his appreciation of Dr. Cowen's paper. One thought that abnormalities of pupils would be very much commoner in the insane than in the sane. He thought that the blunted sensibility of the insane simply prevented those pupillary phenomena which one saw in others. This condition was very much more common amongst sane nervous people. He was reminded of a patient of his own by what Dr. Cowen said about pupillary symptoms in cases of general paralysis. This patient had unequal pupils, but the disease had not progressed in any way.

The CHAIRMAN said it seemed a very important thing that they should come to some decision about abnormalities in the insane, and not jump to hasty conclusions in diagnosing cases. He frequently received cases of alcoholic insanity which had been sent into the asylum as suffering from general paralysis. Total abstinence, fresh air, etc., caused the symptoms to disappear, and the pupils became quite normal. A neurasthenic patient might get an inequality of the pupil. What was the pathology of such cases they could hardly say.

Dr. PIERCE said the paper was a valuable one, and that he was sorry Dr. Cowen had left out a good deal of it. He was rather surprised to learn that so little importance was attached to the condition known as the Argyll-Robertson pupil. He looked upon it as of considerable importance, not as a direct diagnosis of general paralysis, but as a sign of tertiary syphilis. He thought this view would be justified more in the future than it was at present. He remembered a patient who suffered from melancholia in whom there was complete remission of his mental symptoms though the pupils remained unequal and did not react properly to light. He was not, therefore, surprised at the patient relapsing very soon with maniacal symptoms typical of general paralysis. He considered the inequality of pupils of less importance in diagnosis than the failure of the pupils to react to light.

Dr. COWEN, replying to the discussion, said he apologised for not reading the whole of the paper, but he did not wish to bore the members with a mass of figures. With reference to Dr. Hitchcock's remarks, he said he had generally found in cases of acute mania with great excitement that the pupils were dilated. He looked upon contraction of the pupils in these cases as an evidence of great toxicity. When remissions occurred in general paralysis, although most of the pupillary symptoms disappeared, still the pupils did not show quite normal reactions, but were not far removed from the normal.

He agreed with Dr. Blair that at times inequality of the pupils persisted in the remissions of general paralysis, but with almost normal reactions otherwise.

In reply to Dr. Pierce, he said that he had not meant to convey the impression that the Argyll-Robertson pupil had little diagnostic value, as he considered that the true Argyll-Robertson pupil was of very great import as a symptom. He referred to the much greater number of cases which showed apparently the Argyll-Robertson pupil one day, and a dilated, fairly reacting pupil the next. In tabetic general paralytics, which formed only 2·8 per cent. of his cases, the myotic Argyll-Robertson pupil was present unchanged throughout the whole course of the disease.

Dr. Cowen thanked the Chairman and members for their reception of his paper.

The Prophylaxis and Treatment of Asylum Dysentery.

By N. H. MACMILLAN, M.B.Edin., Asst. Med. Off., London County Asylum, Claybury.

DYSENTERY and diarrhœal affections in English asylums have, for some time past, been attracting considerable attention.

Their well-known prevalence has been considered of sufficient importance to warrant a passing reference in some of the larger books on general medicine. Dr. Manson, in his text-book on Tropical Diseases, refers to it as "that very fatal type of

disease which is the scourge and disgrace of more than one of our English asylums."

About three years ago, the Asylums Committee of the London County Council, becoming alarmed at the spread of the disease in their asylums, appointed Drs. Mott and Durham to make a special investigation into its causation. As a result of their study of the disease they handed in a very exhaustive report, in which they state that in their opinion dysentery is a highly infectious disease which can be greatly lessened, if not entirely eradicated, by the adoption of suitable hygienic precautions.

The subject has also been taken up by the Commissioners in Lunacy, who, as a consequence of this report, have recently issued the order that a register of dysenteric and diarrhœal cases be kept in all asylums, similar to the one drawn up by Dr. Mott, and already in use in the London County Asylums. They also suggest that at all post-mortem examinations the intestinal tract should be carefully examined, in order to determine the presence or absence of dysenteric lesions.

This is by no means an unnecessary suggestion in view of the fact that the post-mortem examinations in asylums are not usually carried out by skilled pathologists.

As Claybury is one of the asylums which has suffered from a severe epidemic of dysentery, it was suggested to me by Dr. Jones that it might interest you to hear a few details of the incidence of the disease and of the measures we are taking to free the institution from it.

A perusal of the case-books and post-mortem reports shows that dysentery made its appearance in Claybury very shortly after the opening of the institution.

The asylum was opened for the reception of patients on May 16th, 1893. On May 30th, only fourteen days later, a female patient was admitted suffering from melancholia. On June 27th she was stated to be suffering from severe diarrhœa, and on July 6th to have died from the exhaustion of diarrhœa. No post-mortem was made.

In the autumn of the same year two female patients were admitted. One of them came directly from a workhouse, and the other was a transfer from an asylum in the neighbourhood. Both these patients died within a few weeks, and both showed well-marked signs of dysentery on post-mortem examination.

