of the previous case.

CASE 4. *Admitted December 10th*, 1903 (Hellingly Asylum).—No history. Duration prior to admission stated to be about six weeks.

Female, æt. 81, widow. Admitted twenty-four hours ago.

Restless, fidgets with the bed-clothes, and smooths them out, etc. She asks me how I am, and when I make a remark she at once asks me what I say. She has met me before "close to home; I know you by sight." She thinks the nurse is called Haverdale. She is in a hospital "almost close to the top of the street. I came this morning." "I forget, poor old wretch that I am. I'm good for nothing." The day is Tuesday (Friday). It is about November 3rd (December 11th). She has been here since the beginning of the week. She doesn't know the time of day. The month is "September or October; yes, October, but I came here in September." She thinks she came on Tuesday. She had tea an hour ago, "two nice cups," and thinks it is about eight o'clock (6.15 P.M.) She came here in

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"October, yes September; October. I forget the day of the month. I haven't been here long, have I? I shall try to do everything I can whilst I am with you." She has a husband, D. R—, who is "not quite so old as me. Blessed if I can tell you. It confuses me when I get two or three things on my mind at once, but I shall remember. I hardly ever go from home anywhere."

The patient is extremely restless, is very apprehensive, and is wet in her habits.

Patient died eight months after admission.

The following pre-senile case shows on the one hand much less loss of the capacity for association of ideas, and on the other such marked illusions and hallucinations that a degree of apprehensiveness and depression is produced which causes the patient to be at times almost frantic.

Whilst it might, perhaps, be argued that in such a case apprehensiveness is the primary feature and that both the illusions and the hallucinations are secondary developments, a careful study of this and similar cases, and also of numerous types of the delirium of acute alcoholism, has convinced the writer that the interpretation he has given is correct. He is of opinion that, in at any rate the vast majority of cases, gross emotional disturbances, which occur in conjunction with aberrant sensory or associative phenomena, are modifications of the normal emotional tone of the individual which are produced by these. It is commonly observed that cases of confusion where the associative functions are largely in abeyance exhibit little or no emotional disturbance; also extremely marked illusions and hallucinations often occur together with both consciousness of confusion and a capacity for the performance of mental association, and the patients may or may not suffer from severe emotional disturbance.

CASE 5. *Admitted March 24th*, 1904 (Hellingly Asylum).—Duration prior to admission stated to be about one month.

Female, married, wife of a farm labourer, æt. 52. Admitted twenty-four hours ago.

A dull but perplexed woman, who asks, "What is this all about, doctor? What am I here for? Whatever have they brought me here for I can't think." ("Are you miserable?") "I feel awfully miserable. I haven't seen nothing or done nothing.

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Everything seémed to go wrong, work and everything; washing and everything seemed to be all just anyhow. The things I put on the line seemed to be changed, sometimes things with no names on. I wish they had given me some poison before I came here. . . . Oh, dear, dear! . . . I fancy someone has tried to do me harm but they say not. They say they don't wish me no harm and yet I fancy they do. . . . Sometimes I don't know my husband, I think it is somebody else. Sometimes he don't look like my husband and another time he do. I think he came with me yesterday as it was his overcoat he used to wear" (*i. e.* the relieving officer).

She knows the day when she came. "Friday, or is it Saturday?" (Friday correct.) She knows the month but not the date. The year is "1893 or is it 1894?" (1904.) She hears people talking at night. She has seen "funny-looking things in the beds with horns on their foreheads rolled up," and they look at her all night and she couldn't sleep, and there were funny noises, "sissing" going on (probably from the steam-pipes). When at home she thought that people tried to get into her room and she heard them talking, and they threw things about to drug her and make her go to sleep, and she talked in her sleep. "I wish some one would give me some poison and get me right out of it. I don't want to live, I want to die." She is very depressed and extremely apprehensive.

Patient was discharged "recovered" six months after admission.

The next case is of a different type. The confusion is severe, but simple, in that neither numerous aberrant sensory phenomena nor marked aberrations in the processes of association are present. In this connection it may be noted that an exciting cause existed in the physical illness of the patient, and that the mental confusion, though marked, was not associated with grave pathological changes in the cortical neurones, for the physical and mental conditions improved together. As frequently occurs in such cases, the patient was conscious of her confusion, and during her examination she made distinct efforts, which were often successful, to overcome it. This variety of mental confusion, in fact, much resembles the mental condition which frequently follows the medicinal administration of sedatives to sane individuals.

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CASE 6. *Admitted December 21st*, 1904 (Hellingly Asylum).—Maternal aunt insane. Exciting cause lactation. Duration prior to admission, one week.

Female, single, domestic servant, æt. 33. Notes taken three days after admission.

A dull, vacant-looking woman, who appears pale and ill. She gives her name and says her age is 32. ("Day?") "I'm confused; I couldn't tell you truly; Thursday. Is it Saturday?" (Correct.) She came at the beginning of the week. ("Date?") "Don't you know? I am so confused, I don't know, but I think someone said the 21st. To-day is the 24th if Christmas Day is to-morrow and falls on the 25th." (Correct.) She knows the nurse, but not by name, and she has, she thinks, seen me before, and says, "It wasn't you that rode with me, was it?" (*i. e.* the relieving officer.) ("Time of day?") "They gave me no breakfast, so I can't go by that, and the winter is generally so dark. If I guessed it I should think it was about —it's no use saying—ten o'clock on a winter morning, don't it?" (9 a.m.)

On admission patient was restless and excited and screamed with the pain from her distended left breast. She is now taking her food and is fairly comfortable. She was wet once last night.

She gets very distressed during physical examination. Hair and eyes dark brown. Pupils normal. Tongue catarrhal. Teeth good, but separated by gaps. Palate very high both back and front. Ears plain and possess abnormally large lobules. Reflexes brisk. Right breast contains milk; left is very distended, hard, and painful. Patient is very pale and anæmic.

Patient was discharged "recovered" five and a half months after admission.

The following case exhibits the preliminary symptomatology of one of the types (usually described under the term "catatonia") of the dementia of prematurity. The confusion is severe. The patient thinks that he is at home. He knows neither the day nor the date. At different times he states that he came here "Just now," "Three years ago," and "Oh, about a week," and he exhibits well-marked illusions of identity. His method of writing his name is very characteristic of that

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seen in cases of, or developing, the dementia of prematurity, and differs entirely from the often rapid and always certain mode adopted by the non-confused high-grade ament.

CASE 7. *Admitted May 8th*, 1906 (Rainhill Asylum).—The patient was born and educated and served his apprenticeship as a draper in Ireland. He then came over to England and earned his living as barman in a public-house for three years, after which he acted as steward on an American liner during four voyages. He then drank fairly heavily, chiefly of wine, for a month, and required removal to an asylum.

Male, single, steward, æt. 22. Notes taken the day after admission.

A young man who is at times restless and excited and at others quiet. He frequently strikes attitudes, and as a rule his limbs are in a condition of cataleptoid rigidity, and may be placed in almost any position, from which, however, they slowly fall under the influence of gravity. His face is greasy, and his forehead, even during excitement, is quite expressionless.

Since admission he has been very restless, noisy, destructive, resistive, and wet and dirty, and he only slept two hours last night.

He gives his name and age. He came here "Just now," and on repetition of the question "Three years ago." He is now at "18 S— Street, L—." The attendant near him is "like my aunt, she's living there, 18, and my mother, sisters, and brother, brother Jack." The head attendant is "a chap from America, Leonard, that's his name, like him anyhow." He has never seen me before (untrue). The day is Friday (Wednesday). The date is "4th of . . . 1st of May, isn't it, 1906?" (9th May.) Asked again where he is, he says "L—, S— Street, 18, you know, 18, 18, S— Street, L—, England." Asked when he came, he says "Wednesday the 2nd," and how long here, "Oh, about a week." He writes his name and address, and before writing each word twists the pencil in his fingers, makes an elaborate commencement, and doctors up each word afterwards as if he could not leave it alone.

His teeth are good, but irregular. His palate is a mere deep chink. The upper part of the pinnæ of the ears is irregular, owing to deficiency and crumpling up of the cartilage. The deep reflexes are dull and the superficial brisk.

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June 14th, 1906.—The mental condition of the patient is unchanged since admission.

The last case of this series is also an example of the dementia of prematurity, but is of the type usually described as "hebephrenia." It is inserted in contrast to the case last described, as it is probable that mild dementia has already ensued, although considerable confusion is still existent. Her method of writing her name is as characteristic as is that of the preceding case, and her knowledge of time and place is greatly deficient. She exhibits a certain consciousness of her inability to think, and a general lively manner which, quite apart from previous history or future development, suggest on the one hand that mental dissolution has not occurred to any great extent, and on the other that the morbid process is still active.

CASE 8. *Admitted November 30th*, 1904 (Hellingly Asylum).—Duration prior to admission is about one month, and patient is stated to have had previous attacks at home.

Female, single, domestic servant, æt. 24. Notes taken half an hour after admission.

A simple-looking, smiling girl with horizontal wrinkles on her forehead. Gives her name. ("Age?") "Don't know, I'm sure." ("Think!") "Can't think." She eventually says "Near thirty." She "fancies it is Wednesday" (correct). ("Month?") "December, I fancy" (November). ("Year?") "Don't know. I have no sense at all." ("Where are you?") "At home, I fancy." Then states that she was sent away for "frightful sensitiveness." She replies that she never had a sweetheart. She "fancies" she has nine brothers and sisters, and that she is the fourth. She grins and smirks in reply to questions. She has done no work for three or four years. In writing her name, which she does in a slow, careful, and halting manner, she puts down her surname first and then begins to write the Christian name before it without leaving sufficient room. As a result the latter is partly written on the top of the former. She looks the name up and down and then adds to it "thirty ages." She came with a nurse and the relieving officer half an hour ago, but tells me that she is "supposed to" have come with her mother. She whispers to herself, plays with her fingers, and smiles inanely. Suddenly she springs out of bed, bows to me, seizes the nurse

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round the waist, and says that she doesn't mind amusing us and that we may make fun of her.

Hair brown and nitty. Eyes large, grey, and mobile. Pupils equal, dilated, and react normally. She frequently blinks. Mouth and lips large. Palate very high and narrow. Teeth irregular and decayed. Tongue catarrhal. Superficial reflexes normal. Knee-jerks + + p. c. Breasts virginal.

May 27th, 1906.—The patient is still in the asylum in a condition of "chronic mania."

It is hoped that the cases which have been described above, and which are examples of many common types of mental disease, are sufficient to illustrate one aspect of the basis on which the writer has originated the thesis that mental confusion, though not necessarily resulting in mental dissolution, is the necessary precedent to the appearance of dementia. Amongst these cases are examples of mental confusion in senile, presenile, adult, and adolescent subjects. Further, one of the cases illustrates mental confusion produced by alcoholic excess and another that following early lactation and precipitated by severe distension of the mamma.

The cases which exhibit more or less profound simple mental confusion may therefore be placed in three categories. A considerable number recover from this psychic state without obvious mental deterioration; others, perhaps the majority of the cases under consideration, pass into a stationary condition characterised by the existence of mild or moderate dementia; and in the remainder an active and progressive process of cerebral dissolution continues until death in a condition of gross dementia.

From the etiological aspect, the cases in the first group are precipitated by one or other of the first class of exciting or secondary causes of mental confusion referred to on page 431; those contained in the second group arise from similar causes and also from the influence of one or other of the forms of mental or physical "stress" during one of the "critical" periods of life; finally, the cases in the third of these groups develop under the influence of one or other of the second class of secondary or exciting causes of mental confusion referred to on pages 431–433.

In all cases of mental confusion, however, except perhaps in certain of the less severe and recoverable types, the essential

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physical basis of the morbid phenomena under description is a deficient capacity of resistance to pathological influences on the part of the neurones of the cortex cerebri, and in all cases which develop dementia a deficient durability of these elements.

