and of the only possible solution of the difficulty by proper institutional or other restraint.

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(1) Read at the Glasgow meeting of the Medico-Psychological Association, March, 1916.—(2) The words "high grade" as applied to mental deficiency are used in this paper in the same sense as they are used when applied to "high" or "low grade" imbeciles, *i.e.*, "high grade" signifies a comparatively slight degree of deficiency.—(3) I have to thank Dr. Ivy M'Kenzie for affording me every facility to study this case in detail in his observation mental wards at the Eastern District Hospital.

Diet as a Factor in the Causation of Mental Disease.

By CHAS. MERCIER, M.D.Lond., F.R.C.P.Lond., late Physician for Mental Diseases to the Charing Cross Hospital.

"Forty years long was I grieved with this generation and said: it is a people that do err in their hearts, for they have not known my ways."

IT is just forty years since I first ventured to call in question the accepted doctrines of the causation of nervous diseases. In an article in the *British and Foreign Medical and Chirurgical Review*, an excellent quarterly now long defunct, I likened the imagination of physicians in this respect to the imagination of that fortunate sailor to whom was granted (nowadays we should say who was given) the fairy privilege of having three wishes fulfilled. After he had secured all the rum in the world and all the tobacco in the world by his first two wishes, he could think of nothing further to desire than "a little more rum." So physicians, after they had attributed every known nervous disease to sexual excess and syphilis, had no explanation of a

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new disease to offer beyond a little more sexual excess. The only nervous diseases that were not then attributed partly or wholly to syphilis were tabes and general paralysis. Some five-and-twenty years ago, when an eminent physician was about to lecture upon the causes of insanity, I hazarded the conjecture that we should hear a good deal about masturbation, and I had no reason to repent of my prophecy. We may be pardoned a little natural exultation when we contrast the present state of ætiological doctrine with that which prevailed in those dark ages. We had then no more reason for our belief than Aristotle had for the belief that all heavy bodies tend to the centre of the universe, but now we know that the mental diseases that we used fondly to ascribe to sexual excess and syphilis are, in fact, due to repressed complexes and infantile incestuous longings. How foolish were our predecessors! How enlightened are we!

Without impugning in the least the startling discoveries that we owe to the cleanly imagination of Freud, I think it possible that they may be supplemented by researches less recondite. When I study his efforts to discover the causes of mental disease, I am irresistibly reminded of the story of the Purloined Letter. The detectives knew that it must be in the room, so they groped up the chimney, pulled up the floor, sounded the walls, probed the furniture, and ripped up the cushions, without finding the letter, which was lying displayed prominently under their noses all the time. It has occurred to me that our difficulty in discovering the causes of mental disease may possibly be of the same kind. We may perhaps be looking in the wrong places, and instead of searching for them in the privy and groping in the night-stool, on the system of Freud, we may possibly find them on the dinner-table, and in the sugar-basin and the butter-dish. At any rate, we can pursue this method of investigation without filing our minds; and even if we are unsuccessful, we can leave off with clean hands.

To this line of investigation I was directed by several considerations. First, it is beyond question that certain things, when taken into the stomach, are capable of producing mental disease. Alcohol is an example. Second, the defect of certain constituents of the blood does produce mental disease. Cretinism and myxœdema are examples. Third, whatever the immediate source of these constituents, their ultimate source is

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in the food. If the ingredients of the products of the ductless glands are not in the blood, those products will not be produced; and if the ingredients are not in the food, they must be absent from the blood also. Moreover, fourth, it may be that there are certain ingredients in the blood, and therefore in the food, that are necessary to mental health, even without elaboration and transformation in the ductless glands; for investigation has now discovered the existence and the astonishing properties of vitamines. Whatever the nature and whatever the mode of action of these puzzling substances, it is beyond question that their absence from the food does profoundly affect not only the physical health, but the mental health also. Hence I conjectured that it was possible investigation might discover, in the antecedents of some cases of mental disease, some error in diet that might have a causal connection with the disease.

At this point a great difficulty presented itself. Granted that one or more errors or peculiarities in diet were found among the antecedents of mental disease, how would it be possible to assure oneself that such errors or peculiarities were actual causes, and not mere casual associates or antecedents of the disease? To ascertain this I naturally turned to the writings of logicians, all of whom, and they are many, discuss this matter in their chapters on Induction; but alas! I found that upon this topic the logicians are as inept and as manifestly erroneous as they are on every other topic that they discuss. Not one of them affords any trustworthy criterion or test by which a cause may be distinguished from a mere antecedent or associate, and on this matter their writings are as confused and self-contradictory as they are on every other. It became necessary, therefore, to examine afresh the whole subject, not only of the nature of causation, but also of the methods by which causation can be ascertained; and the results of this examination are embodied in the articles which have already been published in the *Journal of Mental Science*. From this I may extract for the present purpose the following principles, which are all that have a direct bearing on the subject now under discussion:

First, that a cause is, strictly speaking, an action, more loosely speaking, an agent exerting an action, on the thing in which the change that we call the effect is produced. That thing in the present case is the patient.

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Second, that before we can call an action upon a thing the cause of any subsequent change in that thing, we must prove a connection between the action and the change.

Third, that this connection may be proved in at least a dozen different ways, the only ways applicable to the case under consideration being those included in the Method of Association. When an action upon a thing is associated with a subsequent change in that thing we must not infer that the action is the cause of the change unless—

(*a*) We can isolate the action—that is to say, unless we can be sure that it is the only action upon the thing at the time that could have produced the change; or

(*b*) The association is constant—that is to say, the effect always follows the action, and is never present unless the action has taken place; or

(*c*) Though neither isolable nor constant, the action is associated with the effect more often than casual concurrence will account for; or

(*d*) Though the association is neither isolable nor constant, yet when the effect is associated with the action, there is a constant peculiarity in the effect.