On turning to the male records, I find that on June 24th, about six weeks after the opening of the asylum, a patient was admitted with diarrhœa, who, in his previous history, had suffered from chronic diarrhœa for four years. He died five days after admission from pneumonia, but unfortunately no post-mortem was made.

In the following spring the male post-mortem reports show that two patients died from obvious dysentery.

Dysentery thus made its appearance very early in Claybury, and by similar importations the disease obtained a footing in the asylum. During the period of six months—October, 1898, to March, 1899, it assumed such an acutely epidemic form that nearly a third of all the patients dying during that term showed dysenteric lesions of a more or less marked character. About that time more vigorous prophylactic measures were introduced, and these shortly afterwards began to have their effect on the disease.

As to the actual causation of the disease, various opinions are held by different authorities. One eminent alienist has stated that "ulcerative colitis" is primarily due to nerve degeneration, and is a frequent termination in chronic dementia and in general paralysis of the insane.

The preponderance of opinion, however, inclines to its being of an infectious nature. Several observers have shown that the disease is not confined to any age, and this is the experience of all who have noted its spread in Claybury, where it has attacked patients of all ages, of both sexes, and at all periods of residence.

That general paralytics are not specially liable to the disease is shown by the fact that at Claybury Hall, a quarter of a mile distant from the main asylum, and where a large proportion of the patients are suffering from general paralysis, dysentery is non-existent.

In a hundred consecutive deaths from dysentery I find that the patients suffered from the following mental disorders:

Melancholia	28
Mania	25
Dementia	34
General Paralysis	9
Epilepsy	3
Imbecility	1

The fact, too, that it has been communicated to several of the nurses and attendants, also supports the contention that it is of an infectious nature.

The opinion of Drs. Mott and Durham and of many other authorities, including Dr. Manson, is that the disease does not essentially differ from ordinary dysentery.

Numerous bacteria and protozoa have been described in connection with this disease.

Durham, while working at Claybury, found a minute micrococcus which he separated from the blood, bile, kidney, and spleen in seven cases of asylum dysentery, but as his investigations have not been completed, one can say little about its connection with the disease.

More recently, however, a bacillus, resembling the *bacillus typhosus*, which exhibits pathogenic properties and agglutinates when added to the blood-serum of persons suffering from dysentery, has been described by Shiga during an epidemic of the disease in Japan. This bacillus has been examined by several bacteriologists in other epidemics, notably by Flexner, who found that it reacted to the blood-serum of several cases of the dysentery occurring in the insane wards of the Philadelphia Hospital. The blood-serum of these cases did not cause agglutination of recent cultures of the *bacillus typhosus*.

It is impossible, at present, to definitely state more concerning asylum dysentery than that it is one of the infectious diseases whose specific organism has not yet been satisfactorily isolated.

Predisposing causes.—The circumstances which predispose to the spread of dysentery are those which act by lowering the general resistance of the patients.

The predisposition of lunatics to dysentery, as to phthisis, may be associated with their mental condition and their degraded habits.

Among other causes may be mentioned over-crowding, with all its attendant evils; also constipation, indigestion, and catarrhal troubles.

Certain drugs, too, such as croton oil, and sulphonal if long continued, may, by setting up intestinal irritation, predispose to the disease.

Prophylaxis.

The great aim we have before us in Claybury, in our endeavours to combat this disease, is not merely the treatment of individual cases. Our object is two-fold. In the first place we are attempting, and with marked success, to limit the spread of the disease. In the second, we hope to succeed in decreasing the number of cases in the asylum, until it may be looked upon as a sporadic rather than, as in the case at present, an endemic disease.

Many methods suggested in this paper are at present in use in the asylum, and experience enables us to continually add to those at our disposal. It is hardly necessary to mention that the introduction of an elaborate system of prophylaxis into a large asylum can only be done gradually, as it is impossible to at once insure the carrying out of a large number of hygienic rules by relatively inexperienced nurses and attendants.

Whenever it is suspected that a patient may be suffering from dysentery the fact is at once reported, and the case placed in a side room, pending the arrival of the medical officer in charge of the section, and the suspicious stool is preserved for his inspection. If dysentery is diagnosed the patient is immediately transferred to the isolation hospital. All clothing, bedding, and other materials which have been in contact with the patient are disinfected.

It is highly desirable, too, that patients sleeping near the case, or who have been in contact with it, should be looked upon as suspects, and kept under strict observation for at least a week, and it should be the custom to obtain at least one report of the condition of their stools with reference to the presence of loose motions or mucus.

The isolation hospital, to which patients are transferred, should, in my opinion, be regarded as an emergency ward only, and the beds contained in it should not be included in the list of beds available for ordinary patients; in other words, every patient occupying a bed in the isolation hospital should have his or her corresponding bed kept vacant in the main asylum.

This method has been carried out with success in at least one large provincial asylum, from which, by systematic prophylaxis, the disease has been practically stamped out. The isolation hospital should possess a separate staff of nurses

and attendants, none of whom are allowed to do duty in the main asylum, excepting in such wards as are largely or entirely occupied by recovered cases of dysentery.