(2) *The milder Psychic Phenomena which arise in consequence of Pathological Conditions of the Centres of Lower Association. "Confabulation." "Pseudo-reminiscence."*

Under this heading the writer proposes to describe and illustrate certain psychic phenomena which occur in many of the less profound types of mental confusion, and which are due to pathological conditions of the centres of lower association, the higher centre of co-ordination, correction, and selection being in a still more marked morbid state.

These phenomena consist in essence in the repetition aloud of certain associated remnants of former experience. Whilst these remnants, to a greater or lesser extent, are combined into a sequence according to the normal laws of mental association, it is common in the severer cases to find that the description is apparently a mere repetition of one or more long past sequences of events. In some examples, in fact, the patient appears to be involuntarily unburdening himself, in a more or less lengthy manner, of all the groups of associated memories which happen, owing to pathological conditions of the particular cortical regions of lower association which are concerned, to rise into the necessary prominence. Whilst such series of associated memories are frequently incited by illusions based on an erroneous recognition of the surroundings of the patient, they certainly in many instances arise in the absence of extraneous exciting causes.

In cases where the confusion is still less profound, and where in consequence recently acquired memories are available, the patients frequently, in a more or less voluntary manner, and often with the aid of illusions regarding the identity of the persons or objects surrounding them, form new groupings of associated memories which, whilst they are individually based on experience, may or may not, when linked into series, be possible as descriptions of experience or of phenomena.

The associative phenomena which are exhibited by the last and mildest type of case gradually and imperceptibly grade

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into those occurring in many examples of high-grade amentia, and particularly in certain cases of recurrent insanity during their relapses. They also resemble the associative phenomena which occur during the "dreams" of the normal sane. These phenomena are, in fact, merely the result of wayward and involuntary processes of lower association, which occur in the absence of the selective and corrective control of the centre of higher association.

Fairy tales, which indiscriminately combine the possible and the impossible, delight the young owing to their resemblance to the results of the wayward and uncontrolled processes of association which occur in these individuals. The analogue of both occurs during sleep in the adult in the form of stray memories, which for various reasons arise one by one into consciousness. These stray memories combine, thereby raising into consciousness other dormant memories according to the normal laws of association, and eventually result, in the absence of selective and corrective control, in the frequently grotesque and often impossible sequences of associated memories which are known as "dreams."

These phenomena, when occurring during sleep or "dreamy states," are aberrant but not pathological in nature. They are also aberrant and non-pathological in nature when exhibited during certain types of relapse in cases of recurrent insanity, and frequently also in cases of ordinary high-grade amentia.

When, however, they occur in cases of insanity which exhibit the various phenomena of mental confusion, and particularly when the series of associated memories is induced or modified by illusions of identity, they are due to pathological rather than to functionally abnormal states of the neurones concerned with the performance of the processes of lower association. As the severity and extent of the pathological process increases, the associated memories consist more and more of mere reminiscences of examples or groups of former associative phenomena. Finally, in the severer grades of confusion, the processes of association are in abeyance, the patient is often unable to voluntarily recall even individual and stable memories, and in some cases, as for example that cited on p. 435, a sensory stimulus may even fade away without arousing the usual memorial unit. Such cases are further characterised by the rapid fading of impressions even when these are repeated, and therefore, as has

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already been stated (p. 434), by an entire absence of apprecia-tion of time and place.

The first case which will be employed to illustrate the above description is not a case of mental confusion at all, but is one of recurrent insanity. It is inserted with the especial object of giving point to the remarks which have been made on the subject of dreams and allied psychic states in their bearing on the less aberrant psychic phenomena which arise from patho-logical conditions of the centres of lower association.

The patient describes a "vision" or dream which appears to have been of remarkable vividness. Her description is obviously accurate and bears no traces of the involuntary con-fabulation for which, in a case of mental confusion, the several questions which were put to her would have afforded as many suggestions. She states the exact night on which this par-ticular "vision" was experienced, and she clearly believes that she is describing what actually occurred to her. Her descrip-tion of a material Paradise, in which many of the inhabitants wear modern attire, whilst somewhat grotesque, is probably as good an imaginary picture as could be elaborated by any other religious enthusiast of her education and station. It is of interest that during the "vision" she possessed some con-sciousness of personal orientation, as "I could see as if I could see all over the earth, through the roof, and on each side." In this detail the case again differs strikingly from examples of mental confusion.

CASE 9. *Admitted November 14th*, 1904 (Hellingly Asylum). —The duration of the case is about one year. Patient was discharged "recovered" from the asylum some weeks prior to her present admission, after a residence of some months. The exciting cause is stated to be "religion."

Female, wife of a gardener, æt. 60. Present notes obtained on admission.

A dull and very apathetic and phlegmatic woman. Memory and intelligence average. When she had been home a few weeks her strength seemed to fail and she got "low-spirited and down," and felt she had no strength, and slept badly. She says that she has "beautiful visions." "Last Friday" (to-day is Monday) "I was in Paradise quite. It was something lovely. It's real. I don't think it's any delusion." She saw "all the

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beautiful saints," but in reply to a question does not know whether they had wings, "and I could see as if I could see all over the earth, through the roof and on each side, lovely marble places, I couldn't describe. It was like heaven." No one spoke to her. She "saw lots of spirits. They've all been round me, and I've never felt frightened. Some were all in white, and some were in colours, as if dressed as they were on earth. Some were women and some were men, dressed men, long coats and hats. All were dressed in beautiful white. Some, of course, were in coloured dress, men too, in clothes, as if you'd wear yourself. I felt happy enough. It was a lovely night, Friday night. Something grand, something beyond describing." Patient apart from the above is quite sensible; she talks sensibly and without emotion, in a manner which is something between preaching and repeating a lesson.

May 27th, 1906.—The patient is still in the asylum and suffers from a mild degree of dementia.

The next case is an example of mental confusion due to alcoholic excess, and exhibits many details of interest. Though the patient is practically or entirely lost to time and place, he states his age accurately, or rather—and this is more important—he gives it wrongly by ten years and then corrects himself. He shows marked illusions of identity, one of which is worthy of note. The mental state was taken after his arrival in a small admission-room, and the uniform of the attendant and the general surroundings of the patient made his conclusion that the attendant "looks like one of the yachtsmen," not at all unnatural. This mistake in identity served as the basis for many of his remarks. His description of the process of admission, namely that he had just been "down and waited on board ship an hour and then his majesty the officer called you, and you told me to lie on my back, and then I was undressed, and then you came here," would be quite unintelligible without the necessary key. The patient was extremely apprehensive, and owing to this became quite insulting to the attendant who removed his shirt: "With a face like that I wouldn't look at an Englishman. . . . You don't look a bad old sort all the same."

In this case the symptomatology is of recent type, and none of the signs of unfavourable import which are present in the examples which follow later are visible.

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CASE 10. *Admitted November 30th*, 1904 (Hellingly Asylum).—Cause, intemperance. Duration prior to admission one month.

Male, married, inn-keeper, æt. 58. Notes taken on admission.

A dull, restless, garrulous man, who at once asks me to let in the woman in the passage who has come to clean up this room and always does it for him. He gives his full name and says that his age is "forty-nine nearly." He then plays with the bed-clothes a little, and adds "Fifty-nine, I said forty-nine, sure, dear." He knows the day and the month but not the date. He has been here over five years. This place is St. Innes. He knows me by sight very well. I live in Leicester Square. He says that the charge attendant "looks like one of the yachtsmen" (apparently from noticing the uniform). ("Business?") "Up and down the cellars and in and out, you know." Before he came to see me he went to Denmark to see a ship (*cf.* the yachtsman). He makes a good guess at the time, namely 4.15 and then 3.45 (correct). He says he hasn't had his dinner yet. He has just been "down and waited on board ship an hour, and then his majesty the officer called you, and you told me to lie on my back, and then I was undressed, and then you came here." (Patient thus thinks from the attendant's uniform that he is on board ship, and he is describing his admission.) He went to sea both yesterday and this morning, when he went to see a ship which is ashore and ought to be got off, and he is ashore to make arrangements to get it off. He has been captain, mate, and master, and has been at sea twenty-nine years or so. Though he came in a cab this afternoon he states that he has not been in one lately.

During physical examination he gets excited and shouts "Murder!" and asks people outside to come and help. He asks the attendant if he wants to give him a smack on the nose. "With a face like that I wouldn't look at an Englishman. . . . You don't look a bad old sort all the same." Suddenly he shouts out, "D'you hear? The King knew I was in Southend to-day. He was a witness that I was in Folkestone to-day," as if to someone he sees or hears.

Pupils normal. Tongue catarrhal and tremulous. Palate high and shelves forward, and has a narrow, deep chink along the centre. Brachial arteries thickened. Plantars dull. Varicose veins on left leg. Knee-jerks present but dull, and L > R. Abdominals present.

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Patient was discharged "relieved," five weeks after admission, to the care of his friends. He was a private patient.

The following case has also been precipitated by alcoholic excess, but signs of previous syphilis are present. Though the physical signs suggest that the case may become one of chronic general paralysis, the age of the patient and the consequent improbability that extensive reparative reaction will follow the death of the affected cortical neurones suggest rather that it is one of pre-senile breakdown precipitated by alcoholic excess, in which a fairly stationary condition of moderate dementia will result.

The following details are noteworthy. Contrary to what occurred in the previous case, the patient at different times gives his age as "forty-eight," "forty-six, I've been married twice and have four children," and "I'm turned thirty-eight, sir"; and the decreasing age in the successive replies is probably an analogous, though less grave, psychic phenomenon to those results of uncontrolled mental association which are described later (pp. 458–459). This observation points definitely to the existence of a actively progressing process of neuronic dissolution. Further, the remarks of the patient consist chiefly of semi-voluntary descriptions of his daily work as a scavenger, and are relatively independent, for their incitation, of illusions of identity. Again, though he has been in bed since his admission, "I been out this morning," he has been here "about an hour, not an hour quite I don't think," he went out "about 6 o'clock," "I was in W— Road this morning about 7 o'clock . . . and got back here about dinner-time about 12 o'clock," "I slept in P— Road, I believe," and he came here "this morning about 9 o'clock." These remarks point to the same conclusion as do the different ages he states. He replies that the time is "11," "about 3," and "between 3 and 4 o'clock." Finally, he confabulates on illusions of identity. Though he calls the patient in the next bed by his correct name, he says "I've known that chap a good bit, sir. He's a sailor-man, I think. I've drank with him once or twice," and there is no reason to suppose that this is the case.

The case as a whole exhibits acute mental confusion and also signs of existing dementia, and, therefore, judging by the mental state alone, the patient will not recover.

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CASE 11. *Admitted October 18th*, 1905 (Rainhill Asylum).—Mother and brother died of phthisis. Duration prior to admission three months. Cause intemperance (beer).

Male, married, scavenger, æt. 53. Notes taken the day after admission.

