

IV.—Observations and Experiments on the Use of Opium, Bromide of Potassium, and Cannabis Indica in Insanity, especially in regard to the effects of the two latter given together. By T. S. CLOUSTON, M.D., Medical Superintendent of the Cumberland and Westmoreland Asylum, Carlisle.¹

(Continued from vol. xlvi, p. 511.)

Clinical Observations.—The preceding observations and experiments having been undertaken chiefly with the view of obtaining more accuracy as to the immediate and remote effects of bromide of potassium and its combinations, as compared with opium, on maniacal excitement, and on the general health of patients labouring under excitement, I shall now record my experience of the effects of the salt and its combinations when given in the ordinary course of my medical practice among the insane. I began to give the bromide in a tentative manner in the end of 1867, and have continued to use it ever since. It had at that time been recommended for various forms of insanity in several of the home and foreign medical journals. My attention was first strongly directed to the powers of the salt in brain disorder by a case which I was treating in the beginning of 1868. I had amongst other things been giving both bromide of potassium and tincture of cannabis Indica to procure sleep in this case, which was one of melancholia, with great excitement and hallucinations, and by way of experiment I gave the patient a combination of the two. I found the effects to be so very wonderful in this case that I employed the bromide alone, and in conjunction with Indian hemp very largely thereafter in similar cases. I need scarcely say (the subject being therapeutics) that my first impression, that I had discovered a panacea for some forms of brain disorder, was disappointed, but I have found very good results from this combination in very many patients, and I shall proceed to give a summary and an analysis of my cases.

I have given bromide of potassium alone or along with Indian hemp in fifty-one cases of various kinds of insanity. I mean that in those cases I have given it a fair trial to relieve or cure the disordered brain function. I have used it in a more desultory way in many more cases, but of course such a mode of giving a drug is quite useless for any scientific purposes. As regards the forms of insanity to which my cases belonged I have put them in a tabular form (see Table VII). And in the same table I have distinguished between the cases in which its use seemed to be attended with benefit, and those in which this could not be said to be the case. The first important

¹ The essay for which the Fothergillian Gold Medal for 1870 was awarded by the Medical Society of London.

fact in regard to this table is (and it may be thought to be a suspicious one), that those forms of insanity which are well known to be most curable figure most largely among the benefited. Of course

TABLE VII.

Form of insanity.	Seemed to do good.			Seemed to do no good.		
	M.	F.	Total.	M.	F.	Total.
Acute mania	6	1	7	...	2	2
Chronic mania	1	...	1	...	4	4
Periodic mania	4	8	12	1	...	1
Puerperal mania . . . . .	...	9	9	...	1	1
Melancholia	1	2	3	...	2	2
Insanity at change of life . . . . .	...	4	4	...	...	...
General paralysis	2	3	5	...	...	...
Total	14	27	41	1	9	10

this might have been expected, but I exercised what care I could in each case, so that the effects of the drug might be distinguished from the improvement that must have occurred in many of those cases in the ordinary course of the disease. When a remedy is said to be very beneficial in such curable affections as acute mania, puerperal mania, and insanity occurring at the change of life in women, we must carefully test its real efficacy, if it is not to fall into the disrepute of those panaceas for measles, jaundice, and delirium tremens which our fathers so strongly believed in. The table as it stands was the result

TABLE VIII.

Form of insanity.	M.	F.	Total.
Acute mania	3	...	3
Periodic mania . . . . .	...	4	4
Puerperal mania . . . . .	...	2	2
Melancholia . . . . .	...	1	1
Insanity at change of life . . . . .	...	2	2
General paralysis . . . . .	...	1	1
Total	3	10	13

of my first analysis of the cases, and I believe it to be so far correct, but in Table VIII I think I have excluded all possibly doubtful cases, and only claimed credit for the remedy where I had an opportunity of applying some crucial test, such as stopping the medicine, watching the progress of the disease without any medicine, and then giving it again. I think that not even the veriest medical sceptic in this sceptical