A striking feature of the type of the disease at present prevalent in Claybury is the frequency with which relapses occur. On the female side of the asylum I find the relapses have, during the past two and a half years, occurred in about 20 per cent. of the cases under treatment. Several of the patients have suffered from three, and one from as many as five relapses during this period.

It is consequently not surprising to find in the post-mortem records that many of the patients, who have apparently recovered from an attack of dysentery, and have later on died from some other cause, showed chronic dysenteric lesions of long duration. Not infrequently, also, very chronic dysenteric lesions have been found in cases who have died from what appeared to be an acute attack of dysentery of some days' duration only. It is probable that the majority of such cases must have suffered occasionally from irregular action of the bowels, associated with the presence of a certain amount of mucus.

I am consequently strongly of the opinion that a weekly examination of the stools of apparently cured cases of dysentery should be carried out. These facts also show that it is obviously undesirable for apparently cured cases to be permitted to return, haphazard, to any ward which may happen to possess a vacant bed, and, from a general administrational point of view, be suitable for their reception. Such cases ought, in my opinion, to be detained in the isolation hospital for a considerable period of time after all symptoms of the disease have disappeared.

When ultimately it is necessary to transfer them in order to create vacancies for recent cases of the disease, such patients should be sent, at any rate for a time, to wards which are suitable for their reception, and which do not contain recent or curable cases of insanity.

In these wards should be aggregated all those patients who are relatively recently convalescent from an attack of dysentery, and all those cases who have suffered from one or more relapses.

It is particularly important that all relapsing cases should be

for a time, or even permanently, under special observation. I think it desirable that they should be placed on a ticket similar to that in use in the case of suicidal or epileptic patients, in order that the attention of the nurses and attendants may be focussed on them. Weekly examinations of the stools of such patients ought to be made, and the results should be recorded on the backs of the tickets and initialled by the medical officers.

Any stool which is not entirely normal should be reported to and inspected by the medical officer in charge of the section. The bowels of such patients should be kept open by mild laxatives only. As will be stated later on, I personally prefer small doses of liquid extract of cascara taken in combination with Sod. Bicarb. and Spt. Ammon. Aromat., shortly before meals.

The importance of attention to the bowels during an epidemic of the disease has long been recognised. Many years ago Virchow stated that it was noticed during an epidemic of dysentery at the Charité Hospital, Berlin, that those wards were rarely affected in which syphilis was treated not by the administration of mercury, but by a course of medication in which laxatives were prominent.

It is consequently highly desirable, not only as a general principle, but especially when any exacerbation of the disease under consideration should occur, that the bowels of all patients should be kept thoroughly open.

It would be better to err on the side of laxity than on that of constipation.

During the summer and autumn, when diarrhœa due to dietetic irregularities is not uncommon, special attention should be paid to all patients suffering from gastro-intestinal irritation.

Considerable difficulty is, in my experience, likely to occur on the female side during the carrying out of this system, owing to the frequency with which women suffer from habitual constipation; but I find it possible to satisfactorily carry it out when the nurses and attendants sufficiently appreciate its importance, and work loyally under their medical officer. I make a practice of treating cases of gastro-intestinal irritation by mild aperients, followed by tonics rather than by astringents, and I have obtained excellent results by this method.

I may, perhaps, here refer to the general hygiene of public

institutions in which dysentery is endemic. For example, the water-supply, ventilation, drainage, and especially the question of over-crowding should all be attended to.

The medical superintendent has wisely given instructions that the following rules, suggested in the Dysentery Report, should be posted up in all the ward storerooms:

Directions.—All able patients should be made to wash their hands before each meal.

All patients who might assist in laying out meals should be seen to cleanse their hands satisfactorily before being allowed to handle edibles, etc.

All patients who may be called on to assist in ward duties (especially cleansing and changing of other patients) should be seen to cleanse their hands in a sufficient manner.

Systematic disinfection of all things used by or which have come into contact with patients affected even with slight diarrhœa only should be carefully and promptly carried out.

Contaminated, or possibly contaminated objects should be placed in covered receptacles in convenient situations; they should only be moved from the ward in these receptacles, wherein they should remain until disinfection is carried out. The receptacle should itself be subjected to disinfection before it is returned to the ward.

The disease being contagious, the patient should, therefore, be isolated at once, and the clothing, linen, bed-linen, mattresses, used by any colitis case should be scientifically disinfected.

All recovered cases on returning to their wards should be kept under daily supervision and on a carefully regulated diet.

It is, of course, difficult to insure the keeping of such rules as the above, owing to the tendency of nurses and attendants to allow laxity to be gradually introduced, unless the medical officer is constantly on the watch.

It is probable that many of the local recrudescences which are continually occurring in different blocks are due largely to laxity on the part of nurses and attendants.

As regards the source of many of the chronic cases of the disease which serve as foci of infection, it is probable that these are largely introduced from without, owing to the fact

that a large number of the patients are admitted after a longer or shorter period of residence in workhouses and other institutions where the disease is prevalent.

That cases are certainly introduced from without is proved by an examination of the post-mortem records, which show that long-standing dysenteric lesions occasionally exist in patients who have died within a few months of admission to the asylum.