By applying these principles we can ascertain whether a disease that is associated with what we may conjecture to be a cause, is or is not due to that cause. Such testing of conjectural causes has never yet been performed, except in the case of infectious diseases. With the discovery of parasitic micro-organisms the causes of a large class of diseases have been ascertained, but our speculations as to the causes of non-microbic diseases are much the same as they were forty years ago. With respect to these diseases the custom is to hazard a conjecture, and to speak of the conjectural cause as if it were an ascertained cause; and with respect to mental disease our attribution of cause is chiefly determined by fashion. At one time, as I have said, the only causes attributed were sexual excess and syphilis. These were followed by heredity; heredity was followed by toxins; toxins were followed by repressed complexes. In vain have I called on their supporters for evidence of the truth of these doctrines. Truth, as Dr. Johnson said, is a cow that will yield them no milk, so they are gone to milk the bull. The utmost and the only result of my endeavours has been that the Medico-Psychological Associa-

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tion has altered the title of its Table of Causes, and now calls it a Table of Ætiological Factors. I do not think the change was made merely for the sake of euphony. It was made, I believe, with the intention of eluding my criticisms. Alienists have the most profound and complete conviction that they can alter the nature of things by altering their names, and that when a new name is given to a thing a new thing has been discovered. Thus, when that which has been known for many years as primary dementia is called dementia præcox, they are lost in admiration at the brilliancy of the new discovery, and can scarcely find terms strong enough to express their admiration of the discoverer. They seek to abolish the terrors of madness by calling it lunacy; they seek to abolish the terrors of lunacy by calling it insanity; they seek to abolish the terrors of insanity by calling it unsoundness of mind, which it isn't, or mental breakdown, or neurasthenia. I look forward hopefully to the time when they will call it Mesopotamia. They seek to abolish the terrors of mad-houses by calling them asylums; they seek to abolish the terrors of asylums by calling them retreats; they seek to abolish the terrors of retreats by calling them sanatoria or mental hospitals. The last title carries a subtle suggestion of self-complacency, for how great must be that mind which can contain an entire hospital! I suggest, with some diffidence, that it would be still more impressive to call the hospital after a part or faculty only of the mind. We might call it, for instance, an imaginary hospital. Following the same easy and efficacious method, alienists propose, when I show that what they call causes are not causes, to nullify my criticism by altering the name and calling them ætiological factors. One of my ways is to call a spade a spade, but alienists prefer to call it an agricultural implement. It is indeed a people that do err in their hearts, for they have not known my ways.

So far I can follow Moses, but when he loses his temper and proceeds to swear at his recalcitrant people, I must renounce his leadership. Falstaff declared that he was as poor as Job, but not so patient. I, on the other hand, may justly claim to be more patient than Job, though perhaps not quite so poor. His period of affliction was but brief. His friends sat by him in silence for a week, and the whole of the subsequent discussion on Moral Conduct as a cause—I beg pardon, an Ætio-

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logical Factor—in Good Fortune could scarcely have lasted for more than another week, after which his trial came to an end; but I have suffered my fellow alienists, as gladly as I possibly could, for forty years, and for the whole of that time they have erred in their hearts and have not known my ways.

Moreover, though Job was less irritable than Moses, and did not go as far as actually to swear in his wrath at those who were so wrong-headed as to take the other side in the discussion, and to refuse to adopt his views, yet it must be confessed that his patience and forbearance have been a good deal exaggerated, and fell far short of the meekness of Patient Grizzel or the Nut Brown Maid. More than once he was within an ace of losing his temper. "No doubt," said he, "but ye are the people, and wisdom will die with you. But I have understanding as well as you," and so on. No one can accuse me of such petulance, even towards psycho-analysts. If they were to bring forward an argument, or anything that could be passed off as an argument, or even anything that colourably resembled an argument, in favour of their crazy system, I should examine it, I trust, with patience, and with what gravity I couid muster; but though it is my way, it is not their way to give a reason for the faith that is in them. It is a people that do err in their hearts, for they have not known my ways.

The following cases have occurred in my practice in a period of about three years:

CASE I.—Footman, æt. 27. Suffered for years from severe headaches, and for the last four weeks from that form of sleeplessness which consists in inability to get to sleep. For a few days suffered from attacks of dizziness, and one very hot afternoon, in one of these attacks, he acted so strangely that he was taken to Bethlem, where he talked a great deal about the country being infested with foreign spies. (This was before the war.) He eats but little meat, but is very fond of fat—fat meat of any sort, butter, and dripping, which he spreads thick. Has four cups of tea per diem, with three lumps of sugar in each, or nearly a quarter of a pound in all. He was told to knock off his fat, butter, dripping, and sugar, and to eat more meat. During the next week he had one bad attack of headache and dizziness, and two slight headaches. During the second week two slight dizzy attacks, but no headache. In each of the next weeks he had one bad headache,

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and after this they finally ceased. He was now sleeping well, and completely recovered.

CASE 2.—Woman, æt. 53. She feels muddled and dazed, and the feeling is so severe that it keeps her awake at night. With this there is pain in the head, which also is severe. These symptoms have been gradually increasing for three years, and are now bad enough to prevent her from working. She does not care for meat. Eats it only at one meal a day, and not more than five days a week. She is fond of fat, but says she does not eat a great deal. Does not eat much butter or sweets. She is told to regulate her diet, and soon ceases to attend. Presumably her symptoms are relieved.

CASE 3.—Clerk, æt. 26. A wave of confusion comes over him, and he falls down, but does not lose consciousness or hurt himself. For many years he has suffered from severe headaches, coming on once a month, so severe that they compel him to lie down. He goes to sleep and awakes prostrate. Even if they come on in the street he feels inclined to lie down then and there. His sight is not affected. He does not care for meat, lives chiefly on milk puddings. He is very fond of fat, and when he does have meat he eats the fat and leaves the lean. Takes very little exercise. Has had the headaches for fourteen years, and they have been gradually getting worse. He is told to stop the milk puddings, to reject fat, and to eat lean meat at least twice a day. At the end of a week he reported himself greatly improved, and then ceased to attend.

