most instances, were not originally built as sewers, but as drains; a sewer is a conduit for the removal of fouled water; a drain is a channel for the removal of mere superfluous water, the object being to dry the soil.

The pattern of all our old sewers, the Cloaca Maxima at Rome, was originally a drain; it was constructed by Tarquinius Priscus, the fifth King of Rome, 600 years B.C., to drain the marshy ground between the Palatine and Capitoline hills, and it was so well constructed that it drains that ground at this moment. Pliny wondered that it had endured 700 years, unaffected by earthquakes, by inundations of the Tiber, by masses which had rolled into its channel, and by the weight of the ruins which had fallen over it. What would he say could he see it now, as any of you may who choose to go to Rome, still discharging, after more than 2,400 years, its dirty water into the Tiber? But the convenience of the great drain for the disposal of refuse matters soon became apparent, and so it was turned into a sewer, and has been one ever since.

Well, what are we to do with the refuse sewer water, when we have got it out of our towns? This is one of the greatest questions of the day. Drains, of course, were naturally made to discharge into rivers, their proper place, so long as they were only drains; but, when they come to be used as sewers, this will not do; in the first place, the rivers are fouled, and, in the next, the manure is lost. I shall be able to show you, in the course of the lectures, that the only way known by which sewer water can be either purified or utilised, is by turning it, with suitable precautions, on to land; and that this may be done, not only without injury to the health of the neighbourhood, but with great benefit in many ways. We have spoken of drains to dry the soil; what is the necessity of this? Every farmer knows that his crops will not flourish on undrained land; neither can human beings; a damp house is a synonym for an unhealthy house—you all know that; but it is only within the last few years, as the result of a most important sanitary research made by Dr. Buchanan, that we have come to know as a scientific fact, beyond all dispute, that the drying of the soil of a town reduces the number of deaths from consumption in a most extraordinary manner; in some towns the number of deaths under this head has been reduced by one-third, or even by one-half, in this way. To mention some other special diseases which have been successfully combated of late years, look at scurvy, that terrible malady which formerly decimated our navies! We know now that that disease may be prevented by the use of limejuice as part of the daily food, and we are no longer afraid of it. (Some illustrations of the ravages of this disease were given). Look at small-pox, beyond all exception the most fearful epidemic disease with which the world was ever afflicted! We know how to prevent it, and we have recently had a very severe lesson from not applying that knowledge.

It is to the immortal credit of England that Jenner, the discoverer of vaccination, was an Englishman; there are certain people, and they have actually formed a society, who are trying to get compulsory vaccination done away with in this country. Let me tell you that, if there is one fact established in preventive medicine, it is that vaccination affords a protection from small-pox; let me tell you that this statement is founded upon an induction such as has been brought to bear upon no other subject in medical science; and, let me add, that those persons who bring isolated facts as arguments against a statement so supported, show that they have no idea of the nature of an inductive argument at all. An unvaccinated person is a danger to the community, and ought not to be allowed to go at large; and, so far from persons being merely fined for not allowing their children to be vaccinated, and then permitted to keep them unvaccinated, the children ought to be vaccinated by the public vaccinator, even in spite of their parents, who should not be allowed to risk their children's lives through their own obstinacy and ignorance; and not only their children's lives, but those of the persons around them. The recent epidemic of small-pox showed us several important things—it showed us what we knew before, that small-pox is far more fatal to unvaccinated than to vaccinated persons; it showed us that, while small-pox is especially fatal to unvaccinated children, it is less fatal to vaccinated children than to older persons; thus demonstrating the necessity of re-vaccination; and it showed us that re-vaccination once performed is actually a better protection against small-pox than a previous attack of small-pox is. You know that it is not common for a person to have small-pox twice. Well, it is much less common for a person to have small-pox after he has been successfully re-vaccinated; and, if he have it, it is almost certain to be a very mild attack. Out of nearly 15,000 cases of small-pox admitted into various London hospitals during the late epidemic, only four presented proof of having been re-vaccinated. Let us pass on to typhoid fever. Here is a disease of the very existence of which, as distinct from certain other diseases, we have only known in recent times, but yet a disease

about which, thanks to the researches of men now among us, one of whom it especially becomes me, as his pupil, to mention, Sir William Jenner, we really seem to know more than about almost any other disease; a disease which we deliberately hunt down to its source, and stop just as we could stop the supply of stone from a quarry, or of rifles from an armoury; a disease, the haunts and habits of which we know with such accuracy, that we are able to go into a house and say, "Alter this, and alter that, or you will very likely get typhoid fever here;" a disease, the ways of which we know so well, that, when there has been a case of it caused by local defects in a house, we can almost predict what alterations are required without going to the place. Surely the results obtained from the study of this disease are some of the most striking results of sanitary progress in our day. I find that the idea has become widely spread that the recent epidemic of typhoid fever in London was due to the distribution of milk from a sewage farm. This was not so, and I regard it almost in the light of a special providence that none of the milk sent out from that establishment came from a sewage farm; had it been so, such a fact, combined with the prejudice and ignorance which exists upon the matter, would have dealt a severe blow to the progress of one of the greatest sanitary improvements of the day. The cause of that epidemic is known with absolute certainty, the very channel by which the poison got into the dairy well having been recently unearthed.