It is also highly desirable that all such patients on admission should for some weeks be looked upon as suspects, and that a weekly examination of their stools should be made. If irregular diarrhœa should exist, or if a small quantity of mucus should occasionally be observed in the stools, such patients must at once be transferred to the isolation hospital or to appropriate wards.

If the bacillus of Shiga and Flexner should, in the future, be found to give a reasonably constant agglutination with the serum of patients suffering from dysentery, we should have in our hands a valuable method for the diagnosis of such imported cases.

Treatment.

The general line of treatment adopted in Claybury in cases of dysentery is similar to that in common use in the case of typhoid fever, *i. e.* expectant and symptomatic.

In our experience the numerous specifics which have been recommended by different physicians have failed to produce any marked effect on the disease.

Expectant.—In uncomplicated cases our treatment is expectant only. The patient is kept at rest in bed, all unnecessary movement, such as rising to use the night-commode, or to have the bedding changed, is avoided, and the patient is generally made as comfortable as possible.

Little or no food is given during the first day or two, and this consists entirely of milk, which is given frequently and in small quantities.

Not uncommonly in these mild cases the patient, on the second or third day, begins to feel hungry and complains of the reduced diet. The addition of a little arrowroot frequently appeases them. This may occasionally be made more palatable by the addition of a little cochineal and lemon water. Usually

these mild cases rapidly convalesce, but it is well to keep even the mildest cases in bed for at least a fortnight. I consider that by this means the liability to relapse is largely averted.

Symptomatic.—If the case be more severe it is generally desirable to commence the treatment by the administration of ℥ss to ℥iss of castor oil, to which, if necessary, a few drops of laudanum are added. As an alternative—for in some cases patients object to castor oil—magnesium sulphate in one moderate or in several smaller doses is exhibited. These drugs frequently ease the patient from pain and flatulence by removing irritating matters from the intestinal tract.

When the tongue is much coated, in which case milk is badly borne, I generally substitute beef-tea containing such additional proteid as "tropon."

If the mouth and tongue be dry, the patient should be kept strictly on milk, and starchy food, owing to the frequency with which fermentation results from its use, should be avoided. When the diarrhœa ceases and appetite begins to return, custard, eggs, and boiled white fish may be given. If, as frequently happens when the diet is improved, diarrhœa should reappear, and mucus and blood be found in the stools, pure milk diet ought again to be returned to.

Prostration and even collapse are frequent in asylum dysentery. In severe cases they occur early, and immediate stimulation is then, in my opinion, desirable. If, on the other hand, prostration occurs later in the disease, the question of stimulation depends on the general condition of the patient, and this symptom can often be combated by tonics of a more general type.

It is, however, my opinion that in the treatment of asylum dysentery it is a common error to give too little stimulant at the commencement of the attack, and too much in the later stages, when either the patient will die whatever treatment be adopted, or will do better under tonics or more generous diet.

Dryness of the tongue and failure of the heart not infrequently follow a sudden fall of the temperature, and indicate the urgent need of stimulation. Brandy mixed with milk is, as a rule, less likely to cause sickness than whisky, and it is usually more agreeable to the patient.

For excessive diarrhœa, especially when this continues after

blood has disappeared from the stools, a mixture containing subnitrate of bismuth and opium is of great value. When diarrhœa is excessive, patients frequently complain of intense thirst. This is, as a rule, best relieved by sucking ice or sipping cold or warm water. Personally I prefer ice to cold water, as patients not infrequently drink too much of the latter, and are consequently apt to suffer afterwards from painful contractions of the colon. Ice is also useful when a patient suffers from sickness.

Asylum patients, as a rule, do not complain much of pain, and in this they contrast markedly with sane patients suffering from dysentery. If pain be present, it is readily relieved by the application of hot turpentine stupes to the abdomen.

If it takes the form of tenesmus, it, as a rule, readily yields to small enemata of starch and opium.

During the treatment of asylum dysentery it is necessary to be always on the watch for the supervention of pneumonia, which is a frequent and very severe complication.

The treatment of this complication differs only from that of ordinary pneumonia in the need of early and greater stimulation.

Cystitis is by no means an infrequent complication, but it does not, as a rule, give rise to urgent symptoms. It should, however, be suspected in cases who suffer from frequency of micturition or griping pains in the lower part of the abdomen.

It is best relieved by injecting a dilute solution of chinosol into the bladder, the injection being retained by water pressure for a few minutes.

It is necessary to add a word or two concerning the administration of large enemata. From a theoretical standpoint such treatment is excellent, and certainly, in many cases, the patient is much relieved by a large enema of warm boracic solution slowly administered by means of a rectal tube. My experience of enemata does not justify me, however, in recommending it as a routine method of treatment.

During convalescence.—As I stated before, I believe it is desirable to keep convalescent patients in bed for a longer period than many clinicians consider necessary.

This can do no harm and is to be recommended.

After the patients have been allowed to get up, they are, as soon as possible, brought out to the fresh air if the weather

permits. It is essential, of course, that they should be warmly clad, and as soon as possible gentle exercise should be allowed.

It is necessary to warn the nurses against allowing such patients to sit down on the grass or even on the dry ground, as the slightest chill is prone to induce relapse.