A determined-looking man with compressed lips. He gives his name and states that his age is forty-eight. (He looks at least sixty years of age.) To-day is Wednesday (Thursday), and he came seven days ago (yesterday). "I been out this morning, I went to H— Street, and up to E—, and then down here again to A— Street and S— Street" (obvious description of part of his daily work). This place is "H— Street, A— Street, skating rink it used to be called at one time, this place." He thinks the head attendant is well known to him. He has often met him in the park, but doesn't know his name. Asked who the attendant near him is, he remarks: "Well, I couldn't call the gentleman by name, sir. I've seen the gentleman about the park for four or five months. I only work in A— Street here" (*i. e.* quite near the park); "I know a lot of folks about the park, but I couldn't call 'em by name, sir." ("How long here?") "In town here? About . . . over thirty years." ("How long in this place?") "This morning, you mean? About an hour, not an hour quite I don't think." ("Time?") "It'll be running after 11, won't it?" (10.45). ("Age?") "Forty-six. I've been married twice and have four children." ("Day?") "Wednesday, isn't it?" ("Where have you come from?") "Betwixt N— Street and D— Street." ("When did you go out this morning?") "About 6 o'clock." ("Where?") "To L— Street first, then past W— Street, and then from there to W— Street, and from there up to M— Road, down L— Lane over as far as W—, and that way back again. I belong to the 2nd L— Militia going on sixteen to seventeen years." He then says that he came from Ireland about 1860, and was only a boy then. (Present year 1905.) ("What time did you arrive here this morning?") "I was in W— Road this morning about 7 o'clock. I stopped in C— a good while, and then I was over in S— Street a bit and down here in A— Street, and I got removed from there to W—, and from there to W— Street, and I was up in W— and got back here about dinner-time about 12 o'clock." ("Time now?") "Oh, about 3, isn't it, 3 or 4?"

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On now being asked the names of different objects he at once gives correct replies. After this (considerable) interval, he is asked where he slept last night. "I slept in P— Road, I believe." ("When did you come here?") "This morning about 9 o'clock, and then I got removed up to A— Street and then down here again." ("Time now?") "It'll be about 3 or 4 o'clock, I should think." ("Day?") "Wednesday, isn't it, sir?" ("How old are you?") "I'm turned thirty-eight, sir." ("When did you come to England?") "In somewhere about 1830, I think, sir." He voluntarily recognises the patient in the next bed by name. "I've known that chap a good bit, sir. He's a sailorman, I think. I've drank with him once or twice." Patient states that he works for the Corporation as an ashpit cleaner and receives £1 a week. He, as a rule, drinks beer, and on an average about four pints a day, but often much more.

Ears plain. Pupils absolutely fixed and R. > L. Tongue tremulous. Palate high. Arteries tortuous and calcareous. Knee-jerks and plantars dull. Marked shotty glands in groins. Scar on penis. Numerous punched-out scars on legs and thighs. Dense scar on back of neck.

June 14th, 1906.—The patient is still in the asylum. He shows very little change mentally except as regards increasing dulness. He works out of doors at purely manual labour.

The final case of this series possesses a complex etiology, alcoholic excess, senility, and former syphilis all playing their part. As is usually the case in senile patients, in whom the capacity of the tissues for reparative reaction is relatively slight, none of the characteristic symptoms of general paralysis are present.

The patient is in a condition of marked mental confusion, which is not so profound as to prohibit confabulation. In this case, however, the results of the processes of mental association often differ from those obtaining in the last case in their inherent impossibility. For example, he remarks, "I'll see my mother in a minute and she'll tell me," and "Mother says downstairs she doesn't think she'll rear me. I'm sixty-one."

This particular mode of harking back to the remote past is, as has already been stated, one of the characteristics of active mental dissolution in senile cases. A similar example has

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already been given (Case 3), where a patient, æt. 74, remarks that her youngest child "just runs alone. She's a picture, and she'll run after any man. Her brothers learned her to run after 'em." As a further illustration may be mentioned the case of a patient, æt. 61, who had been in bed since admission, but who stated "I was out at the General Post Office at seven this morning to save my father going out."

In the case under consideration confabulation is readily directed by suitable questions—*e.g.* the past of the case following the remark of the patient that he had been "up to the market twice this morning" and had "bought some fish." By a normal process of association he later changes the subject by speaking of having "five calves to sell," and this matter has evidently a stable memorial basis, as long afterwards he voluntarily returns to it and proceeds to confabulate further on it.

It may finally be added that, as commonly occurs in cases of progressive cerebral dissolution, in contradistinction to a temporary morbid condition of the cortical neurones, certain groups of stable memorial units remain relatively intact—*e.g.* he gives a presumably correct description of the manner in which he acquired his attack of syphilis.

CASE 12. *Admitted December 23rd*, 1905 (Rainhill Asylum). —No history.

Male, married, hawker, æt. 60. Notes taken two days after admission.

A dull-looking, restless man, who grumbles away to himself and then puts out his tongue and coughs. He gives his name and states that his age is fifty-one. He is "living in N— Road, no, not living there. I want to think on a minute, and yet I can go straight to the house. I believe it *is* N— Road. I'll see my mother in a minute, and she'll tell me." ("When did you come here?") "I came here this day week." The day is Saturday (Monday). He does not know the date (December 25th). ("Month?") "Yes, September." ("Year?") "September, October, November, December. Them months mix one up what with having two Christmases." ("When was the last?") "Why, there was one afore this" (therefore he evidently appreciates that it is Christmas). ("When is Christmas Day?") "21st February." He says he has been "up the market twice this morning," and mutters to himself about having "bought

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some fish, and I come straight down home and bought nothing after that." ("How much did you pay?") "I paid eighteen pence a stone for it, that's three-halfpence a pound." ("How many stone?") "Two stone." He bought it for himself, and is going to sell it. "I generally have a fish or two over. Well, I've got five calves to sell. They'll want reckoning up. I've got to go up and get 'em killed, and then sell 'em." He is a hawker. I remark that he cannot make much money, and he replies, "Oh! you can make some out of meat." He is garrulous, and talks so much that it is difficult to get replies from him. He evidently remembers the previous questions in a vague way, for he suddenly remarks, "I feels well and all right. It's February, 25th February," and then talks about February and December. He tells me that I am a doctor, and "I knows you well by sight for many years." "I've knowed your face many long years, since I was a little lad." When asked the time he replies that it is 2.20 p.m. (11.15 a.m.). He, however, says that he has not had his dinner yet. He went to bed at 8 p.m. last night, and got up "just after eleven" (he has not got up since admission). He went to bed so early "because I didn't want to go out and get any more drink. It would be a foolish idea." "Our little Lizzie had her leg broke, and I went to bed to care it. I won't be too drunk to care that child," etc. He then seems to remember his calves, as he remarks, "I mightn't kill them there till Monday. They've plenty of good hay to eat. Three or five? I think five on 'em." I then ask him the day, and he says "Friday" (Monday). When asked the time he says "Getting on for 2.30. I've been up since five this morning." He states that he has been married nine or ten years, and has a child aged ten years. When I ask if it was born before marriage he says, "No, you fellows you pull a fellow to pieces with questions. It's ten years born. I daresay you can remember that." He had "pox" about the age of sixteen. He had a sore "at the proper place," "a brown spot came when I'd been with a girl, but I expect she'd been a bit over-heated. It was servant an' all."

During physical examination he remarks, "Mother says downstairs she doesn't think she'll rear me. I'm sixty-one."

Fixidity of lower face when speaking. Tongue tremulous. Palate high and narrow and shelves forwards. Pupils below medium, equal, react to accommodation and also distinctly to

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light. Arteries thickened and tortuous. Plantars very brisk. Knee-jerks brisk. Pigmented scar on dorsum of glans penis.

He is very feeble and shaky, and is restless and rather resistive. Last night he was wet and dirty several times, and destroyed two coir beds.

June 14th, 1906.—Patient is still in the asylum. He is developing dementia, and is unemployed, very shaky on his legs, and in feeble health.

In the above description it has been impossible to avoid referring, as occasion served, to the differences which exist between the psychic phenomena which occur in cases where the pathological conditions of the centres of lower association are recoverable on the one hand, and are associated with more or less extensive destruction of cortical neurones on the other. The latter subject will, however, receive especial consideration both at the end of the present section and during the remainder of this part of the paper.

This mode of treatment, though undesirable from a purely psychological standpoint, is, however, unavoidable. Cases in which mental confusion is slight, transient, and brought about by temporary causes, rarely come under the observation of the alienist, and therefore the detailed consideration of the psychic phenomena which arise in consequence of such purely temporary pathological conditions of the centres of lower association must necessarily be left to other observers. On the other hand, in asylum cases in which the pathological process is more severe but has not such a general distribution as to cause practical abolition of the processes of lower association, a more or less extensive destruction of the neurones of the cortex cerebri is the common result; in fact, the majority of such cases possess an etiology which derives factors from both the groups of exciting or secondary causes referred to on pp. 430–432. The observations of the writer, therefore, necessarily deal rather with the psychic differences between the recoverable and partially irrecoverable types than with the exact psychic phenomena manifested by the former.

From the symptomatological aspect the three cases last cited present differences which enable definite conclusions to be drawn with reference to prognosis. Case 10 exhibits no psychic phenomena which are inconsistent with relatively complete

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recovery; Case 11 shows distinct evidence of active mental dissolution, but there is no reason to suppose that temporary arrest of the pathological process, with a stationary condition of moderate dementia, is improbable; and Case 12 is in a condition of active mental dissolution which will steadily progress till death ensues.

(3) *The grossly aberrant Psychic Phenomena which arise from severe pathological conditions of the Centres of Lower Association. "Delusion."*

Under the above heading it is proposed to consider certain psychic phenomena of grave import which accompany severe and progressive pathological conditions of the regions of lower association and are indicative of an active process of cerebral dissolution.

Whilst the psychic phenomena described under "Simple Mental Confusion" may be, and frequently are, recovered from more or less completely, and whilst those referred to under the subject last considered may also, in their milder and more recent grades, disappear without any very obvious degree of mental enfeeblement, the phenomena which are at present under examination are, except in rare cases, evidence of a process of active cerebral dissolution which ends only at death. Further, in the rare cases in which arrest of the pathological process has occurred obvious mental enfeeblement is a necessary consequence, and the arrest is probably always temporary, the inevitable progress of the case to complete dementia being merely delayed. The writer would, in fact, suggest that such temporary and partial recovery occurs in consequence of the pathological process having been prematurely induced by mental or physical "stress" or by temporary toxæmia, with the result that the vicious circle of neuronic degeneration and active reparative proliferation, which is necessary for inevitable progress to gross dementia, does not at the time develop.

Though the formation of three distinct groups is only desirable for purposes of convenience, and is not entirely justifiable, this division of the subject serves a useful purpose from the etiological aspect, and therefore from that of prognosis.

The group described as "simple mental confusion" contains the bulk of the cases which, being caused by a temporary

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toxæmia, are usually recoverable, and also nearly the whole of those cases of insanity which have been precipitated at one of the "critical" periods of life by one or other of the different forms of mental or physical "stress," and in which a certain amount of degeneration of the cortical neurones and a stationary condition of mild or moderate dementia ensue. This group further contains a number of cases of rapid cerebral dissolution and progressive dementia in which the mental confusion is from the first so profound as to prohibit the exhibition of the psychic phenomena described under the second and third headings.

The second group is smaller and contains a proportion of the less profound examples of mental confusion which are precipitated by alcoholic excess, and many of the more slowly progressing cases which arise in consequence of senile and presenile degeneration of the cerebral blood-vessels. In such latter cases the causative influence is often itself incited, or at least increased in severity, by previous syphilisation or by prolonged alcoholism. Frequently, also, though by no means necessarily, the characteristic psychic phenomena occur in patients who are suffering both from degeneration of the cerebral blood-vessels and also from the effects of recent alcoholic excess.

The third group, which is about to be considered, contains the larger proportion of the cases which are suffering from progressive and inevitable cerebral dissolution. The characteristic psychic phenomena are as a rule best developed in the cases of dementia paralytica (general paralysis) which occur during adult life, as at this period all the factors which are required to produce the more fulminating types of cerebral dissolution—namely, intense mental and physical "stress" and the different toxæmias, violent and profound pathological changes in the neurones of the cortex cerebri, and intense vascular and neuroglial reparative reaction—are able to exert their maximum influence. The group also contains many cases of progressive senile dementia, a number of examples of juvenile and senile dementia paralytica, and certain of the rarer types of progressive dementia. In other words, the cases which exhibit in the most characteristic manner the psychic phenomena to be here referred to are those in which the pathological process is most complicated and therefore of most severe local incidence, rapid degeneration of cortical neurones being followed by intense reparative proliferation of the blood-vessels and neuroglia,

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and this again by further degeneration of neurones and by still further proliferation of blood-vessels and neuroglia—a vicious circle which continues throughout the remaining life of the patient.