CASE 4.—Telephone operator, æt. 30. Very nervous. A sudden noise or being suddenly spoken to makes her start violently. She is losing her business memory—that is to say, she forgets what she has to do. She is so nervous that she screams when a dog comes near her, and cries when she enters a church. She suffers much from throbbing pains at the back of her head. She works in an underground room by electric light from 9 to 6. Her breakfast consists of bread-and-butter and tea. Lunch, tea and a bun. The same for tea. For supper she has three or four days a week a chop or eggs and bacon; on the other three or four days bread-and-butter. She is told to adopt a different diet and eat more meat, but as her wages are only 14*s.* per week she says this will be difficult. She ceased to attend, and the progress of the case is unknown.

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CASE 5.—Married woman. She has been depressed for several years. The depression is now so severe that she contemplates suicide. Sleeps very badly, and has awful dreams. Cries for hours every day, and can take no interest in her work nor in her child. She eats little of anything; lives chiefly on bread-and-butter; does not care for fat, but is very fond of butter, and eats a great deal of it. Drinks much tea, and likes it sweet. Told to leave off sugar, to reduce her bread-and-butter to bread-and-scrape, and to eat meat. For the first week she did not improve, but it appeared that she had not modified her diet except in leaving off sugar. The necessity of complying with instructions was impressed upon her, and the following week she admitted, with evident surprise and reluctance, that she was better. She had not cried once, and now had hopes of recovery. Hitherto she had been certain that she would either die or go mad. From this time she improved so much that she slept soundly every night, became quite cheerful, and spoke with enthusiasm of the treatment, saying it had worked a miracle. She was told she need not attend any more, but three weeks afterwards she appeared again, having suffered a relapse. She said she was as bad as ever, but this was evidently an exaggeration. She was, however, very depressed; and upon inquiry it appeared that she had become pregnant. During her pregnancy she continued depressed, but with wide fluctuations. She dreaded her confinement, having had a very bad time with her previous child. However, it passed off fairly well, but she attended again with her month-old baby, with all her old symptoms as bad as ever. She was told to wean the child, and on the next visit she had improved, though the child was only partly weaned. She was urged to wean it entirely, which she did, and this time she rapidly improved, and in two or three weeks was completely well.

CASE 6.—Married woman, æt. 26. She is very depressed at times, but her chief trouble is that she is so muddled about her work. She has always been such a good manager, but now, though she knows what she ought to do, she cannot do it. She has to be told what to do even in the simplest domestic duties, such as getting the baby's bottle ready. She is depressed by the sense of her own unworthiness, and imagines that her home, her husband, and her children are

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dirty, and that it is her fault. She has two children, and her husband, who, when in work, earns about 24*s*., has been out of work for six months. She has been managing her mother's house as well as her own, and has half-starved herself in order that the children might have enough. The almoner's services were requisitioned, work was found for the husband, the patient was enjoined and assisted to get proper food in proper amounts, and in a month had lost all her symptoms.

CASE 7.—Salesman, æt. 27. For seven years he has had a gradually increasing confusion of mind. When he hears people talking he does not understand what they say; it is as if they were speaking in a foreign language. When told to do anything he stands and looks stupid, until after a time it dawns upon him what is meant, and he does correctly what he is told. He is sometimes told that he does not know what he is talking about, and he says it is quite true that on these occasions he does not know. On one occasion on his way home he asked twenty or thirty people to direct him, though he knew the way quite well. He has only two meals a day, and meat at only one of these, and then not much. He had six cups of tea per diem with two lumps of sugar in each—nearly a quarter of a pound in the day. He was told to leave off his sugar and eat meat twice a day and more of it. At the next visit he was much better, and then ceased to attend.

CASE 8.—Married woman, æt. 25. She says: "I have a funny feeling in my head, I feel half dazed, and don't know what I am doing. I feel I can't settle myself; I am so restless, I can't keep still. I feel as if I want to get about and do my work, but I am half silly, and can't do what I want to. I go off into screaming fits as soon as I am left alone; I don't know why, I am not afraid of anything. And I am so depressed. I suffer much from shooting pains through my head." She has meat always once a day, and sometimes twice, but not much. Has six cups of tea, with two lumps of sugar in each, and is very fond of butter. Eats the best part of half-a-pound per day. She is told to knock off almost all her butter, and to eat bread-and-scrape, and to increase her ration of meat. In a fortnight she was much better. Her head, she said, was not quite as it should be; every other day she feels all right, but on alternate days she is much troubled. In another fortnight she was practically well, and thereafter ceased to attend.

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CASE 9.—Dressmaker, æt. 28. For three years she has become more and more depressed and nervous, and during the last six months has been very bad. She is subject to attacks of pain in the head which used to last a few hours and went off if she lay down and kept quiet; but now they last two or three days and nights, and sometimes for a week. They are brought on especially by railway journeys, even if brief. She is alone all day from 6.30 in the morning until 8 at night. Does not like sweets, but is fond of fat and eats a great deal of butter, fat meat, and fat bacon. No instruction as to diet was given to her on her first visit, and for the next fortnight she did not improve. Then she was told to reduce her butter to a scrape, to renounce fat in all forms, and to eat more of the lean of meat. In the following fortnight she had but one attack, but this was very severe. The journey by rail from Surrey gave her no discomfort. In the next week she had no attack until she took the journey to see me, which brought on a very slight one. In the following fortnight she had several attacks, one of which lasted all day and part of the night; the other three were slight. In the next fortnight she had but one attack, which, however, lasted all day, and a slight one brought on by the railway journey. In the next fortnight she had no attack, and then ceased to attend.