The diet requires careful regulating, and all indigestible and irritating substances should be avoided. The bowels should be carefully regulated, and this is best carried out by the use of mild laxatives. As I have already stated, I personally much prefer a soda—ammonia—cascara mixture given shortly before meals, and this may, with advantage, be flavoured with peppermint.

If the dose be carefully regulated by an intelligent nurse or attendant, healthy motions are induced without either discomfort or intestinal irritation.

Discussion

At the Spring Meeting of the South-Eastern Division at Brookwood Asylum, April 30th, 1902.

The CHAIRMAN said: We have all listened with interest and pleasure to Dr. Macmillan, and our best thanks are due to him for the very able paper he has read to us. As we have an authority here on this subject in the person of Dr. Mott, I am sure that the members would like to hear him discuss this important contribution.

Dr. MOTT said: The paper just read reminded me of the parable of the sower. At one time I thought that the seed I was sowing was going to fall entirely on stony ground, and that it would bear no fruit at all—not, however, from the quarter where most of my work was done; there they were most anxious to stamp out the disease, so that my remarks do not apply to Claybury Asylum. Sir William Jenner, in a lecture I once heard him give on enteric fever, remarked, "The first duty of a medical man is to prevent disease; failing that, to cure disease; failing that, to prolong life and relieve suffering." Dr. Macmillan, in his paper on "Dysentery in Asylums," has followed this important dictum of Jenner. With regard to the infectivity and prevention of this disease (which I regard as dysentery of the same nature as was long ago so prevalent in England), when I was appointed pathologist at Claybury, I was struck with the number of people who died from what was called colitis. In the wards of the asylum I saw many people suffering with the disease, and I was so impressed by the ward incidence and the probable infectious nature of the disease that I asked the late Professor Kanthack to come down and investigate it with me. This he did in the summer of 1897. He took away some material with the determination of trying to investigate the specific cause of the disease, but, unfortunately, he then went to Cambridge and I contracted typhoid fever in the laboratory; the work was therefore suspended for nearly a year. Later I met Dr. Durham, who had been for some years working at meat poisoning due to the *bacillus enteritidis*. He told me that he had been asked by a superintendent to investigate an epidemic of an acute and fatal bowel complaint which had occurred in an asylum. He was unable to associate it with meat poisoning. After hearing the symptoms which he had noted, I came to the conclusion that it was the same disease as the dysentery which was then prevalent at Claybury, and I invited him to come down to the laboratory for the purpose of endeavouring to find a specific organism. He succeeded in finding minute cocci

in the blood, spleen, and bile of fatal cases, but inasmuch as he was unable to reproduce the disease in animals, this organism does not fulfil the requirements necessary for stating that it is the cause of dysentery. Whether Flexner's *bacillus dysenteriæ*, which accords with that of Shiga, can be looked upon as the specific organism I am unable to say; so far experiments made by Dr. Washbourn and myself on agglutination in cases which have recently occurred at Claybury do not support this view. Colonel Bruce, at a recent discussion of my paper at the Epidemiological Society, stated that he had isolated many kinds of colon bacillus from the cases of dysentery which he had had under his charge at Ladysmith, but he was unable to find a specific organism. Moreover, he did not consider the *amæba coli*, which Dr. Durham and I were never able to find, as the cause of dysentery even tropical, but he looked upon it rather as an epiphenomenon. Although, therefore, the true nature of dysentery as regards a specific organism is not yet known, yet the facts which I have been able to collect have proved that it is communicable and infective the same as enteric fever. Many of the most infectious diseases we know of have not yet had a specific organism proved as a cause. The recognition of this disease as communicable and infectious is one of great importance, for it shows that too much care cannot be taken in isolating cases of dysentery, in transferring patients from one ward to another; also in recognising atypical cases and taking precautions with regard to them. We brought forward some striking examples of ward incidence in our report. One at Colney Hatch was very convincing, because it showed nine people in adjacent beds attacked by the disease. Recently at Hanwell an outbreak occurred in Ward 20. Investigation of this outbreak showed that first one attendant suffered with a mild attack, which doubtless he had acquired from an atypical case. A few more then occurred, and then a young attendant who had only been six months in the service suffered with a very severe attack of the disease; after this quite a number of the patients in this ward suffered with dysentery (altogether 35·5 per cent. of the inmates of this ward, whereas the total percentage of dysentery cases for the whole asylum was only 1·4), many of the cases being severe and fatal. It is presumed that a person who can acquire can confer, and I have no doubt in my own mind that dysentery in this ward was carried from patient to patient. It was of interest, as showing the similar nature of this dysentery in asylums to dysentery met with abroad, to have the unbiassed opinion of this attendant, who prior to his entry of the service had been a soldier in India, where he had served as an orderly in the hospital, and had nursed many cases of dysentery. When I asked him whether he recognised any difference between the dysentery he had seen in India and the dysentery of which he had had practical experience in England, he replied, none, except that the asylum dysentery was more severe. We were able to collect a number of instances of attendants, workers on the farm, and other *sane* individuals who were affected with the disease; even doctors and the higher officials (such as the matron at Hanwell) have suffered with severe attacks of dysentery. Moreover, an instructive case of its communicability has recently been afforded. A laundrymaid at Hanwell in April of last year suffered with an attack of dysentery during a slight epidemic of the disease; she was isolated, and recovered. At the end of November she suffered with a recurrence, and another laundrymaid who slept in the same two-bedded room was off duty a week with a mild attack of the disease. I cannot therefore agree with those who believe that it is a disease peculiar to lunatics, although they, from their habits and on account of their being crowded together in large institutions, are more liable to become infected. I do not find that the disease affects one class of lunatics more than another, although the old, infirm, demented, and bedridden are subjected to more chances of infection, and are more liable to suffer with a severe form of the disease on account of their low vitality. A few observations I have made do not support the views put forward by Dr. Claye-Shaw that the disease is due to degeneration of the nerves supplying the bowel. The recommendations which we gave in our report would, I am sure, if carried out, prevent dysentery ever assuming a serious epidemic form. Sporadic cases in these large institutions will always be liable to crop up, and too much care cannot be exercised in making transferences from ward to ward, or from one asylum to another; and especially should care be taken, in opening a new asylum, not to introduce cases of chronic dysentery, which, owing to its liability to intermission of symptoms and then recurrence, may so easily be overlooked, but