time would take exception to any of these thirteen cases. I shall presently quote some of the most typical of them. They were many of them obstinate examples of their respective forms of insanity, which had "defied other modes of treatment." If to a patient whom one has known to have had regular attacks of periodic mania for years, we give a medicine at the commencement of an attack, and the patient's excitement ceases, contrary to anything known in the history of the case before, then I think we may fairly conclude that the medicine and the absence of mania are cause and effect. If in a case of mild melancholia at the change of life in a woman, the disorder has existed for a year and a half, if most of the remedies ever before recommended for that class of cases had been tried and had failed to do good, and if at last the bromide of potassium procures sound sleep, and immediate visible improvement in appetite, weight, and mental state, surely some credit may be given to it. But if in this same woman its use is intermitted, and all the symptoms at once return, and again immediate improvement follows its employment, so that the patient becomes able to employ herself as she never did before since her illness, and through healthy employment gains in flesh and strength, and gets quite as well in three months as ever she was in her life, surely we cannot deny to therapeutics a cure in the best sense of the term. Or if a cure cannot be expected, as in a case of general paralysis, if a mixture of bromide of potassium and Indian hemp so subdues intense excitement, that when not taking this medicine the patient is noisy, violent, destructive, sleepless, and rapidly losing weight, and when taking it he is quiet, semi-rational, dresses and eats properly, and remains in this state for six weeks, till the disease in its natural course passes into its quiet stage, I think here we have a palliative of great value and importance. Or if an old lady gets irrational, restless, sleepless, and unmanageable by her relatives, and if apparently the last alternative to sending her to an asylum has been tried and failed, until half-drachm doses of bromide of potassium and tincture of Indian hemp is found to subdue and quiet this irritability and restlessness, so that she can be quite well kept at home, for the month or two during which this excitement lasts, and until the ordinary dotage of old age to which this excitement was a prelude, comes on, surely the physician's power was augmented, and the patient was unquestionably the better for the remedy he employed.

In acute mania I seldom found the bromide given alone do any good, or, indeed, have any perceptible effect. I gave it in all doses up to 120 grains three times a day, and I continued its use in some cases for a few days. But when combined with tincture of *cannabis Indica* the effects of the mixture were in many cases very remarkable. Sometimes if the excitement was very intense I began with drachm doses of each three times a day, or, in some cases, every three hours for the first day. In the cases in which the effects were good, they

usually appeared by the end of the first day of its use. The patients became less restless, the shouting and violence were abated, and at night they slept. The skin, too, which is so often dry in acutely excited patients became more moist, and they perspired freely. The pulse usually lost in force. Indeed, this is the only objection I have to this mixture, that the force of the heart's action is undoubtedly lessened in most cases by it. But I have never seen a single case of syncope, except in one woman who fainted two hours after a dose, but soon recovered. The lessened force of the heart was shown, too, by the paleness of the face and skin generally. After the medicine has calmed the excitement the patient remains confused in mind. The intelligence and coherence of ideas, of course, do not usually return for some time. It is often sufficient if one or two doses per diem are given after the first day or two, and I have stopped its use altogether at that time—the patient remaining free from acute excitement. The greatest advantage of this sedative over every other that I have tried in acute mania was, that these patients took their food as well or better during its use as without it. Every one who has acute mania to treat knows that there are three great risks. The patient's appetite may fail, the excitement may cause complete exhaustion or death, or it may last so long that the power of the brain to become the medium of normal mental manifestations seems to be lost or impaired, and dementia results. There can be no doubt that the patients being got to take a large amount of nourishing food and stimulants is of the very first importance in all cases of acute mania, and it is the great risk of taking away the patient's appetite that prevents opium or henbane being more extensively used. Especially is this risk great if we give large doses of opium. It seems to me that the bromide and Indian hemp combined approached more nearly by far than any other drug to our great desideratum in treating acute excitement of the brain, viz. a medicine that will so alter or modify the morbid functions of the brain, that the patient will cease to exhaust all his bodily energy in muscular movement and constant wakefulness, and will at the same time allow the reparative effects of rest and food to act quickly in restoring the normal nutrition of the cerebrum. In some cases complete recovery of the mental powers took place very soon indeed after the excitement was subdued; in others, the confused and incoherent state remained for a long time. In the three cases I have put down in Table VIII the patients were rational or coherent or nearly so within a fortnight after getting the medicine, though one was of a month's duration; the excitement in each case being of about three days' duration after being put on the mixture. The cases in which the good effects are less marked are those in which the excitement is subdued, but the patients remain confused in mind, incoherent and suspicious, sometimes with delusions for

periods varying from one to six months. The cases in which its use is followed by no particular benefit as regards cure are those (and in my experience they were rather the exceptions), in which it fails to allay the excitement except when given in very large and continued doses; and when after its use has been continued for a week or two the excitement still remains as acute as ever if the medicine is stopped. If good effects are not manifested within a fortnight of treatment in a curable case of acute mania, my own opinion is that then the case should be left for a time at least to nature, with appetizing tonics and nourishment alone. In all the cases of acute mania where I say that the medicine did good, I mean that its effects were distinctly in the direction of health, and not merely that the symptoms were relieved. In some of those cases in which the best effects resulted from the use of the drug, I think that if it had been given at first the patients need never have been sent to an asylum at all. If my anticipations in regard to it are realised, this will unquestionably be one of the most important effects of the remedy. To be able to treat many cases of insanity, especially if attended with excitement, at home has been impossible just because we had no remedy that could safely be given to allay the excitement without the risk of interfering with the recovery of the patient. In the case of senile mania to which I referred, the patient was treated quite well at home. Some cases of maniacal excitement of short duration which now have to be sent to asylums will, I think, be saved from this by the use of the bromide and Indian hemp combined. There are few risks attending its use, and its good effects, if there are to be good effects, are so very soon seen and follow its use so manifestly, that there generally can be but little question of mere coincidence.