I must allude, for an instant, to the recent sanitary legislation; it has been found fault with by many on account of matters of detail; but consider the fact that the result of it is, that the country has spent a large sum of money in the employment of medical officers of health and sanitary inspectors, and that such men now exist; and you will see that in it we may find great cause for rejoicing when looking to the future of sanitary progress. In a lecture on the "History of Hygiene," which I delivered some three or four years ago at University College, London, I said, "From its very nature, hygiene interests all classes of society; but it is to those who are worst off—the poorest and most wretched—that it must direct its first attention. Civilisation has its evils as well as its advantages, as Bouchardat has well remarked; and one of the greatest of them is the overcrowding of people in the great centres of population, with the misery and disease which are the results of it. It is to better constructed houses for the working classes, to a free supply of good water, and to satisfactory sewerage arrangements, that we must look for an amelioration in these respects; and, I would hasten to add, to a wider spread among those classes of such an education as shall lead them to appreciate the means used for the improvement of their condition, and to lend a helping hand for the furtherance of those means."

I feel that I cannot do better, in conclusion, than congratulate this town on having, through the munificence of one of its citizens, been the first to appreciate the importance of the education of the people in these subjects, and on having such an institution as this, in which so much useful knowledge is imparted to the people, and congratulate myself on having the privilege of such an opportunity of spreading broadcast the great truths of sanitary science. The time is fast coming which was looked forward to by Dr. Parkes when he wrote:—"Let us hope that matters of such great moment may not always be considered as of less importance than the languages of extinct nations, or the unimportant facts of a dead history."

IS THERE SUCH A DISEASE AS ACUTE PRIMARY MANIA?*

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THE plan on which writers on insanity describe the disease is most frequently different from that which authors on medicine usually adopt. The general medical writer commences with the signs and symptoms of a disease, and describes each phenomenon in the order in which it arises in the course of the malady. This may be called the historical mode, and it is the method which is observed in every department of natural history. But in the description of mental disease, some prominent feature arising during the course of a case, without regard to what has gone before or what will follow it, is taken and made the chief feature in the description of the disease. If this feature vary, the variation is itself described, and perhaps is exalted to form the basis of a new variety of mental disease. The varieties become by this process endless.

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Some writers have attempted to classify insanity into emotional, ideational, impulsive, and intellectual insanity, according to whether the case showed more prominently an emotional or ideational disturbance, etc. I say more prominently, for there never was yet known a case in which either of these artificial divisions of mental phenomena was alone affected; the brain-functions were never so dissected, as it were, by disease.

Again, some authors divide the cases of insanity according to their supposed causes. They speak of mania *à potu* as a distinct malady, while others fix upon a mere concomitant, and describe a puerperal mania, or phthisical mania, making a mere accident the godfather to the disease; as, again, in kleptomania, oinomania, etc.

Surely this is a great and very unnecessary departure from the rules of pathology. We might as well speak of the varieties of fractures, as fractures from falls, from blows, from pressure, etc.; or describe puerperal fractures, scrofulous fractures, and so on. In general pathology, too, a disease once ascertained in its early stage continues to be called by the same name throughout all its stages. A case of pneumonia is pneumonia from beginning to end; the first, second, and third stages have not distinct titles, and are not disconnected in works on medicine. It would be as rational to classify disease by its duration, as cases of one week, or two weeks, three weeks old, etc. Yet this is very much what is done by some writers in their classification of mental diseases.

We read in reports of such a case as epileptic mania complicated with paralysis. Surely one disease is enough at a time, and as surely our nomenclature should signify an unity, not a trinity, of morbid processes. Of course, we cannot expect to achieve a nomenclature which is perfect; such a consummation presupposes a complete knowledge of all diseases. But, admitting that our system must be only a provisional one, we ought to guard ourselves against allowing such an auxiliary to become our master instead of our servant; against perpetuating error, instead of aiding in the discovery of truth.

When we speak of acute mania, do we not imply that we are alluding to a disease which is of a distinct and separate morbid species? or, rather, do we or do we not mean a disease as distinct in all its characters, in its progress and termination, as small-pox, syphilis, cancer, etc.? If we do not, we should acknowledge the fact at the outset, and say that mania is a symptom merely, like cough, jaundice, tormina, etc. But mania finds a place in most published treatises on insanity, and occupies, indeed, a prominent position in most classifications, and is divided also into several varieties.

If mania be a disease *per se*, of course it must commence as mania, continue and terminate, always a mania; and if so, I would ask, is such a malady ever met with?

I extract from a French author the following example of the mode of describing the condition. "Mania," he says, "was thus described by Esquirol. A cerebral affection of chronic character, ordinarily without fever, and characterised by perturbation and exaltation of the emotions, the understanding, and the will. It breaks out suddenly, following some strong emotion, an alcoholic excess, or a prolonged incarceration, and mounts in a few hours to its highest degree."