CASE 10.—Married woman, æt. 33. For three months she has suffered from "nervous debility," by which she means that she is low-spirited, weeps for no reason, trembles, and imagines that something awful is going to happen. She is worst in the morning, improves as the day goes on, and is all right by tea-time. She is much alone, her husband being a clerk and absent all day, and she has no children. No note was made of her diet, but it must have been found faulty, for she received instructions to alter it. At the end of a week she was no better, but on inquiry it was found that she had not followed the prescribed diet. She was told to observe it strictly, and at the end of a week she reported that she had no depression to speak of. At the end of another week she reported herself well.

CASE 11.—Married woman, æt. 55. A feeling rises from her feet to her head, where it becomes a tightness, and she feels sometimes as if she had had a blow on her head, sometimes as if her brains were being drawn out. The strange feeling

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in her head often wakes her in the night. She lives chiefly on bread-and-butter, but does not take very much butter; does not care for fat or sweets. Eats very little meat, never more than 2 oz. per diem, and some days none. She was told to eat meat twice at least every day, and in larger quantity. She did not attend again, but three months afterwards I heard from her that she became so rapidly better that she did not think it worth while to attend any more.

CASE 12.—Labourer, æt. 45. For twenty years he has suffered at increasingly frequent intervals from severe pains in the head, coming through to the eyes. It comes on in the morning and lasts all day. Sleep is the only thing that relieves it. He looks much distressed, and says it drives him distracted, and he loses many days' work through it. Cannot eat fat, does not like it, but is very fond of butter. Lives chiefly on bread-and-butter and cake. Drinks about three pints of tea per diem, in which he takes, I find by calculation, from 2½ to 3 lb. of sugar per week. He was told to knock off his butter and sugar and to eat more meat. He returned in a forthight in high spirits, extolling the treatment enthusiastically, and reporting that he had had no headache at all for ten days, a longer interval than he had known for many years. After this he ceased to attend and may be presumed to have recovered.

CASE 13.—Married woman, æt. 28. Three weeks ago she had some "silly fancies." Turned against her husband and accused him of trying to poison her. Had a friend to visit her, and when the friend was gone the patient had a horrid fear that she was not gone. The patient had quarrelled with this friend and called her a liar. She now says that her husband is one of the best fellows going, and so is the friend she turned against. She has no such silly fancies now, but her memory is bad and her mind is confused. When she puts a thing down she cannot remember what she has done with it. She does not always know where she is, and sometimes gets out of a tram when her journey is only half complete. She is alone all day, her husband leaving home at 7 a.m. and not returning until 6.30 or 7 p.m. She has meat always twice a week, but not always three times. Lives chiefly on bread-and-butter. She was told to regulate her diet, but I do not know whether she did so. She attended for a month,

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during which time she did not improve, and she then ceased to attend.

CASE 14.—Married woman, æt. 44. She suffers much from pain in the head, which keeps her awake at night, so that some nights she does not sleep at all. In addition to this she hears voices and sees visions. She constantly hears people talking, all day and all night. The voices are quite distinct, sometimes loud, sometimes a whisper; some of them are the voices of people she knows, others are strange to her. They repeat everything she says and threaten her. Once she was told that her husband was at Paddington Station waiting for her, and she took a cab and went to meet him. The voices abuse her, and their language is cruel, dreadful. Besides this, she sees faces at the window and at the door. Once a woman met her on the stairs, addressed her by name, and asked her about a ring she was wearing. The woman then went into a closet on the stairs. The patient followed her into the closet, but found it empty. The same night when she went into her own room she found three men there. One was a chef whom she knew, the others she did not know. One of these demanded money of her; and the chef said he was doing a dinner at Covent Garden and asked her to help him. She was about to give money to the man who asked for it, but when he stretched out his hand there was nothing to drop the money into. She could see the carpet through his hand. Up to that moment she had thought the men were real, but then she knew they were not. She put down the money and fled. She first began to see visions and hear voices eighteen months ago. They are so real that she cannot help thinking they are real people talking to her, though she tries to think they are only fancy. She is not fond of meat, goes without it three days a week, and on the other days eats very little, and then only the fat. She is very fond of fat and butter. Lives chiefly on bread-and-butter, the butter spread thick, and puddings. She used to like meat, but left it off two years ago. She was advised to alter her diet, to eschew butter and fat and eat meat. She did not attend again.

CASE 15.—Married woman, æt. 50. Has suffered as long as she can remember from incapacitating headaches. Wakes with them in the morning, and they go off towards night. She eats meat every day, but "so little," not more than 2 oz.

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Cannot eat sweets, but is very fond of butter; spreads it thick upon her bread, and lives chiefly on bread-and-butter. Advised to alter her diet. Did not attend again.

CASE 16.—Mechanic, æt. 27. "My mind," he says, "is always concentrated on myself. I suffer from a pressure at the back of my head. I am always wondering what is going to happen—whether I am going to fall down or faint away. I cannot sleep; never go to sleep until 2, and wake at 4 or 5." He never eats meat more than four days a week, and for the last two months only in the form of a ham sandwich, which constitutes his dinner. Eats but little fat, and not much butter, but is fond of dripping. Was told to modify his diet, but the progress of the case is unknown.

CASE 17.—Married woman, æt. 53. Constant pain in head, which keeps her awake at night. Her mind wanders, and she pictures horrible things, such as people drowning. She sees these things when between sleeping and waking. Forgets what she has to do. Eats meat not more than three times a week, and then very little. Is fond of butter, spreads it thick, and eats a good deal, for she lives chiefly on bread-and-butter. Told to eat meat daily and reduce the bread-and-butter to bread-and-scrape. She did not carry out these instructions very faithfully, but slowly improved until in three months she ceased to see the pictures, slept better, and lost the pain in the head. After this she relapsed, the pain returned, and she saw people in her room at night. I then set the almoner at her to see that my instructions were carried out, and again she improved, this time rapidly and much. Subsequently, on the supervision being taken off, she again relapsed.