In these forms of maniacal excitement which have hitherto been found to be incurable, the bromide of potassium and its combinations are no more powerful than other drugs have been found to be in effecting cures. But in many of those cases its effect is to modify the symptoms of the disease so much that the lives of the patients become far more tolerable to themselves and others. In chronic and periodic mania, I have given the bromide combined with Indian hemp in eighteen cases, and it produced good effects in thirteen of these. In four cases of periodic mania to whom I gave it, the effects were, perhaps, more wonderful than in any others, because the patients had all confirmed excitement of a severe character; the history of their previous attacks was known, and could be contrasted with their attacks when getting the drug. In three cases the effect of the drug was to cut short an attack when it was coming on in its ordinary course as it had come on before. In two of the latter the attack was only postponed, as it were, but in the third case the patient remained well, was discharged from the asylum, and has kept well for twelve months—a far longer period than she has ever been

free from excitement before for five years. I shall relate the case more fully afterwards. The other two were not so striking, but still are curious. One was a woman who had in her youth taken epileptic fits. After these ceased she became subject to severe attacks of excitement, which came on about every two months, and lasted for a fortnight. At the beginning of one of these attacks I gave half-drachm doses of bromide of potassium three times a day, and the excitement ceased within twenty-four hours. The patient continued to take the medicine for two months and got better mentally than she had been for several years. It was discontinued to see if the effect was permanent, but an attack of excitement came on at once, and the medicine, though it has since controlled and modified such attacks, yet has never quite stopped them. Another case was that of a woman who for a long time had had an attack of acute excitement every three or four years, the attack usually lasting from six months to a year. She became suddenly maniacal, and got at first drachm doses of bromide thrice a day without any good effect, then half-drachm doses combined with half-drachm doses of tincture of cannabis, but still the excitement was daily getting more intense till she was incoherent, noisy, sleepless, dirty in her habits and violent. The quantity was increased after a few days to forty-five grains of the one and forty-five minims of the other every three hours, with the effect of completely allaying excitement, so that in two days she was removed back to the convalescent ward, remained rational, industrious, and apparently well in mind for a week, during which time she got no medicine. At the end of that time the excitement began again, and is now running its usual course; its symptoms, however, being wonderfully controlled by forty-five grain doses of the bromide with forty-five minims of tincture of cannabis twice or three times a day. She has taken this for three months, and though far from coherent or rational, yet sleeps, and is not destructive or dirty or violent, as she used to be and is now, when the medicine is stopped. She has lost in weight very much, but takes her food well. The comparative loss in weight as compared with former attacks I am not able to say, as she was not weighed in the different stages of former attacks.

Another case is that of an old woman who has taken periodic attacks of mania for at least twenty years, and has been so much better during her last attack under the use of drachm doses of the bromide and tincture of cannabis morning and evening, that she has been kept in the infirmary ward of the asylum during the nine months the attack has lasted, and has during that time slept in a dormitory with other patients, has taken her food, and is now passing into the quiet stage of her disorder. In every attack which had occurred before, she had been destructive, dirty, very noisy, and had to be all the time in the refractory ward.

In one or two cases of very severe excitement the attempt to suppress it by often repeated doses of the medicine has seemed to do harm. The patients got into a state resembling acute dementia, and their nutrition was much interfered with. In one case to which I referred, where the person was old, very weak, and the pulse very thready, she once fainted after getting a drachm dose of each, but she very soon revived.

The forms of insanity in which the bromide or its combination with Indian hemp did most good were puerperal mania, and that form of mild insanity which occurs at the change of life in women. I used it in ten cases of puerperal mania, and in four of such climacteric insanity (see Table VII), and in all except one its use was attended with benefit. In two cases of puerperal mania, both very violently excited, the employment of forty-five grains of the bromide with forty-five minims of tincture of cannabis three times a day was followed almost at once by alleviation of the excitement, and in about a month by recovery. In another case of puerperal mania of three days' duration, and of the most violent character, I gave drachm doses of each every three hours, with the view of cutting short the excitement at once, and in two days the excitement was quite subdued, but the patient remained stupid and vacuous in mind for a fortnight (taking her food quite well, however, during that time), and though now, after three months, quite coherent, industrious, and rational on most subjects, yet is suspicious, and has some delusions. I do not think I should again give the medicine in such a case in quite such quantity, but rather endeavour to allay the excitement a little more gradually. I am quite sure, however, that to have subdued the excitement in that way with any other drug I know would have been followed by total absence of appetite, dry tongue, and much feverishness.

