

pathological appearances observed in those who have died of the disease. I have confined myself to the ordinary, characteristic mental life of epileptics. If I have succeeded, you will be enabled to take a wider and broader view of the relations of this large class of unhealthy organizations moving amongst us; you will come to the conclusion that epilepsy is no bodily disease, to be relieved by a pill or a potion; but a mental blight poisoning the purest and kindest natures, darkening the brightest intellects, and prostrating the best and noblest resolves before secret, sometimes slight, irregularities of the nervous system, which constrain, compel; and over which neither reason nor religion can exercise any influence.

CLINICAL CASES.

The Bromides of Potassium, Cadmium, and Ammonium, in the Treatment of Insanity. By THOMAS B. BELGRAVE, M.D. Edin., Assistant Medical Officer, Lincolnshire County Asylum.

(Read at the Annual Meeting of the Medico-Psychological Association, held at the Royal College of Physicians, July 13th, 1865.)

THE following experiments were initiated more particularly with a view to ascertain the therapeutic value of two of these agents in the treatment of "general paralysis;" and though yielding no evidence of our ability to avert the ordinary termination of this malady, they reveal the possibility of controlling some of its more serious occasional manifestations, as also similar symptoms in other forms of mental disease.

Fourteen cases of "general paralysis" were taken, none, however, being in a very advanced stage.

The bromide of potassium was administered in doses of five grains three times a day.

In Cases 1 to 5 (males) the only effects observed were a slight retardation and enfeeblement of the pulse, with some amount of general depression, as evinced by increased lassitude and indisposition to stir or talk. Cases 6 to 11 (females) exhibited similar results; two of these patients, however, emaciated rather rapidly, and one, hitherto remarkable for hilarity and cheerfulness, became fretful and low-spirited.

Case 12 was that of a stout man, who had shown clear symptoms of general paralysis during nine years, but which remaining stationary the greater part of that time, it had been possible to employ him uninterruptedly on the asylum farm. The influence of the drug on him was very conspicuous; in four weeks he had become depressed in mind, and much thinner and weaker; these effects becoming more marked, the medicine was discontinued, when he rapidly regained his former embonpoint and general condition.

Case 13 was that of a man who was in a state of almost constant excitement, walking rapidly about the airing-courts and ward, swearing and cursing in a very loud voice, frequently striking at imaginary objects, and occasionally arriving at a pitch of great fury. Opiates aggravated his condition, and hyoscyamus and the other remedies tried proved powerless to calm him. He was usually as noisy during the night as in the day.

Having taken the bromide of potassium about ten days, a marked diminution in the more painful symptoms was observed; he had obviously become calmer, he addressed his imaginary enemies in a lower tone of voice, his bursts of passion were less frequent, and he ultimately became quiet; nor has the paresis since advanced in any great degree.

It is possible that the gradual accession of calmness in this case was the natural sequel to the preceding excitement, but the appearance of the case conveyed the impression of an early fatal termination from exhaustion.

Case 14.—A female, in a more advanced stage of the disease than any of the preceding, subject to delusions sometimes of a cheerful, at others of a painful, character. When under the influence of the latter, she is exceedingly fretful and noisy, often shouting and crying, seizing everything movable within reach, and when resisted becomes exceedingly violent, her excitement being followed by very great depression.

Having taken five or six doses of the bromide of *ammonium*, she became calm, and continued so an unprecedentedly long period. Her excitement still recurs now and then, but is invariably subdued by three or four doses, without the induction of subsequent depression, such as characterised the majority of those cases in which the bromide of potassium had been administered.

The next eleven are cases of epileptics, specially selected in consequence of their extreme irritability and proneness to violence.

The results are probably inconclusive with reference to the power of these drugs to *permanently* diminish either the number or the severity of the fits, but afford important evidence of their influence in allaying those manifestations of the disease which so often render the unhappy subjects of it just objects of dread.

Case 15 may be viewed as typical of the class for which the

bromides are singularly suitable, exerting a power as evident and more certain than obtains with many acknowledged remedies in our art. It is that of a remarkably powerful, agile, muscular man, aged twenty-seven, of ferocious aspect and great cunning, always requiring much tact and forbearance on the part of his attendants, apt to strike violently on the slightest real or supposed provocation, and occasionally subject to indescribable paroxysms of excitement, in which his craving and delight appear to be to do bodily harm to his fellow-creatures. His worst periods of fury occur shortly before a fit, but sometimes do not subside until he has had several. They are always of a very severe character. He has been an inmate of an asylum about ten years. In consequence of his frequently manifested disposition to fly at anybody who may be near him, he has been encouraged to walk in a path in the airing-court on a lower level.

The course of bromide of potassium was commenced after a period of excitement lasting several days, during which he ran about his room, climbing the walls in the most remarkable manner, champing his teeth, barking, and uttering cries unlike anything human. When visited, four powerful attendants required to exert all their strength and agility to escape being bitten, kicked, or otherwise hurt.

The medicine was administered in doses of ten grains three times a day. During the first fortnight or three weeks his temper was not improved by the treatment; on the contrary, increased vigilance and care became necessary; the fits were *suppressed*, and his general appearance was altered.

About a month after having taken the bromide, the fits returned, though with less than their former frequency, and he presented very obvious signs of an alteration in what may be termed his emotional condition.