yet act as a focus in the production of an epidemic. The matter of sewage farms and the disposal of sewage, especially when there is an epidemic in the asylum, is of very great epidemiological importance, as was long ago pointed out by Dr. Clouston. My experience would lead me to believe that cases arise not so much from exhalations as from contamination of vegetables, which are eaten uncooked, and by pollution of the hands of workers on the farm, who on returning from their labours do not wash. In fact, the matter of washing of hands by patients before sitting down to their meals is a very important one in the prevention of the spread of this disease.

Dr. ROBERT JONES.—The opening remarks of Dr. Macmillan—minatory as regards myself—have turned out to be a much-appreciated compliment, for we have all accepted his paper as being a full and up-to-date account of this disease, with which we at Claybury, and possibly others in this room, have had too much experience. Since this disease was so fully investigated by Drs. Mott and Durham, who have done a public service by bringing forward their report, there has been no contribution to the clinical and therapeutic aspects of this disease more practical and more full of excellent suggestions than Dr. Macmillan's paper to-day, and I gladly accept any responsibility that I have undertaken in asking Dr. Macmillan to bring forward his experience before this division of the Association.

Whatever views have been favoured and advanced by other recent writers as to the neurotic or nervous origin of this disease, there is possibly no one in this room who does not accept the theory, founded upon an extensive and convincing record, that colitis or dysentery is an infectious disease. Unfortunately, so long ago as the first year of opening of the Claybury Asylum, and in July, 1893, when only 291 patients (147 males and 144 females) were in residence, I reported diarrhœa of an unusual type, and began to suspect that the water tanks may have had something to do with it. The water was examined by the chemist to the London County Council, but no definite cause was discovered. Several cases occurred during the winter, and I feared that the system of ventilation, which was then unsatisfactory and not under proper control, was at fault. In the following spring an epidemic, more or less, made its appearance, and was marked by great headache, and in some cases by extreme collapse and vomiting. The symptoms in one fatal case resembled those of acute metallic poisoning, and my previous experience had met with nothing similar to this. I sent the vomit to the Council's chemist, as also milk, water, bread, some tins, etc. No less than 129 patients and some of the staff suffered from this; one nurse, who developed pneumonia, succumbed to the exhaustion. Careful analysis of the food, drink, etc., failed to give us any information. The epidemic, however, abated, but cases kept cropping up frequently from time to time. In the autumn of this year, the second year of opening, another outbreak occurred, and I suspected the subways, which afterwards were carefully concreted in leaking spots, and channelled for water to run out. In December of this year I met with several fulminating cases of diarrhœa, death occurring in twelve hours after the onset in one case. The following year I had again to report an outbreak, and the Medical Officer of Health for London, Mr. Shirley Murphy, was summoned. The inspection made through the infirmaries, the subways, and the whole place generally, by the Medical Officer of Health and myself, revealed no definite cause, and the Medical Officer was shown various pathological conditions of inflamed and ulcerated intestines in fatal cases. The symptoms accompanying these were marked collapse, a bloody and slimy alvine flux, and severe vomiting, with a temperature of about 104°. During 1895, as is recorded in my published annual report for that year, no less than 280 cases of diarrhœa occurred, and in a number of those who got well this was followed by an epidemic of general acute eczema. I began to suspect the infectiousness of this disease, and in the third year of the opening of the asylum, 1896, we commenced to isolate cases in the isolation hospital. In May of this year I became uneasy again, and Dr. Shirley Murphy was summoned to our assistance, and inspected the day-rooms, dormitories, subways, and stores. The symptoms of the disease in July were reported by me to have been a high temperature, 105°, often sickness, great collapse, a dry tongue, and slime and blood in the stools. Dr. Hamer, Mr. Shirley Murphy's assistant, was summoned to our assistance in the autumn, and he visited and saw cases of diarrhœa under treatment. In my published annual report of this year I stated that thirteen males and nine females had