In five of the cases where the excitement was milder, and where the chief characteristics of the disorder were sleeplessness, restlessness, delusions about husband and children, reduced bodily condition and impaired appetite, I found drachm doses of the bromide given every night procured sleep, and seemed also to increase the appetite, and allay the restlessness and unsettledness of mind, and the patients recovered sooner than my experience of similar cases would have led me to expect without the medicine.

In the cases of insanity at the change of life in women, I found that drachm doses of the bromide alone at night was most beneficial in procuring sleep and allaying the restless depression that usually accompanies this form of aberration. In one of these I had tried opium most carefully, and it had failed to do any good, while the use of the bromide was at once followed by much benefit, and its continued use by complete recovery in two months.

I have given the bromide of potassium alone and in combination

with the Indian hemp in five cases of melancholia, and with slight benefit in three of them, but with decided benefit in only one case, and that I shall afterwards relate. In ordinary melancholia the bromide does not do much good, except by procuring sleep, and combined with cannabis it often seems to do harm. If there is much restless excitement, with hallucinations of hearing, they may do good, not otherwise.

The last form of insanity in which I have used the mixture of bromide and cannabis is general paralysis, and of course in that most fatal of diseases I merely expected, and only got, palliative results. But in no disease is a good palliative of the symptoms in the worst cases of more real value, especially in an asylum, and after my extensive trials of opium (the worst of all in this disease), henbane, digitalis, Indian hemp alone, and bromide of potassium alone, I have found the mixture of the two latter, given in doses of from half a drachm to a drachm of bromide with a drachm to a drachm and a half of the former, to be the safest, surest, and most manageable in its effects. All physicians who have had experience in the wards of an asylum know that of all cases of insanity a general paralytic in the first or beginning of the second stage of the disease passing through the period of excitement which often occurs then, is by far the most difficult to manage. In most other forms of maniacal excitement is there some faint approach to self-control or amenability to control by others, but in this the noise, the violence, the destructiveness, the entire absence of any sort of fear of consequences in annoying fellow-patients, the sleeplessness and restlessness, are simply unmitigated and incessant. An ordinary maniacal patient may generally be taken by an attendant and walked about in the open air, but an excited general paralytic fights and struggles until he or his attendant gets injured in some way. It can be imagined what a boon for such a case, for his attendants and for his fellow-patients, it would be to have some sedative medicine which would somewhat allay his violence and yet not interfere with his appetite until the period of excitement was tided over. Such cases are notoriously intolerant of opium; henbane has been hitherto most relied on in half-ounce and ounce doses of the tincture, but if long continued it causes dryness of the mouth and lips, and loss of appetite; digitalis has been strongly recommended, and in some cases its effects are admirable, but there is a wide-spread mistrust among those who have used it much that it is not a safe drug to give in all cases—one patient poisoned, or nearly so, by it, causes an excusable timidity in using it in most minds, and it is surprising how many asylum physicians have this timidity.

I have given the bromide and Indian hemp to five cases of general paralysis in the most excited and worst stage of the disease, and in all of them I found the worst and most troublesome features of the excitement abated, without causing much loss of appetite. In one

case of most violent excitement I was giving ninety-grain doses of the bromide with ninety minims of the tincture of Indian hemp for weeks, and the patient's tongue got thickly coated, the appetite was impaired, he became very sleepy, and all the other features of "bromidism" showed themselves. But this I attribute entirely to the large doses of the bromide so long continued. I do not think that the doses of this should exceed a drachm, or even forty-five grains if it has to be given three times a day and *long continued*. The great advantage of this mixture is that single doses will *never* do any harm, nor is there the least risk in going on with it for a few days; and that any bad effects come on gradually, and can be observed before any harm whatever is done to the patient. By lessening the doses of the bromide, the bad symptoms at once disappear. In one case of most violent general paralytic excitement I gave forty-five-grain doses of the bromide and forty-five minims of the cannabis morning and evening for many weeks, the patient during that time working out on the farm, sleeping at night, and behaving rationally, while if it was stopped for two days he got noisy, dirty, violent, unable to do any useful work, and quite maniacal. He quietly passed into the second stage of the disease, when the medicine was no longer required. In general paralysis in women it is most useful in half-drachm doses of each. If used in the end of the second or third stages of general paralysis it subdues excitement in small doses, but it increases the want of co-ordinating power of the muscles. Especially is this seen in the patient's walk. I have seen a drachm dose of each quite take away the power of walking for a day in a general paralytic who had previously been rather shaky on his legs. It does not in any way affect the peculiar delusions of general paralytics. When a patient is beginning to be excited, he should get one drachm of each at bedtime, and then half-drachm doses should be tried every three hours next day, or until the excitement is in some degree subdued. It will then be sufficient to give one dose in the morning and another at night in many cases, or at most three times a day. If the tongue gets much furred after using the medicine long it will be quite sufficient to stop its use for a few days.

I shall now give an abridged account of a few of the cases in which I employed either the bromide of potassium alone or along with Indian hemp.