Whilst the higher co-ordinating, corrective and selective functions of the cerebrum, which are performed by the centre of higher association, are in temporary or permanent partial abeyance in the cases exhibiting the psychic phenomena hitherto considered, in the group now under description more or less complete dissolution of this centre has already occurred. The pathological basis for this statement has been considered in the last portion of the present paper (*Journal of Mental Science*, April, 1906), and need not be further referred to.

In the psychic state under consideration, not only the phenomena of simple mental confusion, frequently including illusions and hallucinations, but also indications of a morbid activity of the centres of lower association are present. The latter, however, differ markedly from the phenomena which have last been described, and which consist largely, and in many cases entirely, of groups of more or less stable associated memorial units.

Whether as the result of extraneous excitation, or frequently in consequence of actual morbid states of the centres of lower association, memorial units or associated groups of these rise into consciousness. Owing to the morbid condition of the region concerned with the higher co-ordinative, corrective, and selective functions, the patient, except for a consciousness of the ego, which is usually relatively unimpaired, and is, in fact, often abnormally prominent owing to the cessation of higher corrective control, possesses merely such semi-conscious psychic processes as are developed by the morbid activity of his centres of lower association. In consequence, such simple or associated memorial units as arise into consciousness, whether through external stimulation or internal morbid incitation, are unquestioningly accepted as facts connected with himself, however grotesque this conjunction may be.

However aroused into activity, such memorial units or associated memories are limited in number and complexity solely by the actual or excitable content of the mind of the patient. Whether or not he has had actual *experience* of the possession of money, goods, or power, the patient owns, according to his previous *knowledge* of such things, hundreds, thousands, or millions of

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pounds, or all the money in the world or universe; he possesses houses, palaces, cities, or countries, and yachts, ships, fleets, or navies; he is a baronet, a peer, a king, or the ruler of the world; he can play any instrument, perform any athletic feat, etc., etc. His capacity is only limited by his knowledge, and whatever subject is brought to his notice or arises in his mind is straightway elaborated by one or other of the fundamental modes of mental association. He is not bound by the possible, for when the morbid process is well developed mere contiguity of ideas results in the immediate association of these together. If, for example, he is speaking of jumping, he can jump over a house or a church; if of running, he can run round the world, or at the rate of a thousand miles a second; if of possessing, he possesses all he thinks of or sees. *Bien-être* is consequently in many cases the prevailing emotional state. The emotional tone is, however, dependent primarily on the normal emotional tone of the individual, and secondarily on the particular associated memory of the moment. The emotional state may therefore vary from minute to minute, and may be as evanescent as are the ideas from which it arises. The actual physical condition or capability of the patient naturally bears no relationship whatever to the psychic state. The performer of wonderful athletic feats may be unable to walk or even stand alone, and the king or God may be patiently washing floors.

According to the activity of the morbid process and to the rapidity and special characteristics of the processes of association, the "delusions" may vary from minute to minute or from day to day; and when mental association, owing to the destruction of the physical basis of this, becomes impossible, psychic remnants frequently remain as more stable "delusions." Many cases, in fact, at the time of observation have already advanced to this stage, and in others the mental confusion is of so pronounced a character that relatively little capacity for association of ideas exists. Frequently, therefore, instead of the psychic phenomena which have been described being readily elicited and well marked, occasional examples of such associated memories can alone and with difficulty be obtained.

From the above description it will be evident that, in the opinion of the writer, "delusion," as here considered, is an entirely different psychic entity from the systematised and fixed "delusions" of the paranoiac, and the less systematised, equally

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fixed, and at times accidentally produced "delusions" of the more marked degenerate.

It differs also from the "delusions" which are not infrequently developed in cases of existent but non-progressive dementia, as the result of aberrant ideation in a maimed cerebrum.

The "delusions," however, which occasionally appear during the mental confusion which precedes the development of non-progressive, mild, or moderate dementia, are of a similar nature to and are evolved in a similar manner as are the "delusions" which have just been considered.

Certain typical illustrations of these psychic phenomena will now be inserted; and, for purposes of comparison, a case of insanity (emotional type of high-grade amentia) which bears a superficial resemblance to these in the psychic phenomena presented, but in which no mental confusion exists, will first be described.

In this case the points of note are the absence of mental confusion and the otherwise general resemblance to an example of early dementia paralytica (general paralysis). Such a case illustrates more clearly than would pages of description how the various types of mental dissolution possess their psychic analogues in the varieties and grades of mental sub-evolution.

CASE 13. *Admitted November 30th*, 1903 (Hellingly Asylum).—Paternal uncle died from apoplexy. Duration prior to admission stated to be three weeks.

Male, æt. 23, draper's assistant. Admitted five days ago.

An exalted and excited young man with large staring eyes. He at once begins to tell me that he sent six telegrams the other day, but doesn't think that any of them went. He proposes to summon eight people, including the medical superintendent, for unlawful detention. He smiles at me in a superior way during conversation. He says that he was "put here for jealousy and nothing more." He gives his name and age, the day and the date when he came, how long he has been here, and the name of the asylum. He talks on rapidly and inconsequently. He says that he is the Liberal candidate for Parliament for a neighbouring town, and he offers to bet me £5 that this is the case. He has been here about a week "tanning patients and acting as a keeper." He tells me with pride that he spent

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fifteen months in London, and "kept my eyes open." When I remark that I lived there as many years as he did months, he tells me that I must be a fool and have wasted my time. He states that he can "do any trade, carpenter, plasterer, bricklayer, art-furnisher, window-dresser, motor-car driver, zither player, English concertina, singing, and speak French, and boxing." A few minutes later, after further conversation, inquiry elicits the same list of employments. I then ask him to sing, as this is the most available of his accomplishments, and without the least self-consciousness he begins "The Holy City." His voice is decent, and he has an idea of singing, but he has absolutely no idea of pitch, and the performance is, to say the least, grotesque in spite of his evident self-gratulation.

During his residence he continued quite unchanged, and he afforded much amusement to both patients and staff. He fell violently in love with and proposed marriage to one of the officers, and his friends in all seriousness brought him an engagement ring to present to her. They were unable to appreciate that he was insane, and four months after his admission removed him "not improved." He afterwards wrote several letters to members of the staff, and on one occasion actually called at the asylum and requested to be allowed to see his *fiancée*.

The following case affords a typical illustration in their more recent phase of the psychic phenomena under consideration. The case is a recent one, and the pathological process, though extremely active, is not very far advanced. The patient is confused, but it is evident that the morbid process in the cerebrum is active and also recent, as he replies readily to questions, and he is at times able to provide answers to these which at others he cannot supply. Though he is not voluntarily garrulous, he readily elaborates, chiefly by the method of association by similarity, any group of associated memorial units which is aroused by extraneous stimulation. It is worthy of note, as might be expected, that as the investigation continues the usual earlier results of physiological or pathological stimulation appear, the processes of association becoming more lengthy and the results more elaborate. In order to avoid unnecessary repetition certain of the examples of this elaboration which occur in the description are printed in italics.

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Whilst the results of his processes of mental association rise at each new attempt to the impossible, it will be observed that they do not, as occurs in the next case to be described, pass into the entirely absurd. The factor, therefore, which is lacking in the existing phase of the case under present description, is the corrective and selective action of the centre of higher association; and the pathological process has probably, so far as regards the centres of lower association, resulted in acute changes in, rather than in extensive dissolution of, the neurones of these regions of the cortex cerebri.

CASE 14. *Admitted August 1st,* 1902 (Claybury Asylum).—No history. Male, married, glass beveller, æt. 37. Notes taken three days after admission.

Patient says he had syphilis twelve years ago. Scar on penis. Palate very high. No lobules to ears. Ordinary physical signs of general paralysis.

Patient is excitable and restless. He jumps out of bed and makes grimaces, etc. He is happy and self-satisfied. During conversation he is at times more confused than he is at others; and therefore he is sometimes able to reply to questions, the answers to which he has been previously, or becomes later, unable to give.

He states that he came here ten months ago (three days) and that his age is thirty-four years. He appreciates that he is in an asylum, but he calls it by the wrong name, that of an institution several miles off. He is not voluntarily garrulous, but readily elaborates his replies to such questions as are put to him. ("Married?") He has been married twelve years, and has one child, aged ten years, a girl (she is adopted and is not his child). She is a professional player on the piano *and the harp and every instrument*. . . . ("Money?") He is worth thousands, *and millions*, and made it by mining in Australia. He would be glad to take me on a sea voyage. He has *three or four yachts of his own, very large ships*. . . . ("Athletic?") He is a strong man and can do "anything, don't matter what. I am a butcher by trade and a beveller and silverer." . . . ("Sporting?") He has done racing, backing Arab horses. He has always backed them for a million. He has *hundreds of horses, wild animals, and everything*. I shall soon see if I come down to his place. He has *the finest house ever built*, all bevelled plates and

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embossed work. *It is an enormous size and everything is made of gold,* shoes and everything else but the bricks, and these he could coat with it. . . . He is a runner and jumper, and can jump about six feet, and has got several prizes. He *could run fifteen miles in twenty minutes.*

This patient died of general paralysis two and a quarter years after admission.

The next case differs markedly from the last in the details that the confusion is more profound and that the processes of lower association result in psychic phenomena of a most grotesque and impossible character. A merely cursory examination of these, in fact, at once demonstrates that the centres of lower association, as well as the region of higher co-ordination, correction, and selection, are undergoing an active process of dissolution. The patient is garrulous both in response to extraneous excitation and in the absence of this, he talks and whispers away to himself, at times he pays no attention to questions, and as the examination continues he develops visual and auditory hallucinations. In his descriptions, more or less stable memorial groupings are inextricably mixed with psychic phenomena resembling those of the preceding case, and as the investigation of his mental state proceeds the result of the fulminating morbid processes in his centres of lower association is a mere heterogeneous mass of all kinds of partially associated psychic phenomena, including hallucinations. At this stage his centre of higher association is obviously in entire abeyance, and further extraneous stimulation is needed to arouse this region into temporary partial activity.

CASE 15. *Admitted March 26th,* 1902 (Claybury Asylum).—No history.

Male, married, provision merchant, æt. 49. Notes taken two days after admission.

The patient exhibits definite physical signs of previous syphilis. The left leg is covered on both sides with the punched-out scars of former ulcers. Some of these are pigmented. There are fewer on the right leg, but still a large number. These vary in size from a threepenny-bit downwards, and the larger ones are pigmented. The right testicle is large and irregular and adherent to the skin, on which are several

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scars from former incisions. The scrotum on the right side, and the right side of the skin of the penis and of the glans penis are covered with varicose veins due to venous obstruction. The glands of both groins are shotty. There is a chronic sore on the right side of the lower lip, which bleeds. It shows no induration, and there are no enlarged glands.

The ordinary physical signs of general paralysis are well marked.