CASE 18.—Married woman, æt. 36. For eighteen months she has had attacks about the time of her periods of laughing and crying, with a feeling of suffocation. She forgets that she has done a thing, and does it over again repeatedly. She suffers much from headache at a spot on the right side of the forehead. Husband has been out of work for eighteen months. She has had no meat for a long time. Never buys any. For the last eighteen months has lived on oatmeal and rice. She ceased to attend, and further progress is unknown.

CASE 19.—Widow, æt. 70. Pain in the head, giddiness, sleeplessness, shocking dreams. Between sleeping and waking

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has visions of murdering people. Lives chiefly on milk puddings and a little fish. Meat once a week, fish twice, and but very little of either. Does not get to sleep till between 3 and 4, and sleeps only for two or three hours. Told to eat meat every day, and a larger ration. In a week she had increased her sleep to four to five hours. In a fortnight she lost the visions. In three weeks she was sleeping well and did not dream. In four weeks she was sleeping ten to twelve hours, but still suffered from pain in the head. In seven weeks she lost her headache, slept well, and did not dream. Volunteered that she was better than she had been for three years.

CASE 20.—Married woman, æt. 42. Headache and throbbing of the head. Very nervous. Imagines things—that someone is fumbling with the handle of the door, and trying to get in; that her husband is unfaithful. Has no strength, and can take no interest in things. Bursts out crying without reason, and is depressed. Cannot give her mind to anything. Everything seems too much for her. It is becoming too much trouble to wash her child. She has meat once a week only—on Sundays. Told to eat meat daily. At the end of a month her depression had nearly gone, and she had no difficulty in attending to the child. Went for days without crying. She continued to improve, and in two months ceased to attend.

CASE 21.—Servant, æt. 56. Pain and pressure on top of the head. Sleeps badly. Depressed. Cries a great deal, and thinks everyone is against her. Eats fat and butter, but not in excess. Is fond of sweets, and eats much cheese. Told to eschew cheese and sweets and eat more meat. She improved slowly and irregularly. In six weeks she was able to sleep "quite well." Her spirits improved a great deal: she lost her headache, but she was not well when, at the end of four months, she ceased to attend.

CASE 22.—Married woman, æt. 24. Her nerves are bad. She cannot bear to be alone. Feels that if left alone she would commit suicide. So depressed that she always wants to sit down and cry. Terribly irritable. Has fits of panic with trembling. Lives chiefly on bread-and-butter and milk puddings. Eats a little meat every day, but very little, as she is not fond of it. In a fortnight she reported herself a little better. She had been eating more meat, but still not much.

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She was told that she must eat more, and at the end of a fortnight she reported herself very much better. In six weeks she could sit alone in a room if she knew there was someone else in the house. Had ceased to cry and had no trembling fits. In another fortnight she was practically well and ceased to attend.

CASE 23.—Unmarried woman, æt. 22. Three years ago she was left by the death of her mother in charge of the house and of two younger sisters. For twelve months she has been out of health. Wanted to shut herself up and be away from everyone. During the last few weeks she has become worse. She imagines things, sees ghosts—her mother and brother, both of whom are dead. Last week she cried a great deal, and the week before kept laughing without provocation. One day she lay on the floor all day. She sleeps very little. No headache. For many weeks past her appetite has been very bad. For a fortnight she has eaten scarcely anything, and for the last three days nothing at all. Her sister was told to urge and compel her to eat plenty, especially of meat, and carried out the instruction. In three weeks she was sufficiently improved to be sent to a convalescent home in the country, with instructions as to diet, for three months. She returned quite well. Said she feels all right, never cries or laughs irrationally, never sees ghosts; eats and sleeps well.

CASE 24.—Male. Pain in the head. Depression. Feels as if he were going out of his mind and as if he must do away with himself. Sleepless. No reason for the depression, and he cannot understand why he should feel it. Eats no breakfast, but has two raw eggs in milk. Not fond of fat, but very fond of butter and eats a great deal of it. Two eggs in milk for tea. Told to revise his diet, omit the butter and the yolks of the eggs, and to eat meat. In a week the pain in the head was lessened, but the depression and other symptoms continued. In another three weeks the headache was still further improved and he felt "much brighter." He then ceased to attend.

CASE 25.—Housemaid, æt. 28. She has "dreadful thoughts." Her mind is confused. She "feels desperate." Cries a good deal and mopes. Cannot sleep. Cannot bear to be left alone, but people being with her irritates her. This has been gradually coming on for a year. She has not touched meat for eighteen

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months. Has no breakfast and lives chiefly on bread-and-butter and milk puddings. She never has headache. She was told to revise her diet and eat meat, but she was not efficiently supervised, and it is doubtful whether she carried out the instructions very faithfully. At the end of a month she reported herself "certainly improved," and then ceased to attend.

CASE 26.—Widow, æt. 77, says: "My head is in a muddle. I sit down to write a letter and I know what I want to write, but I can't write it. I often find I have written it wrong. All of a sudden things go blank and I leave words out. I am of a very worrying disposition and am always depressed." She suffers much from headache, and has to spend one day in every week in bed on account of it. For two years she has eaten no butcher's meat, but occasionally she eats an egg, or a little fish or chicken. Lives chiefly on milk puddings. Took to a vegetarian diet on account of indigestion. Does not eat much fat or butter, but drinks large quantities of milk. Seen once only.