Acute mania.—W. B—, æt. 18, a boy who had been insane for three months, but whose symptoms had become gradually worse until he had become quite maniacal.

On admission he was a small, ill-developed youth. He was quite incoherent, restless, violent, and destructive. No bodily disease. Temperature, 95°. Pulse, 80. Conjunctivæ suffused; right pupil more dilated than the left. Tongue slightly furred. He was quite sleepless. He was ordered half a drachm of bromide and of tinc-

ture of Indian hemp three times a day. The excitement was evidently lessened after each dose. He took his food well, and on the fourth day after admission the excitement became greatly more subdued, and his mental condition one of confusion of ideas and stupidity. The medicine was then stopped, and in a week he was coherent and rational, and rapidly gained in weight. In two months he had a very mild subacute attack for a few days, but has since then (six months) kept quite well.

Acute mania.—J. P—, æt. 27, a man who had been insane for a week. The maniacal excitement had come on suddenly, and after it commenced he was sleepless, restless, incoherent, and most dangerous. He tried to cut his mother's throat, and tore out all the windows out of a gentleman's dining-room. Maternal grandfather insane.

When admitted was in mechanical restraint (as he had been since attempting his mother's life), and was confused and suspicious looking, though partially coherent. He was a robust, healthy looking man, of 6 ft. 1 in., very strong, and his bodily functions all performed normally. He got worse mentally until in two months he was quite deliriously maniacal. He tried to choke everyone near him, sometimes making attempts on his own life, once very nearly killing both an attendant and himself. He was sleepless, his tongue got furred, and he had frequently to be secluded in a strong room for a day or two at a time. Hyoscyamus, opium, antimony, and stimulants were all tried in vain. He had the "ear of the insane" in October, and after that gradually got more quiet, till in the following January, a year from the time of his admission, he was rational, coherent, industrious, and quite free from excitement, though a little silly in mind. In the following September he suddenly took a violent fit of excitement when attending a concert one evening, and became as violent, dangerous, and incoherent as ever. He was at once put on drachm doses of the bromide with ninety-minim doses of tincture of cannabis, three times a day. In two days he was free from excitement to a great extent, and continued to get the medicine in half the above quantities. For the three months the excitement lasted he never required to be secluded, he worked on the farm regularly, he took his food, he exhibited none of the suddenly dangerous and violent paroxysms which characterised his former attack, though if the medicine was stopped he at once showed signs of being violent. The attack passed off, and he remains now free from excitement.

I think this case will have periodic attacks of excitement all his life, but after my experience of the power of bromide and Indian hemp to subdue the worst symptoms, I do not look forward to the coming on of the next attack with the anxiety and dread which I should have felt (and did feel when the second attack began) had I not known of this safe and powerful sedative.

Periodic mania.—H. S—, æt. 23. This young woman has had six attacks of mania in four years. She had been insane for four weeks previous to admission. All the attacks had begun during menstruation, and while maniacal she was always very erotic, especially at the beginning of the excitement. She was violent, incoherent, noisy, dirty in her habits, and sleepless before admission and for about three months afterwards. She then got well, but in six months had another similar attack of mania lasting for two months. She lost twenty-eight pounds in weight during this attack, and her temperature was always 1.5° above its normal rate when she was excited. She remained free from excitement for nine months, and then had another similar attack. After four months of sanity she one night suddenly got up, smashed the windows of her dormitory, saying that the devil was looking in, and became violently excited, her temperature that day being 100.8° , pulse 108 and strong. She was ordered drachm doses of the bromide every three hours with a drachm of ammoniated tincture of valerian with each dose. She was put into a dark room at her own suggestion: On the following day her temperature was 99.6° , and her pulse 108. She was still much excited, but not so much so as on the day before. On the second day her temperature was 99.3° and her pulse 130 and weak, the excitement being much allayed. The medicine was after this given only three times a day. She was kept in bed for a fortnight in a dark room, as she said that if she got up she would get worse. At the end of that time she was still rambling, partially incoherent, and full of delusions, but nearly free from active excitement, and the medicine was discontinued. She remained slightly affected in mind for another fortnight. At the end of a month from the day the excitement began, she was well, and was discharged from the asylum six months thereafter. I heard a few weeks ago that she was still keeping well, and it is now a year from the time her attack of mania was thus cut short (as it seems to me) by bromide of potassium. I gave the valerian because she was beginning to menstruate at the time the mania began.

It will be observed that the excitement in this attack only lasted about three days, and she had never been less than two months excited at a time in her nine previous attacks; the aberration of mind was only of a month's duration, it had never been less than between three and four months previously, every symptom of an ordinary attack being clearly present at first; and the interval of sanity has been even now longer than any such interval except that between the fifth and sixth attacks. The excitement disappeared as the patient showed signs of coming under the influence of the bromide and its constitutional symptoms were developed.