died from diarrhœa caused by colitis. In the following year and in the autumn of 1897 we had several cases of typhoid, and the serious attention of the asylums' engineer and myself was directed to the general sanitary condition of this new asylum. We examined closely the subways, the water tanks in the roofs, the outlets and inlets of the ventilating system, and the drain-pipes before these issued into the sewers, and after they had received the soil from the upright soil pipes. We found that liquid sludge had deposited in the glazed earthenware drains at the foot of the main soil pipes, but there was no block, and this was perfectly ventilated. No smell could thus issue into the w.c. annexe where typhoid cases occurred, unless syphonage had taken place. This system, however, was entirely removed. Later on one of the Medical Officers of Health for London again visited and investigated the recent cases of typhoid. He also went into the water-supply, drainage, and system of subways with myself. In the annual report for this year, published 1897, it was reported that twenty-one deaths (seventeen males, four females) were caused by diarrhœa, which was confined mostly to patients, and the incidence was believed to be more particularly during spring and autumn. In cases that proved fatal there was much collapse, acute pain, hæmorrhage, and an almost constant alvine flux. Post-mortem examination revealed the most acute colitis, and cultures of the *bacillus coli communis* were obtained after death even from the blood of the brain.

In the following year, 1898, eighteen deaths (seven males, eleven females) occurred, but it is possible, as I have stated elsewhere, that post-mortem examination may reveal the disease where during life it was not suspected, or where the patient died from some other more evident disease, and in this way there may be a higher record in the post-mortem notes than in the annual statistical tables.

In 1899 thirty-five deaths occurred (fourteen males, twenty-one females). The whole of the glazed earthenware pipes round annexes were relaid and trapped, and further, a commencement was made to relay the whole of the drainage system on a bed of concrete covered again with six inches more concrete, no section being passed as satisfactory until it had answered the hydrostatic pressure test and been seen by myself and a representative of the asylums' engineer. In 1900 there were further thirty-five deaths, but the incidence became now more marked on the female side, only seven males, but twenty-eight females dying from the disease. In 1901 the drains were finished completely; a reduction of 100 was made in the number of patients, which became 2400 instead of 2500—the asylum was built for 2050 patients,—and very strict isolation of all cases of diarrhœa was carried out. In consequence of these variations the deaths were reduced to twenty-five (nine males, sixteen females), and this year, up to April, 1902, there have been no male deaths, but twelve females.

So far as I have been able to ascertain from the medical journals, case-books, and other records, the dysentery since the opening of the asylum has been as follows:

	Males.	Females.
1893 ...	10 ...	22
1894 ...	44 ...	106
1895 ...	17 ...	52
1896 ...	33 ...	76
1897 ...	10 ...	29
1898 ...	19 ...	74
1899 ...	80 ...	104
1900 ...	58 ...	142
1901 ...	81 ...	153
1902 Up to April ...	28 ...	48

Such is the history of the progress of this disease in one asylum only, and it will be evident to every one in this room how personally I welcome Dr. Mott's very great assistance.

As to its origin, Dr. Mott has already referred to its introduction from other asylums or workhouses; and once admit the infectivity, it is not difficult to account for its spread when a typical case has been admitted. Although this disease is probably not caused by overcrowding, it is favoured and aggravated by such a condition.

As to treatment, I agree that it is in the main preventive, but my experience of actual cases has been in accordance with Dr. Macmillan's account, and I agree as to the futility of rectal injections. I have tried large rectal injections of boracic, and if my late colleague, Dr. Spicer, had been here to-day as he expected, you would have heard more of the detail in this regard. I have used from one to six pints, and I do not think you can disinfect the bowel. I have used salol, resorcin, iodine, carbolic acid, and chinosol as internal antiseptics. Purgatives in the early stages are certainly useful, and if the disease be due to a special micro-organism this must be in the bowel, and obtain access through the abraded mucous membrane, possibly from a stercoral ulcer caused through constipation, and we all know how much women among the insane suffer from this. Rest in bed from the beginning, with farinaceous food as dietary, is the most suitable, as Dr. Macmillan has already stated. The ticket which Dr. Macmillan suggests; and to keep the infected person under suitable supervision I consider to be a most excellent and important suggestion; but I would venture to add a further one, and that is that the superficial area should be marked in clear plain numbers upon a panel of the door of every dormitory in the asylum, so that the number of patients allowed upon the scale of the Lunacy Commissioners' rules may be easily seen, and overcrowding remedied where this can possibly be done.

As to something which has been said in regard to working with sewage, I should like to make it quite clear that the sewage of Claybury goes into the local sanitary system, but it has the possibility of being intercepted in one place and turned on a part of the land. This, however, has only been done on about four or five occasions in the history of the asylum during nine years, and then only in a summer drought. The sewage of Claybury Hall, where the private patients are fed on a more liberal scale, and where the total number of beds has not exceeded sixty, is dealt with upon the Dibdin bacteriological method, the effluent flowing into a local course.