The patient knows neither the day, nor the date, nor when he came, though it is only two days ago. He is Sir Frederick William M—, the Emperor of the World. Every place in the world belongs to him. He says that he bought this place yesterday for a million millions, and then mutters "Millions, trillions," etc., to himself. ("Know anyone here?") All the officials here are his friends. He and Dr. M— (name unknown) are great friends and are always together. He has seen him in the corridor this morning. ("Married?") He is married, and every child in the world belongs to him and his wife. She is the most handsome woman in the world, a most beautiful lady, Empress of the World, and was a Miller. Her family is very large, as so many were born. They were always taken to Marlborough House. The Princess of Wales, and the Queen, and all the nobility are all his wife. There are thousands of himself and his wife, but only one Emperor of the World —himself. ("Clap?") He got "clap" when eight years old. They had two servants at home, and one of them had the "flowers." He used to cuddle them. He got very sore and had much pain, and couldn't pass water. After that they had a beautiful servant, Kate, and his mother caught him in bed with her. He was taken to St. G. Hospital and treated there, and he was shown to everyone in the hospital as a prodigy. When I remark on his youth he explains that it was not really early, as when children are born now they are born *him*, and are fifty years old and know everything. . . . He then remarks that he earned five, seven, ten shillings a week and was then manager of a cheesemonger's shop. He did £200 a week, and then took in the next door and was paid £1 a week. The takings rose to £400 a week. He lent £200 a week to two men. The money was put in the bank and he didn't get credit for it, so when he bought the world he had £800,000,000,000, and double, double that. . . . He then goes on talking

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to himself as if he were replying to questions from somewhere and he looks up as if he could see the speakers. To arouse him, I suggest that he has a good voice, and he replies that he sings on the stage, sings everything, and acts on the stage with every one. He is a Member of Parliament and of the House of Lords. He always calls himself an honorary member. He says that he knows Chamberlain well, and that Gladstone (dead for some time) and himself are always together, as both are very fond of wood-cutting. I suggest that Gladstone is dead, whereupon he calls me an ass. On being asked a question about the sea, he says that he goes round the world every day of his life and owns all the ships. I then ask him, finally, to say "rural artillery." He at once repeats the words as if he did not understand them, and immediately adds that he speaks all the languages in the world.

The patient died of general paralysis sixteen months after admission.

(B) *Psychic Phenomena due to Pathological Conditions of the Regions concerned with the Evolution of Sensation and Recognition, and Allied Products of Aberrant Mental Association.*

(1) "*Illusion.*" "*Hallucination.*"

Under this heading it is proposed to consider certain psychic phenomena which bear a more or less close relationship to the normal psychic products of the processes of sensation and recognition. Whilst the simpler of these phenomena, namely "illusion" and "hallucination," will receive especial attention, certain more complex psychic products, which appear to arise in consequence of an unharmonious action of the centres of lower association under the local influence of the former simpler phenomena, will also be referred to.

Though, at any rate, the less complex of these psychic manifestations usually form part of the ordinary symptomatology of mental confusion, their mode of origin, and the fact that in their milder degrees they frequently occur during the performance of normal mental processes, form sufficient reasons for their consideration apart from the general phenomena of mental confusion, and at greater length than is necessary from the point of view of this condition alone.

Whilst the usual definitions of "illusion" and "hallucina-

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tion," which describe the former as a false or imperfect recognition of an actual sensation and the latter as a psychic phenomenon which may be spoken of as a recognition in the absence of an actual sensation, serve a convenient purpose from the point of view of alienistic terminology, it is frequently difficult in practice to decide whether a particular psychic product should fall under the one term or the other. Further, as is clearly demonstrated by Case 18 (p. 477), an illusion may form the basis of an associated memory around which are grouped more complex psychic products which, under misinterpretation, may readily be regarded as "hallucinations" as above defined, though they are in reality merely vivid reminiscences which are more or less modified owing to imperfect reproduction. Again, as is seen in Case 15 (pp. 463–465), a riot of lower associative processes, which is primarily caused by gross pathological changes in the physical basis of these, evolves psychic products which can only be regarded as "visual and auditory hallucinations," though there is no reason to suppose that they are accompanied by actual consciousness of these phenomena on the part of the patient.

It is thus extremely doubtful whether the usual definition of "hallucination" is in any sense a correct description of the psychic phenomena which will be referred to under this term. The writer therefore purposes, whilst accepting the above definition of "illusion," to employ the word "hallucination" merely as a convenient term for the description of certain psychic products, which may be either solitary vivid reminiscences, or the result of aberrant processes of mental association, consequent or not on illusions, and which can rarely or never be described as the equivalents of the normal psychic products of the recognition of sensorial stimuli.

The writer does not wish to suggest that a special "centre" for recognition exists. A sensorial impression may reach its appropriate memorial unit either with or without the cognizance of the subject. In the former case an attempt at, or an actual, recognition occurs, and the new memorial unit can usually be voluntarily revived at a later period. In the latter case recognition does not occur, and the memory of the individual sensorial impression, as superadded on the more stable memorial unit, cannot, as a rule, be voluntarily revived. The necessary precedent to recognition is, therefore, a fixation of

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attention on the attempted conjunction of the sensorial impression with the memorial unit. By the term "recognitive field," which will shortly be employed, the writer thus merely wishes to express, in a general way, the seat of the memorial units towards which the attention of the subject is, or becomes, directed.

Illusions, as above defined, are common in sane individuals, and develop after a sensory stimulus which is of sudden occurrence and is also either of short duration or of low intensity, especially when this stimulus is applied to a recognitive field which is in a hyper-excitable or expectant condition.

As an example of the former may be mentioned the sudden meeting, in a crowded street and under conditions which preclude a second and confirmatory sensory stimulus, of some one closely resembling a known individual. After such an experience either doubt or certainty as to the correctness of the recognition may exist, although the individual seen may really have been a stranger, and in this case at least an illusion has been experienced.

The commonly cited example of the latter mode of development of an illusion is the recognition in a faint illumination of a window-blind or a white object as a ghost, which false recognition is, as a rule, readily corrected by further examination of the source of the sensory stimulus. It is perhaps, however, more common to meet with illusions of this type in the case of auditory stimuli, as when unexpected sounds are heard at night, or when certain expected footsteps or other sounds are being intently listened for. Such illusions are also, as a rule, temporary. They cease if an increasing or a fading away of the auditory stimulus leads to the rejection of the false recognition; but they may persist if a fading away of the auditory stimulus occurs in association with a highly expectant condition of the recognitive centre, and in the absence of additional and corrective visual or other sensory stimuli.

Illusions of pathological origin are similar in their psychic characteristics to the above, and they depend for their definiteness, persistence, and frequency on an aberrant condition of both the physical bases of the act of recognition, namely the mechanisms for the reception and conduction of the sensory stimuli to the particular recognitive fields and these fields themselves.

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Though a careful study of the types and grades of illusion suggests that in certain cases of mental confusion—*e. g.* alcoholic confusion with marked tremor, which leads to aberrant visual stimuli, or confusion occurring in association with blocking of the external auditory meatus or with disease or disorder of the middle ear, either of which may lead to the occurrence of aberrant auditory stimuli, etc.—the psychic phenomena are very largely caused by these aberrant sensory stimuli, it is probable that in at any rate a large number of cases a definite part is played by deficiency or aberration of the processes of reproduction of associated memories under the influence of different aberrant sensory stimuli. Further, in many cases the sensory stimulus is probably relatively or entirely normal, but illusions result in consequence of certain associated memories, out of the enormous number of psychic units which may possibly be revived under the influence of external stimuli, being exceptionally liable to recrudescence.

Whilst any of these psychic phenomena come under the definition of illusion, those of the latter type described gradually shade into the phenomena which have been referred to as hallucinations.

Hallucinations may be defined as normal or aberrant groups of associated memorial units which possess such an abnormal vividness as to resemble the psychic products of the recognition of external stimuli, and which, therefore, in patients incapable of exercising the higher corrective and controlling faculty, are to a greater or a lesser extent liable to be confounded with or mistaken for the latter.

In some cases—*e. g.* certain examples of recurrent insanity—these psychic phenomena do not suggest objective reality to the sufferer, who can, according to his degree of intelligence and his command of language, describe their characters and their modes of origin. In other patients, and especially in individuals who have little capacity for or habit of thinking, these phenomena possess a more or less objective reality, although by suitable interrogation it is as a rule easy to determine that the "voices" or experiences differ considerably in character from the normal products of the recognition of sensorial stimuli. This difference is also evident from a consideration of the observation that the sufferers usually endeavour to determine the source of the phenomena, and, in their inability

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to do this, refer them to agencies of the action of which they are ignorant—*e. g.* X rays, telephones, cinematographs, etc. Finally, examples of hallucination are common during actively progressing cerebral dissolution, as the result of the consequent riot of the processes of lower association which exists in patients suffering from this pathological condition of the cerebrum. Whilst to the observer these phenomena appear from the actions of the patients to possess an objective reality, it is probable in such cases, owing to the existent extensive dissolution of the centre of higher association, that they are almost or entirely unaccompanied by consciousness.

It is thus evident that, in the opinion of the writer, the psychic phenomena under description grade from, on the one hand, such false recognitions of actual sensorial stimuli as frequently occur in the normal sane individual to, on the other, vivid associated memories, which arise by processes of lower association in the absence of sensorial stimuli, and which, in cases where the capacity of higher co-ordination, correction, and selection of the products of mental association is practically or entirely in abeyance, may present such a resemblance to the psychic results of the recognition of sensorial stimuli as to be mistaken for these and projected externally.

Normal illusions thus occupy one end of the series and the purely psychic phenomena referred to as hallucinations occupy the other, the numerous intermediate types of illusion possessing greater associational and lesser sensorial components until pure hallucinatory phenomena are reached.

As has been stated, and as will be illustrated by examples, the simpler grades of illusion are common in most cases of simple mental confusion, whether this is of a primarily toxic, etc., and recoverable type, or is the forerunner of cerebral dissolution but is of too profound a grade to admit of complex processes of mental association.

The more complex grades of illusion, requiring as they do for their development more or less activity of the processes of lower association, occur usually in the cases of less profound confusion, which as part of their symptomatology exhibit the phenomena referred to under " Confabulation " (p. 445 *et seq.*).

Finally, the purely psychic phenomena described as hallucinatory occur either in cases exhibiting marked hyperactivity of the processes of lower association—especially certain cases of

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recurrent insanity during their relapses—or in cases of active dissolution of the centres of lower association, in which occur fulminating associative processes and consequent extraordinary and grotesque complexes of associated memories.

When the psychic phenomena are the result of a pathological process (whether this is of a temporary nature or will result in neuronic dissolution) which is widespread and causes, at any rate, considerable mental confusion, the illusions may occur in association with aberrant sensorial stimuli of any kind, though visual greatly predominate, probably because, in such patients, visual stimuli are the most numerous.

When, however, these phenomena occur in cases in which active pathological conditions of the cortical neurones are slight or absent—*e. g.* cases of high-grade amentia, of recurrent insanity during relapses, and of non-progressive dementia (*i. e.* cases of "mained brain"), etc.—the psychic phenomena as a rule occur at night, and in association with imperfect or aberrant auditory stimuli. The cause of this relative prominence of auditory psychic phenomena appears to be two-fold. On the one hand, in at any rate most ordinary individuals the usual channels for the reception and transmission of knowledge are hearing and speech, sight, except in the case of special psychic acquisitions, occupying a subordinate position; further, the majority of people think in words as spoken rather than in words as seen. On the other hand, fear or apprehensiveness is naturally greater when the subject is alone at night, or in the dark, than it is by day; and hearing, which is then the only sense available, is therefore preternaturally active. It is thus possible to give a simple psychological explanation of the prominence of auditory illusions and hallucinations in these types of case.

Certain illustrative examples of the various psychic phenomena under consideration will now be cited. In the case of the less complex varieties which occur in most cases of mental confusion it is unnecessary to insert special illustrations, as many examples exist in the cases already referred to and described. Certain of these will now be reproduced.

Case 3, a senile patient, æt. 74, presents a good example of a simple illusion of identity. On being asked whether she knows the nurse, the patient remarks, "I don't know her. Oh,

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yes, I think I do! Of course I do. How are you?" She then sits up and shakes hands, and adds, "I'm pleased to see you, quite pleased."