Periodic mania.—M. G—, æt. 56; a woman who has been rather

weak-minded from birth, but got married and had children. She has been subject to attacks of excitement at intervals of a year or two for twenty years.

On her admission from another asylum, she was found to be a little thin woman, who went on talking quite incoherently, was restless and destructive to her dress, and violent at times. Sometimes she refused her food, and had to be fed with the stomach pump. Though she got much food and stimulants she became quite run down, thin, and exhausted in mind and body before the attack was over. The first attack lasted from March till the following January; she had a short attack in April. In the beginning of the next year she had another short attack, and in the December following she had three epileptic fits (the first she ever had). They were the prelude to an attack of excitement which lasted for six months. In the following year she had another attack of excitement lasting for three months. In the beginning of this year she again became excited, and was put on drachm doses of bromide and tincture of Indian hemp, three times a day at first, and afterwards morning and evening. The medicine so completely moderated all the unpleasant symptoms of the excitement that she was kept in the infirmary ward among the sick patients. She was not noisy, destructive, and dirty in her habits as she had been before; she did not lose flesh to nearly the same extent as before, she took her food better than ever she had done before during excitement, and the attack terminated in September, leaving her far stronger than she had ever been before after a long attack of excitement.

This case illustrates the effect of the medicine on an old person very weak in body, and perhaps, therefore, more amenable to the effects of the drug. Such cases when violently excited in asylums, are far worse to manage, and cause far more anxiety than stronger patients, and, therefore, it is more important to have a mild and safe sedative.

Puerperal mania.—E. B—, æt. 33. This woman had been insane for four days, having been confined of her fifth child six weeks ago. She at first began to be suspicious and jealous of her husband, then became sleepless, restless, lost all interest in her children, and then got very violent.

On admission she was confused in mind, but soon became violently maniacal. Her temperature was 97.2° , pulse 92, strong; breasts full of milk. The usual measures were taken to stop the secretion of milk and relieve the breasts, and she was ordered a drachm of bromide of potassium and of tincture of cannabis every three hours during the day. By the end of a fortnight she was free from excitement, but was rambling in mind and full of queer constantly changing delusions. She ate and slept well most of the fortnight she was on the medicine. Her temperature fell to 96° . She has gone on

improving, but rather slowly, and it was three months before the confused suspicious state of mind passed away. She often got, during that time, a drachm of the bromide at night for sleeplessness with the best effects. She now is almost well. Her recovery has been delayed by menorrhagia.

I am inclined to think I pushed the medicine too far in this case, and subdued the violent excitement too quickly. The prolonged after stage of confusion of mind, and the great fall in temperature, makes me think so; still the sedative effects were here most marked.

Melancholia with excitement and hallucination.—M. C—, æt. 60; a sempstress, unmarried, who had been insane for about three months. The immediate cause of her insanity is stated to have been a sudden shock which she received from a nephew shouting in her ear that he would kill her. She had “brain fever” twenty years ago, and is stated to have been rather “nervous” and irritable ever since. After the shock she got depressed in mind, and began to take fancies that people were going to hang her, that dogs were going to worry her on account of the crimes she imagined she had committed. She got so depressed in mind that she many times attempted to commit suicide by strangling herself. Had been sleepless. No hereditary predisposition to insanity.

On admission she was dull in mind, but quite coherent and rational on all points except that she said she was to be hanged. She was short and rather stout; tongue furred; pulse 96, very weak and thready; morning temperature 97·6°; evening temperature 97·2°; weight, 134½ lbs. Her pupils are both contracted and her eyes suffused.

For the first month she got no medicine. During that time her average morning temperature was 98·1°, and her evening temperature 97°, and the pulse was 100 and remained weak. She ate pretty well, and gained 3½ lbs. in weight in that time. She did not sleep well. Her delusions remained, and she got more depressed in mind. She was then put on one grain of opium three times a day. She slept better while taking this, but her depression of mind got worse. She had hallucinations of hearing, and after a fortnight the opium had to be given up. While taking it her temperature in the morning was 7° lower than it had been, and in the evening 1° higher, while her pulse was ten beats lower. She ceased to gain in weight after getting the opium. After this, various modes of treatment were adopted, and amongst others she got occasional doses of tincture of cannabis indica; but she continued to get worse and to lose in weight until, at April 1st, 1868, her state was the following:—“Is much excited, sleepless, restless by night and day, cannot employ herself in any way, imagines that she is to be hanged every minute, begs every one about her for a ‘reprieve,’ tries to get forcibly out of the ward door to get one; tries sometimes to commit suicide; says her brain is

'on fire,' and cries out, 'My head, my head—I'm confused. I don't know what I'm doing—I'm mad.' Has lost a stone in weight."