I cannot help thinking that the majority of cases of colitis occur among the more demented; at any rate, it occurs among non-workers rather than the workers in the asylum, which points to the more feeble and helpless; but no single class is free, and I have known quite young acute mental cases ill with it, but the habits of these are difficult to control. It is absolutely impossible to get the insane to be chemically and bacteriologically pure, and the suggestions of Dr. Mott, and in the paper read to us, are most valuable and necessary.

As to the disease, it certainly has of late years become more recognised. In 1897 the Lunacy Commissioners reported a death-rate of 2½ per cent. Five years later their statistics record a death-rate of 6 per cent. Taking the deaths that have occurred in Claybury, there appears to be an increase, although only a slight one, during March and April, also during August and September. This has certainly been so the last two years since a more accurate record has been kept of all cases of diarrhœa. Of the cases of diarrhœa and dysentery which prove fatal, the proportion has been variously estimated, from one fourth downwards, and I have estimated that 168 cases (63 males, 105 females) have died from the disease in Claybury since its opening in nine years, and in a population under treatment of nearly 8000 persons. For the reasons I have previously stated, this may not be in accordance with the number as ascertained upon post-mortem examination.

As to relapses, these are not uncommon after longer than a year's recovery, and once a dysenteric probably always a dysenteric; at any rate, more or less certainly, it may be so for three years. As to the age of the patient, I am inclined to believe that the older are more liable; the greatest number of patients are attacked between 50 and 59 years. In my statistics the senile cases appear to be the more numerous, as many as thirty or forty being between 70 and 79.

Dr. BOLTON.—The average age at death has been 57 years.

Dr. JONES.—This goes to confirm what I say, for if the paralytic dements are considered, they being of the earlier decades tend to lower the average ages. Mr. President and gentlemen, our thanks are due in a high and special degree to Dr. Macmillan for his very full, suggestive, and critical paper from actual experience, and whether we agree with his theory of infectivity or not, I venture to think that in this room there are no dissentients. He has contributed, summarised, and classified a most interesting addition to our knowledge of a disease that apparently presents some diversified phenomena, and a disease which has certainly been the subject of much recent scientific inquiry.

Dr. BOLTON.—I should like to draw your attention to the fact that one third to one half of the total deaths are due to general paralysis, whereas only about 11 per cent. of any series of deaths from dysentery are general paralytics, therefore dysentery is not more common in general paralytics than in other varieties of mental disease. With reference to the question of the infectivity of the disease, some six or seven years ago I myself suffered from it at Rainhill. At Claybury the post-mortem porter has suffered from dysentery; the present chief nurse at the isolation hospital and also the past chief nurse have suffered from it, and several of the attendants. This alone is quite sufficient to show that the disease is infectious. I quite endorse what Dr. Macmillan has said. The suggestions he has made have been largely carried out at Rainhill, and were instrumental in stamping out the disease in that asylum. The treatment he has suggested is that which I have myself used in this disease with successful results.

Dr. WHITE.—This is no new disease. When I was an assistant medical officer in 1872 we had several cases. I made post-mortem examinations on the cases and carefully investigated them. During my career I have seen several cases of an endemic type at the City of London Asylum. These cases were treated in our hospital with the other hospital cases, and the disease did not become epidemic. We had during the autumn of last year a certain amount of acute diarrhœa, but it was caused, in my opinion, by the patients eating a large amount of stone fruit. I think there is no doubt this disease is sporadic. It is brought on sometimes by defective sanitary conditions, defective ventilation, defective sewage disposal, etc., and very often from defective drainage and overcrowding.

Dr. MOTT, in answer to questions put by Drs. Hyslop and Taylor, said that chronic cases of dysentery might occur without diarrhœa; generally at the post-mortem it would be found that the bowel was blocked with scybalous masses. He wished particularly to emphasise the fact that acute cases might die before the characteristic stools had had time to occur. Patients like epileptics and general paralytics often ushered in the onset of the disease with continued fits, and naturally, if a post-mortem had not been made, would have been said to have died in "status epilepticus." Again, Dr. Mott referred to cases occasionally dying in a few days, and at the post-mortem the large and the lower part of the small bowel might be found filled with blood and slime, and yet no ulceration to account for it, only the acute inflammatory congestion.

In answer to questions put by Dr. Boycott, Dr. MOTT said that he considered the sporadic cases of so-called ulcerative colitis which one occasionally finds in hospital and private practice were really sporadic cases of dysentery. With regard to Dr. Boycott's question about care in sterilising enema apparatus, this had been called attention to by the French physicians as a cause of the spread of dysentery, and he had some time ago pointed this out to the medical officers and attendants at the asylums, although it was not specifically stated in the recommendations of the report.

The Psychiatric Wards in the Copenhagen Hospital.

By Professor KNUD PONTOPPIDON.

The Commune Hospital was built in 1863 for the reception of poor patients of all classes from the city of Copenhagen. It was therefore necessary to provide a ward for the treatment of the insane. For this special purpose a pavilion was erected simultaneously with the main building, within the grounds of the hospital. It was arranged on the corridor plan, with single rooms only. The pavilion cost between £3000 and £4000.