Case 4, a woman, æt. 81 years, goes a step farther from the associative aspect. She tells me that she has met me before, "close to home. I knows you by sight." She also knows the nurse, and says that her name is Haverdale, and that she is in a hospital "almost close to the top of the street."

Case 5, a pre-senile patient, æt. 52, who was later discharged "recovered," exhibits a different type of illusion. "Everything seemed to go wrong, work and everything; washing and everything seemed to be all just anyhow. . . . The things I put on the line seemed to be changed, sometimes things with no names on. . . . Sometimes I don't know my husband. I think it is somebody else. Sometimes he don't look like my husband, and another time he do. I think he came with me yesterday, as it was his overcoat he used to wear" (really the relieving officer). She states that she hears people talking at night. She has seen "funny-looking things in the beds, with horns on their foreheads rolled up," and they looked at her all night, and she couldn't sleep, and there were funny noises, "sissing" (probably from the steam-pipes) going on.

In this case the capacity of correct recognition was largely in abeyance, and at night matters were even worse. The patient was a woman who probably did relatively little thinking of any kind, and the earlier aberrant psychic phenomena were naturally those connected with the concerns of her every-day life. Later on, however, and especially at night, illusions of identity of a similar type, but grotesque in character, appeared.

Case 6, a female, æt. 33, in a condition of acute toxic mental confusion, also exhibits a simple type of illusion of identity. She knows the nurse, but not by name, and she has, she thinks, seen me before. She remarks, "It wasn't you that rode with me, was it?" (*i.e.* the relieving officer).

Case 7, æt. 22, an example of adolescent confusion (of the

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type usually termed "catatonia") presents illusions of identity which possess more complex associative components than the last. The patient states that he is at present at "18, S— Street, L—." The attendant near him is "like my aunt, she's living there, 18, and my mother, sisters, and brother, brother Jack." The head attendant is "a chap from America, Leonard, that's his name, like him, anyhow."

Case 10, a man æt. 58, who is suffering from acute alcoholism, exhibits marked activity of the processes of lower association, together with much confusion. His illusions of identity thus possess complex psychic components. He knows me by sight very well, and tells me that I live in Leicester Square. He states that the charge attendant "looks like one of the yachtsmen." (The attendant's uniform was not very dissimilar from that of a yachtsman, and the examination was conducted in a small admission-room.) He describes the process of admission thus: He has just been "down and waited on board ship an hour and then his majesty the officer" (*i.e.* the "yachtsman" or charge attendant) "called you, and you told me to lie on my back, and then I was undressed, and then you came here." As the patient got more excitable and his associative processes became still more active, he suddenly shouted out as if to some one he saw or heard: "D'you hear? The King knew I was in Southend to-day. He was a witness that I was in Folkestone to-day." This remark apparently occurred in the absence of any sensorial stimulus, and as the consequence of vivid processes of mental association (see Case 15, p. 463).

Case 11, a male æt. 53, who is suffering from alcoholic excess and from the effects of former syphilis, exhibits similar psychic features. The pathological process is, however, of a more chronic nature. The psychic phenomena are complex, but are largely based on fairly stable associated memories which concern the every-day work of the patient, and the illusions of identity depend upon an aberrant psychic rather than upon an abnormal sensorial component.

The head attendant is well known to him. He has often met him in the park but doesn't know his name. He remarks, concerning the attendant near him: "Well, I couldn't call the gentleman by name, sir. I've seen the gentleman about the

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park for four or five months. I only work in A— Street" (*i. e.* quite near the park). "I know a lot of folks about the park, but I couldn't call 'em by name, sir." He voluntarily recognises the patient in the next bed by name. "I've known that chap a good bit, sir. He's a sailor man, I think. I've drank with him once or twice."

Case 12 is of complex etiology, alcoholic excess, senility, and former syphilis all assisting in the production of an active process of cerebral dissolution. The psychic phenomena in this case are based on associated memories of all ages and all degrees of stability, and the groups of memorial units are therefore often impossible as descriptions of fact or experience. He tells me, for example, that I am a doctor and "I knows you well by sight for many years. I've knowed your face many long years, since I was a little lad." As the patient is old enough to be the writer's father, it is evident that in this case the higher functions of co-ordination and of selective and corrective control of the processes of lower association are practically in abeyance, and that the psychic phenomena exhibited (see also Case 12, p. 453) are due to a semi-voluntary riot of the latter processes.

The above examples of the various grades of illusion illustrate the more important of the simpler psychic phenomena under consideration. The writer will therefore now pass on to the description of certain cases which exhibit the nature and mode of development of those more complex psychic products which are grouped under the term "hallucination."

The five cases to be referred to fall into two groups. Of these the first contains three cases of recurrent insanity (Cases 16, 17, and 18), and these agree in the important detail that the patients voluntarily give more or less clear indications of the mode of development and general characters of the hallucinatory phenomena. This is probably due to the details that the psychic disturbance is of a temporary and functional nature, and that the phenomena experienced by the patients are therefore more or less capable of interpretation by them the moment that normally controlled ideation becomes re-established. Such examples are naturally very rare, and are obtained by accident, because leading questions, owing to their

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suggestive influence, are entirely inapplicable. The remaining two cases (19 and 20) are types of confusion due to acute alcoholism, and therefore fall into a different category.

The first of the cases to be cited is an example of recurrent insanity during an acute relapse, and exhibits the clinical features of "acute mania." There is hyper-excitability of the special senses, and intense reaction to, and rapid mental association as the result of, sights and sounds. The patient vividly sees his own former actions repeated on the slightest suggestive sensory foundation, and develops illusions in consequence of the prominence of certain associated memories. During examination he gradually loses ideational and motor control, and his processes of mental association so fulminate as to render it impossible to fix his attention. In order that unnecessary repetition may be avoided the more prominent features of the case, to which the writer wishes to draw especial attention, are printed in italics.

CASE 16. *Admitted May 8th*, 1906 (Rainhill Asylum).—Brother and maternal uncle insane. Previous attack in 1891. Duration prior to admission three days.

Male, married, labourer, æt. 53. Notes taken the day after admission.

A restless, excited man, who at once says that he was here before in '91, and offers to write his name. He is rather slow of comprehension but gives a good account of himself. At times he hesitates for a reply, puts his hand to his forehead, tries to think, and remarks that he feels confused in his head. He "hears voices using filthy talk and sees them rub their fingers and pull their eyelashes. *I used to do it myself, you know. They do it by telephones, and in the streaks of gaslight and all such as that*" (*i.e.* he associates what he hears and sees with what he happens to recall). He then remarks, "I'm just trying to think of the youngster's age" (a question previously asked him). *He does not know the people, but they are "mostly men in the building, but I came with a couple or three women when I came here"* (correct). He did not see them after they left him here. He then volunteers "*There's nothing to moider me when there's nobody there. Brain gets worried.* Knocking and banging and pulling things about. Can't stand it. I've left all them tricks off." *I happen at this point to accidentally rub my eyelash, and as I do it he remarks that*

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they do it too, and says that what he says they repeat, and as an example he repeats the alphabet and says they do it too. *He then states that the other two patients who are in bed in the dormitory watch his every movement* (correct). He then gradually loses control of himself, and his association of ideas becomes rapid and uncontrolled. He says the red counterpane resembles blood and then passes on to talk of painting. As he gesticulates the bed shakes, so he talks of spring mattresses. Later he mentions prayers, and he thereupon gets up, stands on the bed with clasped hands and uplifted head and eyes, and repeats the Lord's prayer. He then suddenly gets into bed again and says "fish of air, birds and seeds, everlasting life, amen." Then he makes a remark about hell, which arises in consequence of his bumping himself and happening to swear, and he remarks, "I could bear to have my throat cut as that's blood" (pointing to the red counterpane). . . .

He has an old left hæmatoma auris but shows no stigmata of degeneracy.

May 27th, 1906.—Patient is rapidly recovering from his acute attack. He is still excitable and unstable but is improving daily.

The next case is inserted owing to the definiteness with which one important detail concerning the source of purely hallucinatory phenomena is illustrated. The patient states that the "voices" which he hears are "my own family in particular and those I've come in contact more closely with." It is therefore clear that his "voices" are reminiscences of groups of associated memories.

CASE 17. *Admitted November 26th*, 1903 (Hellingly Asylum).—Duration prior to admission about three months. Exciting cause stated to be religious excitement.

Male, æt. 26, auctioneer's clerk. Admitted nine days ago.

A neurotic-looking, restless man who appears very depressed and worried. He gives his name and age. He says that he came here last October (November), and that the date is December 4th (5th). He does not know the day of the week (Saturday) but says that it is four days since Sunday. He has not been "acting quite up to the mark," and has been depressed about "some religious matters partly." He is as comfortable

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as he ought to be under the circumstances. *He suffers from auditory hallucinations. Voices tell him "to do the right thing," and he hears both men and women speaking to him. They are "my own family in particular and those I've come in contact more closely with."* Whilst talking he fidgets to such an extent that it is painful to watch him, and the intervals between his replies are so long that it is difficult to obtain much information from him.

May 27th, 1906.—Patient was discharged "recovered" on June 28th, 1904. His friends sent him into the country, and he continued well-behaved for five months, though he was distinctly feeble-minded in comparison with his original mental condition. He was re-admitted on November 20th after creating a commotion in a church and attempting to injure the altar furniture. He was again discharged on July 3rd, 1905, and has not since been heard of. He was a private patient.

The last, and by far the most important, of the three recurrent cases is that of a male, æt. 35, who gives a remarkably clear account of the mode of development of the psychic phenomena which he exhibits. The mode of origin of the idea that his father is superhuman is extremely interesting, and is presumably correctly stated. The patient was probably vividly impressed by some familiar attitude of the man under the fire escape, and instead of, as an ordinary normal individual would do, noting a resemblance to his father as a temporary illusion of identity, reacted to the sensory stimulus after the manner of a religious fanatic. His description of his nocturnal hallucinations is proof that these are merely elaborations of vivid reminiscences, though the patient obviously finds great difficulty in discovering suitable terms in which to express what he wishes to explain.

CASE 18. *Admitted August 25th,* 1905 (Rainhill Asylum).—Father intemperate and insane. Patient was admitted in May, 1902, and was sent out on trial in September, 1902. He was brought back at the end of a month, and was discharged "recovered" in March, 1903. According to his mother, he relapsed almost at once, but she kept him at home till his present admission.

Male, married, painter, æt. 35. Notes taken two days after admission.

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A pale man of very worried appearance. His eyes have the strained appearance of a case with acute hallucinations.

His memory is normal, and he gives a good account of himself. When asked what special reasons have brought him to the asylum he gives the following description in an even monotone: "I've been believing in my father to be Almighty God, and if I'd done what I was told I'd not have been here now." . . . "I was told not to believe in my father, but to believe in someone above him, an Almighty God above, our heavenly Father, and I was believing in my earthly father." His wife and his mother told him to believe in a heavenly Father. He gives a vivid description of how he first thought his father to be superhuman. Whilst he was in the asylum the first time, he was working with a party of patients near the administrative block, and "*I thought my earthly father appeared in a flash under the fire-escape at the front. A man I was working with went under it and like as if he appeared to me in that man. That's where the idea sprang from.*" This idea has been "getting more and more strong ever since I went out." Now, however, since he has been in the workhouse infirmary during the past three weeks, he has begun to believe in the Power above. *He hears his father's spirit at night, "my earthly father's, guiding me, not like a voice but a spirit; whether it's a memory of his voice I don't know, like what I've heard him saying, sayings of his,* and he tells me to believe in a God above, a Supreme above, and that he's in heaven, so it 'uld be a good job for me so long as he is safe in heaven—let me be safe, you know."