She still got worse, requiring stimulants to keep her up until the beginning of August, when she was put on drachm doses of bromide of potassium thrice a day with scarcely any good effect. By way of experiment a drachm of tincture of cannabis Indica was added to each dose about the middle of August, and the effect of each dose of the mixture was quite marvellous. She at once became quiet, slept at night, took her food better, began to be industrious, and was sent to the convalescent ward, and to see whether this improvement was really due to the medicine it was discontinued and in two days she was nearly maniacal again. It was continued regularly for six weeks. She gained ten pounds in weight, and then began only to get a dose of the medicine when she felt her head getting confused. She used to ask for it to clear her head, and said its effects were "miraculous." She ceased to have the hallucinations. She remained in this state till December, requiring no medicine at times at all. At that time she began to get worse. She was then put on regular doses as before, and the attack was quite checked, but in January she got worse in mind and more stupid. She remained quiet till July following, getting the medicine regularly. It then lost some of its good effect, but still subdued the excitement.

It was through this case that my attention was first directed to the power of a mixture of tincture of cannabis and bromide of potassium to allay excitement of the brain. I never in my experience of over 2000 cases of insanity had seen anything so wonderful. It seemed a direct antidote to the morbid action of the cerebrum. I thought from the beginning that the woman had limited softening somewhere in the ganglia at the base of the brain. The contraction of the pupil, the small pulse, the hallucinations of hearing, and the unimpaired intelligence on many points seemed to point to some such lesion. If my diagnosis is correct, of course complete recovery could not have been expected. In no case in which I have given it since have I seen quite such good effects at once. Its sedative action I have seen as powerful, but it must be admitted that it is seldom, indeed, in therapeutics that we are able even temporarily to remedy a morbid action of the cerebrum so severe, so long continued, and so obstinate.

Insanity at the change of life.—A. H.—, æt. 47, a married woman, who had lately ceased to menstruate, and who had been insane for three months; she had been restless, sleepless, noisy, complaining of all sorts of imaginary ailments, and had attempted to commit suicide.

On admission, she was depressed and restless looking. She complained of bodily weakness and many ailments. Pulse 75, good;

temperature, morning, $97\cdot3^{\circ}$, evening, $97\cdot1^{\circ}$; weight, 130 pounds; no bodily disease to be discovered.

She remained from May till the following January in the state described. During that time she got various medicines, chlorodyne, Pil. Aloes et Fer.; quinine and iron, and Tr. Valer. co., but she got no better. In January she was put on a grain of opium, three times a day. She was kept on this for about three months. It seemed to produce improvement, at first procuring sleep and allaying restlessness, but there was no permanent improvement in the mental depression. She lost six pounds in weight, and her average temperature rose $\cdot9^{\circ}$ in the morning, remaining the same at night while on the opium. In April she was put on half-drachm doses of bromide of potassium at bedtime. This at once procured sound sleep, and after about a fortnight the restlessness and depression were visibly allayed so that she could settle to regular useful employment. The medicine was continued till July, when she had gained more than a stone in weight, and was apparently well in mind. As the case had been so long insane she was kept in the asylum till September, 1868, in case of a relapse, was then discharged recovered, and has kept well since.

This is a good example of the good effects of the bromide alone in climacteric insanity. It is usually subacute in its character, and does not require such large doses. I was beginning to despair of seeing any improvement in the case when the bromide was tried.

General paralysis.—T. D—, *æt.* 50, in the end of the first stage of general paralysis. Before admission he had been much excited, and had all the characteristic delusions of the disease about his immense wealth, &c.

On admission his speech was affected slightly, and he had all the most characteristic symptoms of general paralysis. He became worse rapidly, getting more and more excited. He was exceedingly noisy by day and night, filthy in his habits, and so constantly attacking and interfering with other patients and attendants that it was nearly an impossibility to prevent him from being injured. Indeed, on two occasions he was severely hurt by fellow patients. There seemed to be no alternative between almost constant seclusion and the risk of accidents. In this state he was put on a drachm and a half of the bromide with the same amount of the tincture of Indian hemp thrice a day, and after he had taken it for two days he became quite manageable. After about a fortnight it was found necessary to reduce the quantity of the bromide, on account of the persistent drowsiness and the furred tongue it was causing; but five-grain doses, however, were given until that attack had passed off, and with the same sedative influence.

This case is merely a type of general paralysis in the excited stage.

Such a patient is, without exception, the most troublesome class of inmate of an asylum.

Summary.—1. The preceding observations consist of three parts. 1st. Experiments to determine the effect on maniacal excitement of single doses of certain medicines, stimulants, and food. 2nd. Experiments to determine the effect on maniacal excitement of prolonged courses of certain neurotic medicines. 3rd. An account of clinical observations and experience of the effects of the same medicines in all kinds of insanity.