CASE 27.—Married woman, æt. 32. "I am tired of everything and everything is a worry. I can't think. I have such pain in my head it makes me forget everything. I sleep badly, and all night my mind is on the work. There is something in my head that causes everything to be jumbled up." She eats large quantities of raw rice and starch. She eats more than a teacupful of rice every day (a tablespoonful of rice will make a pudding large enough for four people). She does so because it is company for her and stops her from thinking. She goes without her meals and eats rice instead. Seen once only.

CASE 28.—Farmer, æt. 34. Lacks confidence in himself. Cannot concentrate his mind upon his work. Incapable of mental exertion. Little things worry him excessively and unreasonably. Sleeps well, but dreams much. No headache. Bad family history. Has been a vegetarian for three years, living chiefly on grape-nuts, bread-and-butter, rice, macaroni, sago, and tapioca. Cannot eat fat and is very moderate with butter. Told to rearrange his diet and eat meat two or three times a day. In a month he returned much improved. He had an assured and confident demeanour; said he had a better grip on his work and had no difficulty in concentrating his mind.

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CASE 29.—Married woman, æt. 35. Has horrid thoughts and feels as if she were going out of her mind. Silly things come into her mind. The knives on the table suggest to her to do horrible things—injure herself or someone else. She thinks she has done things that she knows she has not done—things like injuring people. She has frequent headaches, with "golden zigzags." Never eats breakfast. Dislikes meat, often goes without, and when she takes any it is very little. Does not like fat, but is fond of butter and spreads it thick. Seen once only.

CASE 30.—Married woman, æt. 48. "I can't think. Everything seems altered. I can't remember what things look like. I have two children, and I can't remember what they are like. Oh, yes; I know them when I see them. Everything seems getting more and more strange." Husband says she complains much of headache and sometimes of giddiness. Eats very little meat and a great deal of butter. Lives chiefly on milky puddings and bread-and-butter. Seen once only.

CASE 31.—Married woman, æt. 37. Has a muddled feeling in her head and is apprehensive that something dreadful is going to happen, and such awful depression. Becomes frightfully tired after trifling exertion, but the worst is the confused, muddled, dazed feeling in her head. Suffers from headache. Has lived in India, where meat or poultry has been on the table two or three times a day, but the quality being so bad she rarely took it. Not fond of sweets or fat, but eats much butter and cream, and her chief diet is milky puddings. Seen once only, but I heard some months afterwards that she had taken my advice about her diet and was "almost well."

CASE 32.—Man, æt. 42. Insomnia and depression. Has attempted suicide three times. Becomes confused in mind, so that he cannot take orders in his own shop. Not a great eater of meat; once or twice a week he goes without, and when he does take any it is only once a day, and then very little—not more than 2 oz. Fish twice a week. Drinks much milk. When he feels low, which is pretty often, he eats nothing. Seen once only.

CASE 33.—Schoolmaster, æt. 29. Breaks down and cries for no reason; has to rush out of the room to save himself from making an exhibition of himself by an outbreak of weeping. On one occasion he rushed off to a doctor, and as soon

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as he reached the consulting-room he broke down and wept. There has been some tendency to this for three years, but he has easily overcome it until the last month, during which it has become intolerable. I saw him on May 1st, just after Easter, and he had been keeping Lent very strictly, but previously he had eaten very little meat, never more than one cutlet or an equivalent amount in a day. No other error in diet. No headache. Seen once only, but I heard from his doctor a month after I saw him that he had reformed his diet and was greatly improved.

CASE 34.—Man, æt. 66. Looks much older than his age, and complains of loss of memory of the usual senile type. Forgets in five or ten minutes an occurrence, such as a visit from a friend. Begins to be suspicious and to fancy that his money is being kept from him. He is very careful of his money, but forgets where he puts it. Forgets the names of his children. Suffers much from neuralgia. Is very fond of sweets, jams, and puddings. Spreads sugar on his bread-and-butter. Eats meat only once or twice a week, and then very little. Seen once only.

CASE 35.—Male, æt. 18. "I can't work. I can't do anything. I can't apply my mind to anything. I have a difficulty in getting up in the morning. It sometimes takes me an hour to dress. I get thinking about other things." A friend says there are times when the patient seems lost in thought and stands stock still, doing nothing; but when spoken to he can rouse up and go on with his work. He says he is a very bad meat eater. Never eats as much as there is on a mutton chop, nor anything near it. Not nearly as much as a slice off a sirloin. Lives chiefly on puddings, cakes, and bread-and-butter. Not fond of fat or butter. No headache. He is 5 ft. 10½ in., and still growing. Weighs 10 st. 5 lb. Seen once only.

Here are recorded a number of cases of persons who have sought relief from mental disease; and the first comment that they call for, that they cry aloud and clamour for, is that, of thirty-five cases of mental disease, only one could be certified as insane. I insist upon this with special emphasis because of the universally accepted doctrine that disorder of mind is equivalent to insanity—that disorder of mind and insanity are the same

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thing. The contention that I have urged for so many years, that unsoundness or disorder of mind is not necessarily madness, has always been received by the people that do err in their hearts with contemptuous incredulity and open derision. Now, whatever my faults, and whatever my fads, I think even this people will admit that a patient must be undeniably sane if I cannot certify that he is insane; and of these thirty-five patients I could not have certified more than one; that is to say, 3 *per cent.* Of course, I do not expect this to make any impression upon my alienist friends, but I beg them to note this indefeasible demonstration that mental disease, mental disorder, or unsoundness of mind, is not the same thing as madness, but that many and varied mental disorders are compatible with complete sanity.