I have, with this view in mind, waited now some twenty years without finding anything in my experience to agree entirely with this description. If this description be that of a distinct species of disease, I have never met with any clearly marked instance of acute primary mania; and my experience now ranges over several thousands of cases.

I have several times supposed that I had such a case under observation, but on thorough investigation I have never been able to satisfy myself of the fact. I use the word primary to avoid misconception, though I do not admit its propriety: all true morbid species of course are primary. I have also received patients certified to be labouring under acute mania, cases commencing, that is, as mania and so continuing; but I have never been able to verify such a diagnosis. I have searched reports, newspaper accounts, trials in which persons have been accused or tried for sudden outbreaks of maniacal violence, or whose crimes have been excused on the ground of insanity; but, whenever any history of the accused's case has been given, I have never found that the outbreak was the first symptom of the disease. The cases which I have received as examples of acute primary mania have been of the following character.

Firstly—and these appear to correspond most nearly to the description given of acute mania—are cases of general paresis, in what the French call the expansive stage. I believe it to be almost universal that maniacal symptoms occur very early in the course of general paresis. There is a stage of excitement evidenced at first by great garrulity, which speedily goes on to an outbreak of maniacal violence. It is not uncommon, as we all know, for this stage to pass away before any motor symptoms make their appearance, and the patient may be even discharged cured at this juncture, and his case may seem to justify a diagnosis of primary

mania; but the motor symptoms, according to my experience, invariably appear, and in the sequel all the other characteristics of paresis. It would not be correct, however, to call the same pathological conditions by two names. The disease is general paresis from first to last; one morbid process only is in operation in the patient's system from beginning to end.

I think that other cases, considered at first sight to be examples of primary mania, are secondary attacks of recurrent insanity. In such cases, the attack, though it be the second or third, may not be known, or it may be concealed by those who bring the patient to the asylum. The premonitory symptoms of these secondary attacks are often of very short duration, and show but slight deviation from the ordinary condition of the patient, to detect which it may require a well-tutored observation. The symptoms of maniacal character quickly succeed; they are often well-pronounced, and seem to the friends and non-medical observer to be the first phenomena of the attack; but such cases are not instances of primary mania.

If it be the fact, then, that no case of insanity commences as mania, we should expunge the name from the list of diseases, and use the word only as a term for a symptom or series of symptoms of a given character. And if it be true that no primary case commences with violence, the knowledge of the fact becomes of the utmost value in a medico-legal point of view also.

ON THE ACTION OF ALCOHOL.

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I WISH to supplement my paper "On the Action of Alcohol," which appeared in the JOURNAL of October 4th, by a few additional remarks. When I wrote that paper, I was quite aware that Dr. Beale, in common with Professor Binz and many others, was of opinion that alcohol was one of a class of agents which checked the movements of white blood-corpuscles and other masses of protoplasm; and that from this fundamental action, all the other effects of these agents upon living organisms was to be explained. I was not, however, aware that Dr. Beale had to a very large extent anticipated the views which I now hold so far back as 1863. The author has kindly sent me a small pamphlet of his published at that date, entitled, "On Deficiency of Vital Power in Disease, etc.," and the coincidence between some of his observations on the action of alcohol and some of my statements is altogether remarkable.

I will, with permission, cite one or two of the more striking passages. After describing the morbid changes which take place when a slight abrasion of the cuticle inflames, he proceeds. "Now what happens when a drop of alcohol is applied to such a sore? Momentary pain, followed in the course of a few minutes by great relief, or complete cessation of pain, and diminished vascularity. But how does the alcohol bring about such changes? If alcohol be added to any serous fluid, the albumen is precipitated. If delicately granular cells are placed in alcohol, and afterwards examined under the microscope, every one knows that they will appear shrunken, and will have altered much in form; and they would resist disintegration by pressure to a greater extent than they did before. The surface of the wound is covered with a dry crust, produced by the hardening effects of the alcohol; and some of the rapidly growing cells are quite destroyed, while others become surrounded by an envelope of hardened matter, which prevents the possibility of their absorbing nutriment, and giving rise to new cells so rapidly as before. Not only so, but the permeating power of the nutrient fluid itself is diminished by the tendency of the alcohol to coagulate it. The most superficial of the cells, composed entirely of germinal matter, would be destroyed by alcohol, though not so quickly, perhaps, as by the actual cautery, nitrate of silver, sesquichloride of iron, sulphate of copper, etc."

Dr. Beale then goes on to make interesting remarks on the action of alcohol upon the vessels and nerves; and he finally discusses the action of the agent when taken internally. After noticing that many agents have the property of coagulating albuminous fluids and solutions of extractive matter, he says: "The favourable action of such remedies is probably due to their direct influence on the fluid constituents of the blood. They, no doubt, also diminish the rate at which blood-corpuscles are disintegrated, and at the same time they tend to render the walls of the blood-vessels less permeable to fluids. But of all remedies, I believe alcohol acts most rapidly in this way, and in these particular cases (pneumonia, etc.) most efficiently. The properties alcohol possesses of hardening animal tissues, and of coagulating albuminous fluids, are well known; and these properties must not be forgotten, when its effects in the animal body are discussed. Of course, when