2. To compare the effect of opium on maniacal excitement, with that of bromide of potassium, with that of cannabis Indica, and with that of a mixture of bromide of potassium and cannabis Indica, and to compare the effect of these with that of a pure stimulant in large quantity, and with that of a nutritive food, eleven maniacal patients were treated with drachm doses of each of the medicines, and with four ounces of whisky, and the beef tea made from a pound of beef on successive days, and the results noted. The experiments were repeated from fourteen to twenty-nine times.

3. A mixture of one drachm of bromide of potassium with one drachm of the tincture of cannabis Indica is more powerful to allay such excitement than any of the other drugs or stimulants tried. It is more uniform and certain in its effects, more lasting, interferes less with the appetite; and to produce the same effect the dose does not require to be increased after long-continued use.

4. Single doses of opium tended to raise the temperature and to lower the pulse; single doses of the mixture above-mentioned to lower the temperature and quicken and weaken the pulse, of bromide of potassium alone to raise the temperature and lower the pulse, of cannabis Indica alone to raise the temperature and quicken the pulse, of whisky to lower the temperature very much and slightly to quicken the pulse, and of beef tea to lower the temperature in the least degree and to lower and strengthen the pulse.

5. By giving bromide of potassium and cannabis Indica together, not only is the effect of either given separately immensely increased, but the combination has an essentially different action from either of them given alone.

6. Bromide of potassium alone can subdue the most violent maniacal excitement, but only when given in immense and dangerous quantities, and its effects are so cumulative while so given, that after they have once begun to appear they increase for days after the medicine has been stopped, almost paralysing the cerebrum and sympathetic.

7. To produce sleep in mild excitement, one drachm of the bromide of potassium is about equal to half a drachm of laudanum. To allay maniacal excitement, forty-five grains of the bromide and

forty-five minims of the tincture cannabis are rather more than equivalent to a drachm of laudanum.

8. Seven cases of chronic mania were treated for twelve weeks with opium, in doses rising gradually from twenty-five minims of the tincture up to ninety minims three times a day, and the results noted. After getting no medicine for several months the same cases were treated with a mixture of bromide of potassium and cannabis Indica in gradually increasing doses, and the results noted and compared with those of the opium treatment.

9. Under the opium treatment the patients all lost in weight continuously; their morning temperature was lowered and also their evening temperature, but the latter (which was too high, and its being high was a bad sign) very slightly, and their pulse was decreased in frequency. The opium allayed the excitement in the larger doses, but it soon lost its effect.

10. Under the bromide of potassium and cannabis Indica treatment the patients only lost in weight very slightly for the first six weeks, and after that they gained, their weight being more at the end of eight months' treatment than it was to begin with. Their appetites were not interfered with. Their temperature fell, especially their evening temperature, and the pulse was slightly increased in frequency and weakened in force, while the excitement was subdued, and the medicine showed no signs of losing its effect, even after being thus used for eight months. The maximum of good effects and the minimum of the ill effects of a sedative drug were thus obtained by using the bromide of potassium and the cannabis Indica in combination.

11. The bromide of potassium alone may be continued for months in doses of half a drachm three times a day, and the patients gain in weight and remain healthy in body.

12. Cannabis Indica being a diuretic, and the bromide of potassium being carried off by the kidneys, it is probable that the former in that way helps to prevent the cumulative action of the latter when given alone.

13. When the two are given together, the first symptoms developed are those of the cannabis Indica, but these soon merge into a state of drowsy calmness of the nervous system which is in all respects the opposite of nervous irritability.

14. Fifty-one cases of various forms of insanity were treated by bromide of potassium alone or along with Indian hemp, and the results were that eighty per cent. of these were benefited more or less in some way, and twenty-five per cent. were most decidedly benefited.

15. The milder cases of puerperal and climacteric insanity were sometimes remarkably benefited by drachm doses of the bromide of potassium given at night.

16. In some of the cases of acute mania the excitement was subdued in a few days by the bromide combined with Indian hemp in doses of from half a drachm to a drachm of each given three times a day.

17. In some cases of periodic mania and general paralysis all the worst symptoms of maniacal excitement were allayed by giving a mixture of bromide of potassium and cannabis indica in doses of from half a drachm to a drachm and a half of each three times a day. This was continued in one case for nine months with the best effect.

18. In three cases of periodic mania, attacks were cut short by a mixture of the two medicines, or by the bromide alone. In one of these complete recovery followed.

19. Fewer cases of simple melancholia were benefited by the bromide alone or along with Indian hemp than any other form of insanity. Some were made worse by them, but in one case of this disease where there was great excitement and hallucination of hearing and suspected organic disease of the brain, the combination gave immediate and complete relief of all the symptoms for four months.

20. One case of senile mania was successfully treated at home by a mixture of the bromide of potassium and tincture of cannabis Indica, when she was to have been sent to an asylum. It seems probable that some such cases, and also patients with short attacks of mania might be treated by the same medicines at home, when at present they have to be sent to lunatic asylums, on account of the want of such a safe and powerful sedative.