The peculiarities in diet which preceded and accompanied the mental disorder in these patients were mainly of two kinds —deficiency of meat, or excess of fat, starch, or sugar. According to current practice, the peculiarity of diet would be regarded as unquestionably the cause of the mental disorder; but so to regard it would be quite unjustifiable unless the association of the peculiar diet with the mental disorder satisfies one or more of the conditions stated above; and the reason is clear. Vegetarianism is common enough: mental disorder is common enough. On the doctrine of Probability it is certain that the two must coincide in the same person in a certain number of cases—in a number that cannot be exactly ascertained for want of exact figures. There is, besides, another source of possible error. It is quite rare for vegetarianism to be the only fad of the vegetarian. Almost always he has a stock of fads. He cultivates a number of what may be called anti-isms. He is anti-alcoholist, anti-vivisectionist, anti-vaccinationist, anti-capitalist, anti-bellumist, anti-patriotist. He is anti-penalist, and would provide all gaols with pianos and newspapers, beer and skittles. He is anti-restraintist, and would abolish all lunatic asylums, rightly from his own point of view, for so he would escape the risk of losing his own liberty. It is, no doubt, possible to hold some of these opinions with reasoned conviction, and after examination of the evidence; but it is not so that the faddist holds them. He holds them as mere prejudices. He attaches to them a very disproportionate importance. He advocates them in season and out of season,

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and with intemperate zeal. He erects them into a religion, of which he is a fervent missionary, and of which he is proud to be a martyr in any small way which does not interfere too much with his comfort, or if it does, brings him a consoling notoriety. He regards any means of proselytising as justifiable, and lies conscientiously in furtherance of his fads. A mind of this nature is unbalanced. It is not insane, but it occurs in people who have insane relatives, and who are apt themselves to become insane. We should expect, therefore, to find among vegetarians an undue proportion of insane persons. For this reason I have omitted from the cases adduced every case in which abstention from meat was a fad, and have included those only in which meat was eschewed either because it was distasteful or because it was not procurable.

That very definite peculiarities in diet did precede and accompany the mental disease in the cases I have recorded is unquestionable. What is now to be determined is whether this antecedent and accompaniment can rightly be considered a cause. To this end we must make four inquiries:

First, is the action that we conjecture to be the cause, that is, the action of the diet upon the patient, isolable? In other words, can we separate it from other actions on the patient so as to ascertain beyond doubt that the change in the thing acted on is due to that action, and to that alone? At first sight it seems that we cannot, for we know very little of what other actions tending to produce mental disorder may or may not have been incident upon the patient at the time. In some of the cases—viz., Cases 10 and 13—the patient was alone from morning till night six days in the week, which we may conjecture was inimical to mental health; in other cases there had been worry, anxiety, and other stresses. While, however, we never completely isolate the action, we can produce an approximate isolation by withdrawing the action that we surmise is the cause, and noting any difference in the effect during its absence, and, it may be, allowing it to act again and noting the effect of the addition. In several of the cases the rectification of the diet was followed by improvement of the mental health, and in some cases this improvement was rapid or immediate, and was great. In this respect Case 5 is extremely instructive This patient improved very decidedly within a week of the rectification of her diet. She continued to improve, until at

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length she spoke of her recovery as a miracle. Then she had a relapse. The relapse was not coincident with a return to the faulty diet, but it was coincident with what, for the purpose in hand, amounted to much the same thing—that is to say, with her pregnancy. She now took, it is true, enough proteid to nourish her own tissues, but it was not allowed to nourish her own tissues. It was seized upon at once by the growing fœtus, whose demands were paramount, and she was deprived of it. Nor did she improve when the child was born, but then, when the child was born, it was still her own food that nourished it. When, however, she weaned the child she rapidly recovered. It is difficult to avoid the conclusion that in this case the mental disease was dependent on the deficiency in the ration of protein, whose fluctuations it followed so closely.

It is one of the disadvantages of consulting and hospital practice that a large proportion of the patients are seen once only, and the result of one's advice remains unknown. Of the thirty-five cases here recorded, fourteen were seen only once, and nothing certain is known of their progress; but of other cases seen only once inquiries were made, and it was found that they had so greatly improved that they did not think it worth while to come again. It is a fair inference, therefore, that some of those who were not heard of had the same reason for ceasing to attend. Taking, however, those only whose subsequent history is known, all but one recovered, or very greatly improved, when their diet was rectified; and these were more than half of the whole number seen. The total number is too small, it is true, to draw any very large or confident conclusion from, but as far as they go they show, among those as to whom the result is known, a rate of between 94 and 95 *per cent.* of recovery or of very great improvement, and this is too striking to be ignored.

Application of our second principle, that of constancy in the association of the effect with the possible cause, does not yield such a favourable result. It is certain that the positive association of an excess of fats or carbohydrates, or a deficiency of meat, in the diet with mental disease in the consumer is not constant. The denizens of Arctic climates, who live largely upon blubber, are not known to suffer disproportionately from mental disease, nor are those considerable populations of Eastern countries who live upon an exclusively vegetarian diet;

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but then it is clear that the circumstances are not the same, and no principle of logic is more important, though it is not mentioned by Aristotle nor acknowledged by professors of logic, than that circumstances alter cases. That indulgence in fat which may be disastrous to the dweller in a temperate climate need not be anything but beneficial amid eternal ice and snow; and that abstinence from meat which may be fatal to an individual or a member of a race that is accustomed to a carnivorous diet may be innocuous to one who and whose ancestors have never tasted meat. Moreover, there can be little doubt that what is harmful in the absence of meat is the absence of protein, and this may be made up by consumption of vegetable proteins.

Nor is the negative association in the least degree constant. There is abundant experience that mental disease is by no means confined to those who indulge excessively in fats and carbohydrates and those who refrain from eating meat.

The third principle cannot be applied for want of data. When there are a great many people who suffer from mental disease, and in the same population a great many who commit these errors of diet, the doctrine of Probability assures us that there must be some in whom the two will be combined casually; and among the cases recorded No. 13 seems to be such a case. But it is quite impossible to apply this principle, and to discover whether or no the combination of mental disease with error in diet is more than casual concurrence will account for, until we know (1) the total population; (2) the number of cases of mental disease; and (3) the number of cases of error in diet, in the population. In the absence of data no conclusion can be drawn.