He has been married over ten years and has six children. His wife has been very good to him in working for their living. He "chucked work just after Easter" (about four months ago) "owing to the ideas I got into my mind."

Patient was discharged "recovered" on April 28th, 1906.

These three cases demonstrate that the simpler type of psychic phenomena which are grouped under the term "hallucination" are the products of vivid association of ideas, and are thus capable of simple psychological explanation.

The next case exhibits phenomena of association which are also readily explicable, but which are of a somewhat different type from those just described. The patient, a woman æt. 39, with a history of intemperance, associates the nocturnal ticking

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of a clock, which appears in her case to have been a prominent sensory stimulus, with the products of her psychic processes (*cf.* Case 16, p. 474). Such groups of memorial units as arise into the consciousness of the patient are associated with the ticking of the clock, and thereby projected externally. The resemblance of the "voices" to a telephone is merely a further stage of association by similarity, and such terms as "voices" and the clock "talking" and "saying" are merely instances of the modes of expression which the patient finds available for the purposes of description.

CASE 19. *Admitted December 2nd*, 1903 (Hellingly Asylum).—Cause, intemperance. Duration prior to admission, one week.

Female, æt. 39 (?) years; cook. Admitted twenty-four hours ago.

Appearance dull; face expressionless; memory and general intelligence good. No illusions of identity. She states that she has been working in a hotel during the season, and that when she left they could not pay her her wages. This upset her. During the past week she has heard voices at night. She heard the clock talking "a communication from New Cross." "*It was my brother and cousin talking, and like a telephone.*" "*Two nights ago,* first the clock said 'Think of me on Wednesday.' *I was frightened. My mother-in-law and sister were in the bedroom and she was crying as they are going to the workhouse, and she said that my brother had been keeping another woman during the past seven years. That's what I was told distinctly by that clock.*" Last night she "didn't hear enough to disturb me and I don't remember it now." (There is no clock in the dormitory.)

Patient was discharged "recovered" on June 14th, 1904.

The last case, that of a man æt. 60, with a history of intemperance, is a similar example to the previous one, but the psychic phenomena are more complex. The description given by the patient is so clear as hardly to require any explanation. The preliminary symptom developed was a loss of higher control over the processes of lower association, which occurred in consequence of the exhibition of indecent photographs and of the resulting emotions of suspicion and jealousy. Later on, as the case progressed, the patient's processes of lower association acquired an involuntary and uncontrolled prominence which resulted in the psychic phenomena he so well described.

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CASE 20. *Admitted January 14th*, 1905 (Hellingly Asylum).—Cause, intemperance. Duration prior to admission, fourteen days.

Male, married, no occupation, æt. 60. Notes taken on day of admission.

An intelligent man with rather a heavy appearance about his eyes. He gives a good account of himself and his memory is normal. He does not know why he is here but says that he has had a lot of worry during the past two weeks with his wife, who would not do as he wished, and he has been brooding over this. His wife was a servant, and one day he saw a German waiter show a servant in the establishment a lot of indecent photographs. He thought that these might be shown to his wife so he made her leave, but she persisted in going back again. They then "had words" and she left him. She is his third wife, and he is not married to her, as his second, who is "more like a wild beast than a woman," is still alive. *He has lately heard "voices" at night.* He thinks "the Salvation Army has had a lot to do with it." "*Funny noises in the ears,*" *probably due, he thinks, to living near the sea for thirty-five years,* "like a man talking like Punch." *A few nights ago it sounded "like the old-fashioned Punch and Judy shows,* and was behind my head through the wall and acting as detective from Scotland Yard, and calling out things about the Duke of Devonshire and the King." In former years he "used to go a lot to market" and meet these individuals at cattle shows, etc., "*so it might have come up again and revived itself.*" "I haven't heard any of these noises to-day since I've been out here." He has only heard them since his trouble two to three weeks ago, and has slept badly during this time. He is a moderate drinker and at times has drunk heavily.

Patient was discharged "recovered" on July 29th, 1905.

In the above illustrations the psychic phenomena described were accompanied by consciousness, and this is the case in the majority of the patients who exhibit these symptoms. As has already been stated, it is rarely difficult to determine, by suitable interrogation, that these phenomena do not possess a true objective reality. Whilst the sufferer is only too vividly conscious of their existence, they are of a different order from the normal psychic products of the recognition of sensorial stimuli,

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and are not mistaken for these in spite of their projection externally. They may be described as "voices," or as "interference," or as "torture," or the patient may go a step further and endeavour to determine their source. If he be of low intelligence and poor education, he develops the idea that these phenomena are caused by X rays, cinematographs, electricity, or telephones, or by some other agency he does not in the least understand. If his intelligence and education be considerable, such causes will naturally be unsuitable and even unthought of, and the patient has therefore to fall further back upon the unknown and to appeal for a suitable or possible origin for the phenomena to hypnotism, occultism, theosophy, and various mysterious agencies.

The writer is thus of opinion that many "delusions" may be regarded merely as evidence that the patient more or less clearly recognises that the hallucinatory phenomena from which he suffers are of a different order from the normal psychic products of the recognition of sensorial stimuli.

The last variety of (simple) hallucination to which the writer wishes to refer is of a different nature, and occurs in cases of progressive cerebral dissolution, as one of the phenomena which result from riotous processes of lower association.

An example is given in Case 15 (p. 463). In this patient advanced dissolution of the centre of higher co-ordination, correction, and selection has occurred, and the processes of lower association are in consequence being performed in an almost entirely automatic manner. Fatigue consequent on the stimulation of questions therefore results in a very fulmination of these processes. The psychic products, which arise by aberrant and mained processes of association in the actively diseased physical basis, are inco-ordinate and jumbled together. The patient mutters away in what is necessarily quite an unconscious manner. He speaks as if in reply to questions and looks up as if he were reacting to external stimuli, in automatic accordance with the recrudescence of such associated memories as resemble the normal psychic products of the recognition of sensorial stimuli.

Such a psychic state is solely due to a riotous action of the processes of lower association in the practical absence of consciousness, which, however, can be temporarily aroused into existence by a further question.

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This variety of hallucination therefore completes the types of psychic phenomena which occur in cases of profound mental confusion, and bears a similar relationship to the types of hallucination which have been previously illustrated, to that which the various types of illusion which occur in profound mental confusion bear to the simpler and semi-normal varieties of illusion which were referred to at the commencement of the present description.

(2) *Certain Complex Phenomena of Association which arise under the Influence of Local Disorders of Lower Association.*

The writer will now, in conclusion, refer briefly to certain more complex psychic products which appear to arise owing to an unharmonious action of the centres of lower association under the local influence of the simpler phemonena which have just been considered.

Cases are occasionally met with in which the psychic phenomena manifested appear inexplicable except on the hypothesis that the different centres of lower association are acting independently of, or at least unharmoniously with, one another.

To illustrate the writer's meaning, an example will be cited. A single man, æt. 44, by occupation a clerk, and exhibiting signs of former syphilis, was admitted suffering from apprehensiveness associated with ideas of persecution by his fellow-clerks. He had for some time been failing in his work and had felt doubtful of his capacity to continue to perform his duties as usual. His prominent ideas at the time were that he was falsely accused of sodomy and of uttering forged cheques. After a residence of some months, during which he was quiet and well-behaved but very apprehensive, introspective, and solitary in his habits, he developed certain interesting psychic phemonena. During the period in which the patient was under observation the following progression of phenomena was observed: (1) The words which the patient spoke seemed to him to be repeated inside his head. (2) Later, whatever he read also appeared to be repeated aloud, word for word, by a voice within his head, even when he read silently. This phenomenon worried him greatly as he was afraid of disturbing the other patients, and he therefore became still more solitary in his habits. As a means of describing his symptoms he referred to the "voice" as the "speaker." (3) Later

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still, the "speaker" not only repeated aloud what he said and what he read, but also what he thought. He then became still more worried and very depressed when in the presence of others. All kinds of associated memories—dealing, for instance, with actions performed whilst he was a boy, with sexual matters, with everything, in fact, which he most wished to keep secret—were, as they happened to be recalled, repeated aloud by the "speaker" for everyone in the room to hear, and his existence was thereby rendered unendurable.

The order of spread of these auditory hallucinations of words exhibits a correspondence with the order of acquisition of the normal functions of language, in that the hallucinatory phenomenon attaches itself first to the earliest acquired and most stable associate of the auditory word image.

Such a case is readily explicable on the hypothesis that the centre of lower association for the hearing of spoken words was in a condition of hyper-activity, and that vivid associated auditory word-memories were aroused whenever the corresponding vocal or visual word-memories were stimulated by speaking aloud, or by reading to himself, and eventually even by thinking to himself.

An example will now be given in which a hyper-excitability or unharmonious action of the physical basis of auditory associated memories so influenced the centre of higher association as to cause the development of a fixed delusion, which eventually dominated the whole of the processes of mental association.

The patient, a man æt. 39, had followed various occupations, including that of a cattle-slaughterer. He was an individual of relatively little education but of considerable, in fact of marked, intelligence, and at the time he came under observation had already been several years in an asylum. Before his admission he had served a term of six months hard labour for assault, and when he was admitted he suffered from severe hallucinations, which were chiefly of a sexual nature, with reference to one of the prison warders. As his case progressed, and his hallucinations became more vivid and numerous, he still continued to refer to this individual as their source. When he came under observation careful investigation of his hallucinations demonstrated that these consisted entirely of groups of associated memories which were not projected externally by the patient. He considered that the prison warder or, as he termed him,

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"the mystery," or "the man underneath," apparently because he had satisfied himself that the source of his associated memories was certainly not anywhere *on* the earth, had some occult method of putting thoughts into his mind, and not only into his own mind, but into the minds of everyone else. He, in fact, believed that the "mystery" was the source, not only of nearly all the thoughts which arose in the minds of men, but of all the evil which resulted from these. "I am writing you a few lines. The Yankee mystery is shoving things into the butchers' heads and putting them on to pilfer things to get him into trouble, and he is shoving into my head that I know all about my masters, and said that I seen him pilfering many a time and trying to force lies out of your mouth. My mother in L— can see everything that's done in the asylum and the doctors of the asylum can see everything that's done outside if they have one of the cinnamatic machines in the asylum they can see everything but still keep it all to themselves." The above is an illiterate description of the methods employed by the "mystery." Occasionally the patient got fellow-patients to write from his dictation. "When I was in Ward ——, the patients received tobacco and cigars off the mystery to charge me wrongfully, and they furthermore gave him instructions not to give me justice unless I spoke the truth concerning myself. This is a made-up thing on the patients' part before I came from prison, and I know that the majority of them are jealous because I speak up for the attendants a little, knowing where all the destruction comes from. . . . When asked by the doctors in the morning as to how they feel they are afraid to tell all that is in their mind lest the doctors might say it was their own." (Note the distinction made between what the "mystery" puts into the patients' minds and what they think themselves.) "Also, when saying their prayers it is from the lips and tongue only, whereas the actions of the other man" (*i. e.* the "mystery") "is on the lips and tongue as well as the mind. All the speeches from men in the side-rooms and dormitories go through my head at night-time, and this is why the patients and the attendants who have left got the mystery to try and knock the truth out of me, and so cause the mystery to shout out everything himself, but I have not done anything that the mystery says, or else the companions whom I used to work and sleep with would have

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written to me and told me all. But all this is done to make a liar of me and other people with whom I am acquainted. The mystery puts lies into people's heads in order to do them an injury." One more extract will be given to show how wide-spread was the influence of "the mystery" or the "other man's mind." The "mystery" interfered with the beef trade between England and South America in order to give Germany the benefit. "The importation was stopped owing to foot-and-mouth disease amongst the cattle, but it was not their own at all, but that of the South American Board of Agriculture under the earth. They are in a position to shove the disease in and take it off again at pleasure. On the arrival of the last cattle-boat in this country there was, according to the statement of the veterinary inspector, no disease at all on board, and I can vouch for this myself, looking after the offal, and finding the heart, lungs, and liver of the cattle quite sound. The German inventor having a spite against this country, caused the cattle to be forwarded to his own country to be divided amongst forty thieves in like manner that they do in this. This would have the effect of bringing all trade to themselves. They would like to obtain all the offal trade if possible, but my advice is to ignore them and say that you are in the know. The German butchers have been trying to ruin this country for years, but we have found them out at last. It is to be hoped that all the English, Welsh, Irish, and Scotch men in and around New York will look after the German inventor, who is the cause of all poverty and starvation, but no one living on this earth ever dreamt of his being underneath the same, and having his big mansion there."