The fourth principle, however, is more fertile in results. It assures us that if a certain change in a thing follows, though only occasionally, an action on that thing, then, although from the mere occasional sequence we are not justified in calling the action the cause of the change, yet if in each case of the sequence the change exhibits a constant character, we may then properly infer that the sequence is causal. To take a cognate instance: insanity follows, though only occasionally, excessive and prolonged drinking of alcohol; but since insanity often occurs without this antecedent, and since the antecedent often occurs without insanity following, it would be quite unjustifiable to

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assert, on the mere ground of antecedence and subsequence, that the drinking was the cause of the insanity. When, however, we find that whenever insanity does follow prolonged and excessive drinking the insanity always has certain peculiar characters, which are never found in insanity otherwise occurring, the case is different. This constant quality in the result does justify us in presuming that the constant antecedent of that quality is the cause of the insanity. Can we then apply this principle to the cases before us? I think we can. Here it becomes necessary to separate the two factors of excess of fats and carbohydrates on the one hand and defect of meat on the other, and to consider each by itself.

If the cases in which an excess of fat was consumed are examined it will be found that whatever other symptoms they complained of, they all suffered from severe headache. This is not a new observation. The connexion has been thoroughly established by Dr. F. Hare in his excellent book on the *Food Factor in Disease*. The cases here adduced are a mere addendum to his observations, and pretend to no originality. They are, however, of value as corroboration by an independent observer of his views. While, however, the headache is the most prominent and troublesome symptom in these cases, it is not the only one. It is well known that attacks of migraine are often accompanied by mental confusion, and it appears from some of the cases here recorded that excess of fat in the diet is accompanied in them by confusion of mind, which occurs even at times when the patient is not suffering from headache. There is no case among those here recorded in which headache was complained of when there was no excess of fat in the diet. From this it must not be supposed that I suggest excess of fat as the only cause of headache; I suggest merely that deficiency of meat alone is not a cause of headache.

It seems, however, that it is a potent cause of *confusion of mind*. In case after case in which the diet was subsequently found to be deficient in meat, the mental state is described in almost or quite the same terms: "I feel muddled and dazed"; "A wave of confusion comes over me"; "I am so muddled about my work"; "I have such confusion in my mind"; "I feel half-dazed, and don't know what I am doing"; "My mind is confused"; "My head is in a muddle"; "I cannot think"; "I have a muddled feeling in my head"; "I cannot apply my

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mind to anything"; "I am half-silly"; "There is something in my head that causes everything to be jumbled up"; and so on.

Depression is almost as common, and is in some cases very severe. In several cases it led to contemplation of suicide, and in one to repeated attempts; perhaps, since they were repeated, they were not very determined, but still they were attempts.

Screaming fits and motiveless weeping and laughing occurred in several cases among the women.

Defects of memory, especially of the business memory—that is to say, forgetting to do things at the proper time—was noted in several cases. It is a part or a form of the mental confusion.

In three cases there were hallucinations, and in one of these the hallucinations were extraordinarily vivid, and were of sight and hearing coördinated. Case 14 would of itself serve as a text for a discourse upon the origin of ghosts and the nature of ecstatic visions, of celestial visitors, of supernatural revelations, and so forth. It is unfortunate that I was unable to follow up this case, and I may say that its very peculiar character makes it doubtful whether the mental state owed any of its origin to the diet, which, however, was certainly very defective. On the other hand, it could be urged that Cases 17 and 20 are halfway houses on the road to the same destination.

Many other inferences can be drawn from these cases, and there is one inference that will certainly be drawn, however much I may deprecate it and protest against it, and that is that I have asserted that every case of mental disease is due to excess of fat or to deficiency of meat in the diet. I make no such assertion. Obviously the cases here related form but a small proportion of those that have come under my notice since I first began, several years ago, to investigate the diet of my patients. In only a small proportion of cases could I find any definite fault in the diet; and where a fault existed, it was not always excess of fat or deficiency of meat. It surprised me to find in how many cases people live very largely on milky puddings, and I was in doubt in many cases how far the symptoms were due to deficiency of protein, and how far they were due to excess of starch and sugar. In Case 27 I have little doubt that much was due to excess of starch, and I always made a point of inquiring into the relative proportions of all the constituents in the diet.

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A word may be said as to the method of inquiry. In this, as in all things, it is most important to avoid leading questions in opening the examination. My practice is to ask, What do you have for breakfast? and so on for each meal. The next question is, Is there anything to eat that you are particularly fond of? Meat? Sugar? Fat? Milky puddings? Then, Is there anything you particularly dislike? It is important to remember that people do not reckon butter as fat. Many patients declare that they dislike fat, and never eat it, but when the question is put to them, they will admit an inordinate fondness for butter.

It should be remembered also that there are wide differences in the capability of different persons to dispose of the fat, starch, etc., that they consume, so that what is moderation for one may be gross excess for another.

A point that, to economise space, is not brought out in the cases here recorded is that those symptoms that seem to be due to excess of fat, starch, and sugar in the diet, and that are relieved by diminishing these constituents, are almost always worse in the morning, clear up towards afternoon, and are often absent in the evening. Hence I never omit to inquire, What time of day are your symptoms worst? and whenever I hear that they are worst on waking in the morning and diminish as the day goes on, I make very stringent inquiry into the diet, no matter what the symptoms may be.

Finally, let me assert once more that I do not hold that there is only one cause of mental disease. If I did so hold, I should be little better than a psycho-analyst. My contention is, and I think it is borne out by these cases, and by the application to them of the true principles of ascertaining causation, that in a certain number of cases of mental disease, small in proportion to the whole, but considerable in the aggregate, the disease is due to error in diet, and can be cured by rectifying the error in diet.

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