It will be observed that this patient differs from the last in having, after the manner of the group of cases suffering from systematised delusions (*Journal of Mental Science*, January, 1906, p. 14), extended the scope of the imaginary cause of his hallucinations or abnormally vivid associated memories until he applied this cause to nearly all his own personal products of mental association, then to nearly all those existing in other people, and, lastly, to all the intrigues and evils in the world. From an accusation of masturbation by a prison warder he developed the idea that the warder was the real offender, and left the results in his bed in order to substantiate the false charge. He then considered the warder to be the cause of the

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prominent auditory associated memories from which he suffered; and later on of nearly all the associated memories of whatever kind which arose into his consciousness. He finally developed the idea that this person, whom he eventually described by such titles as the "mystery," the "South American Board of Agriculture," the "German inventor," the "man underneath," the "other man," the "other man's mind," etc. etc., was the one power of evil.

The case differs from paranoia in an important detail. The patient was able at times to detach himself, so to speak, from the aberrant products of mental association. Thus he frequently, with *his own mind*, originated certain practical ideas—*e.g.* when using ointment for internal piles he invented a tube by means of which the ointment could be neatly applied to the affected region; and he used to speak of "telling the mystery" about such inventions or suggestions in order that they might be put to some general use.

This case, therefore, illustrates how morbid psychic phenomena evolved in the lower centres of association may eventually by introspection result in widespread anomalies involving the whole of the mental functions.

It will be observed that both the cases which have been described suggest a simple and by no means improbable explanation of such phenomena as alternating, double, or multiple consciousness.

Though many similar cases might be adduced, the above are sufficient to illustrate how local lesions of the centres of lower association may eventually, by the persistent influence of the psychic phenomena they excite, result in unharmonious interaction of these regions, and even in a general involvement of the whole of the psychic centres. In the experience of the writer a greater degree of dementia develops in cases of this kind than is found in the primarily non-hallucinatory types of paranoia which were described under "Amentia" in the second part of this paper. It is probable, therefore, that persistent hallucinatory phenomena, when of such abnormal vividness as to acquire a more or less marked degree of objective reality, and therefore to be projected externally by the patient, are indicative of neuronic dissolution in the particular centres of lower association which serve as their physical basis.

The writer would, therefore, draw attention to the difference

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which exists between the types of cases under consideration and cases of pure paranoia. In the latter the centre of higher association is the primary region at fault in that it is unable to exercise its normal functions of co-ordination and of corrective and selective control of the centres of lower association. In the former various local disabilities exist in one or more of the centres of lower association, and these lead either to unharmonious action of these centres in relation to one another or to more generally aberrant psychic processes involving also the centre of higher association. In these cases considerable neuronic dissolution and dementia frequently occur: in those relatively little cerebral disintegration may ensue even in cases of long duration.

SEQUELÆ OF MENTAL CONFUSION.

As has already been stated, the sequelæ of mental confusion are recovery, a stationary condition of dementia, and dementia which more or less rapidly progresses till death ensues. In any individual case the particular sequela depends on the cause and the severity of the pathological process of which mental confusion is the psychic expression.

Recovery.—It is doubtful whether any attack of insanity associated with, at any rate, moderate mental confusion ever leaves the patient in exactly his previous mental condition—*i. e.* in the possession of an entirely intact cerebrum. A study of the after-history of cases discharged "recovered," in fact, only too frequently demonstrates that a certain degree of feeble-mindedness has ensued, although for practical purposes the patient is again "sane."

This is particularly the case when patients who possess neurones of deficient durability have broken down, usually at one of the "critical" periods of life, under the influence of such a degree of mental or physical "stress" as would have produced no ill effects on normal cortical neurones.

In cases of mental confusion which have been induced by the direct action of toxines (p. 431), recovery is more often relatively complete. In such patients the pathological process in the cerebrum is more general and the confusion is more profound than occur in the former types. It is usual, therefore, to find that either practically no dementia, or else a very

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appreciable degree of dementia, is the sequela when the acute neuronic changes have subsided.

In cases of this kind recovery, if it occurs at all, is as a rule not delayed longer than a few weeks or months. From the pathological aspect the subsidence of the acute neuronic changes in the cortex probably resembles that which ensues in "peripheral neuritis," without destruction of nerve-fibres, in other parts of the nervous system.

Occasionally, however, recovery occurs after one or two years in cases which appeared to be hopeless, and therefore, especially in mental confusion following alcoholic excess, experience suggests a guarded prognosis. It is probable that such cases are analogous to severe examples of "peripheral neuritis," in which actual destruction of nerve-fibres has occurred, and which only recover after these have had time to undergo regeneration. In cases of this kind it is at least conceivable that relatively little actual destruction of cortical nerve-cells has occurred, but that severe though more or less reparable damage, which is only recovered from after a considerable period of time, has been done to their fibrillar ramifications. This is at any rate a preferable hypothesis to the alternative one, namely, that "spare" neurones exist in sufficient quantity to take on the functions of those destroyed, for in this case the mental functions would be re-established on a neuronic basis which would be to a large extent a *tabula rasa* as regards associated memories, and also recovery from prolonged mental confusion would be much more common than it is.

A stationary condition of dementia. This is the common sequela in a large proportion of the cases which are precipitated by the causes referred to under the last heading.

The usual condition of the patients is one of moderate dementia, and this is perhaps largely due to the frequency with which patients suffering from the milder grades of dementia are eventually discharged "recovered" or to the care of their friends. A difference is often noticeable between the mental condition of the patients who have developed dementia as the result of the direct action of toxines and that of the remainder. It is frequently observable that the former cases exhibit a greater degree of dulness, apathy, and lack of initiative than the latter, though they are often very useful mechanical workers.

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This difference is, however, not so common as to merit description as a constant distinction between the types. It is probably due to the more general involvement of the neurones of the cortex which occurs under the influence of toxines, and to the consequent greater dissemination of the neuronic destruction. It may be added that patients suffering from a stationary condition of dementia, however this has been induced, are, in comparison with any of the types of high-grade amentia, especially prone under the necessary causative agents, the chief of which is senile or presenile degeneration of the cerebral vessels, to develop progressive dementia.

The commoner *symptoms* of stationary dementia which occur in all cases, however induced, will now be briefly detailed. These are general dulness and apathy, a loss of initiative, and an indifference to their surroundings; a marked degree of stereotypism of all the mental processes, and an inability to learn new acquirements; a mechanical method of performance of known acquirements, a general stupidity and inability to understand when an attempt is made at correction of any kind, and a tendency to revert to accustomed modes of speech and action; finally there is a tendency to the repetition of accustomed actions which often shows that these have been performed in the entire absence of intelligent volition. As an example of the last may be mentioned an action of a certain patient who had been accustomed in her previous asylum to go for coals every day. On the morning after her admission she was discovered standing patiently at the door of the ward with a slop-pail in her hand. She could not give any explanation of this, but it was obvious that she had picked up the nearest thing to a coal-pail that happened to be available and had gone and stood at a door which more or less corresponded with that through which she was accustomed to pass on the way to the coal-house.

Progressive dementia.—In very many cases of mental confusion this symptom-complex is the indication of a more or less rapidly progressive process of cerebral disintegration and mental dissolution.

The causes of such progressive dementias are cited on pp. 431–432, and need not here be further referred to. It is, however, desirable again to draw attention to certain details of symptomatology which distinguish such cases from examples of simple

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mental confusion which are presumably capable of recovery. These have already been referred to, as occasion served, in the remarks on Cases 3, 12, 14, and 15, etc., but many of them are exceptionally well exhibited in the example now to be described.

The following case, in fact, illustrates, better than would any general description, the chief differences which exist between simple and presumably recoverable mental confusion and the mental confusion of progressive dementia. The chief of these are as follows: The patient does not know the time of year; she gives her first married name instead of her present one; she states that she is "getting on for forty," whereas she is seventy-five; she confabulates readily, but the psychic phenomena evolved are on the whole impossible, and are largely based on groups of memorial units dealing with her early life; she has well-marked illusions of identity, but she continually makes use of the same name, "P—r," in her identifications.

In all these points the case differs from one of presumably recoverable mental confusion, and shows evidence of the mental confusion of progressive dementia.

CASE 21. *Admitted September 22nd*, 1904 (Hellingly Asylum).—Exciting cause, intemperance. Duration prior to admission said to be fourteen days.

Female, married, nurse, æt. 75. Admitted four days ago.

A wrinkled old woman, who says that her name is "Sarah C—x; a large family we are." This is her married name, and her maiden name was H—s. She then states that she married again, and that her present name is W—m. ("Isn't your name Mrs. B—d?") "I am, sir, because I was a widow and married Mr. R. B—d?" She recognises the nurse as "Mrs. W—m's daughter. Mrs. P—r it was once, I know. Weren't your grandmother's name P—r?" She then tells me that the nurse is "Mrs. P—r's grand-daughter, isn't it? I know the old lady, and I know your mother." She states that she has seen me before at Bishopstoke. She does not know whether my name is P—r or not. "I know Mr. P—r and Mrs. P—r, and thought you were Mr. P—r." She calls a patient named M— B—d "Mrs. T—r," and another named S— P—x "Mrs. P—r," and a nurse "Mrs. P—r's daughter." She thinks to-day is Sunday (Monday), and that the date is the 25th or 26th (26th). She replies that the month is "Not February, is it?" (September),

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and that the year is " I don't know whether it is 101 or 102" (1904). ("Age?"). " I'm getting on for 40. It's a nice little age, isn't it? I suppose *you're* beginning to shave it, aren't you?" ("Out to-day?") "Yes, I've been out to see the cricket match to-day." She states that she saw her husband at Bishopstoke this morning. She brought her husband's breakfast home with her—bread, butter, and oysters. I tell her that I don't know a *soul* in Bishopstoke, and she remarks "*A soldier* there, are you?" She replies that she has children at home. The youngest is five or six, and she has twenty-five living, and thinks it likely that she will have another to make twenty-six. When asked where she is she replies that it is " About one mile from Bishopstoke station here." When again asked the same question she remarks " Very nice place. I like it very well. I should think it was a bonny place myself." I then ask her if she is a country-woman, and she replies " Southampton woman." She answers questions quickly and apparently rationally, but as a whole does not volunteer much information about herself. She laughs and looks about slyly from face to face as if she thinks that she is amusing. She has evidently lived a rather dissolute life, as she says, "I went to Bishopstoke this morning. I enjoyed myself, I can tell you. I always do when I go on the spree. I was along with your nephew last time I saw you and with his father this morning." She is very erotic. When I touch her chin to get her to open her mouth she tells me I am a rascal and that " He thought he'd tickle me under the chin." She is wet and dirty in her habits, but is quiet and no trouble and takes her food well.

This patient died two and a half months after admission in a condition of advanced dementia.

For examples of the symptomatology of the more fulminating types of cerebral dissolution which, together with certain of the above characteristics, also exhibit still more markedly aberrant phenomena of lower association, the reader is referred to Cases 14 and 15 (pp. 462–463).

(To be continued.)

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