He rarely complained of anything, and appeared comparatively contented, frequently engaged in quiet conversation with his companions, and now and then on frosty mornings he would run and dance about the garden, without losing the power to check himself when necessary, or inspiring any fear among those present.

The drug was discontinued in two months, and its sedative effects have been of a somewhat permanent character, as during the last four months he has enjoyed an immunity from uncontrollable excitement. He continues, however, occasionally to exhibit indications which were formerly viewed as invariable precursors of severe epileptic irritation, but these speedily disappear after a few doses of the bromide, and, indeed, he is no longer a source of anxiety.

The treatment has been attended with the additional advantage of having cured him of his propensity to masturbation, and has altered the character of the secretion from the skin, which has lost its former intense odour.

Case 16.—This patient, a powerful man, aged thirty-one, resembled the preceding one in bodily condition and appearance, but was more impulsive, less cunning and active, and in a more advanced state of dementia.

It had long been necessary to exercise the greatest care and circumspection in managing him, in consequence of the suddenness and exceeding force of his blows. On one occasion, without increased excitement having been previously detected, he struck his fist through a pane of plate glass nearly half an inch thick, sustaining but a slight abrasion from the skin of the knuckles.

So irritable was he generally that either speaking or looking at him would arouse dangerous excitement; at first, showing itself by laughter, jumping, and other evidences of delight, or by approaching his interrogator with a savage aspect and in a significant attitude.

The bromide of potassium in doses of ten grains was prescribed, and during the first three weeks of its administration the patient was more confused, had a more ferocious expression, never answered a question but with an oath and in the most savage conceivable manner. During this time he was comparatively free from fits, but when they returned he became very much better in mind and body, being able to converse calmly and even rationally, never appearing excited or angry; and on one occasion, when a fellow-patient struck him in the face, he did not even return the blow, but reported the circumstance to the attendant. He is now thinner, though not addicted to masturbation. The remedy has evidently exerted a powerful influence in allaying his chronic state of erythism; it is, however, still apt to manifest itself, but usually yields to a few doses of the bromide.

Case 17.—A thin, strumous young man, with extensive caries of the bones of one leg, several years the subject of epileptic mania.

At intervals of two or three weeks he became irritable, was constantly in motion, and swearing, nagging, complaining, teasing his fellow-patients, and was quite incapable of being appeased by any moral or material means.

The bromide of ammonium was prescribed in doses of ten grains three times a day. Its effects have been very gratifying; without losing flesh, or acquiring a more unhealthy complexion, he is now less irritable, and gives no annoyance.

Cases 18 to 25 were ordinary instances of epileptic mania. They have all derived more or less benefit from a month's course of one or other bromide, the good effects continuing to the present day, two months after the treatment.

Case 26.—A young and powerful woman, the subject of epileptic mania, usually extremely perverse and irritable, subject to frequent paroxysms of violence, sometimes of incredible intensity, and which

would break out when she was alone, and without the slightest obvious cause.

Took the bromide of potassium in doses of ten grains. During the first three weeks, instead of having about three fits daily, she had scarcely any, but appeared worse in her general health. Her fits returned gradually, and since then she has been surprisingly industrious, docile, and amiable.

Case 27.—A male, age about fifty, stout and strong. Is much demented, and insusceptible to moral influence. Is constantly walking about, swearing and ejaculating in a loud voice and excited manner.

Was much calmed after a week's course of the bromide of potassium; he continues to walk about incessantly, though less rapidly, and mutters in a low tone.

His inconvenient excitement has several times recurred, but has always yielded to the treatment in a few days, no injuriously depressing effects following.

Case 28.—Chronic mania; a powerful young woman. Has been insane several years, but during the last few months has become idle, perverse, passionate, destructive, and so noisy as to be heard at a considerable distance from the asylum. Is becoming thinner, and shows signs of commencing exhaustion.

The bromide of potassium was prescribed in doses of ten grains three times a day, and in about three weeks there was a marked subsidence of the excitement, the patient talking in an ordinary tone of voice and more rationally. A few weeks after the discontinuance of the medicine her agitation returned; she ran about the airing-court, waving her bonnet, shouting, and misconducting herself in her former disorderly manner. This condition became more distressing, and her speech more incoherent, when recourse was again had to the bromide, with the effect of inducing in three days a state of comparative composure. The medicine was continued another month, and the patient has been quiet, more orderly, and in an improved state of mind and body.

Case 29.—*Recurrent mania*; a male, aged forty-nine. Has been subject to occasional severe, though short, paroxysms of mania during the last twenty-five years. They have, as far as can be ascertained, always been abrupt in their origin and termination. When suffering from them he is excessively noisy, violent, destructive, and abominably dirty. During his lucid intervals, ordinarily of two or three months' duration, he is exceedingly well behaved, industrious, and useful.

He took the usual dose of the bromide of potassium, with the singular effect of reducing the severity, while it protracted the duration, of the attack.

It induced in this case an unprecedented condition of mind;

though troublesome and fidgety, he was supportable, but appeared much confused and demented, and remained in this condition nearly four months, whereas the ordinary duration of his paroxysms was ten days or a fortnight.

Case 30.—A male, aged thirty-four; a strumous person, with evidence of pulmonary tuberculosis; the subject of chronic mania; quite incapable of appreciating any moral consideration; is incessantly running about, hopping, dancing, bawling, shouting, and singing.

After having taken the bromide of potassium a few days, he became more orderly and quiet than he had been during the two previous years, but did not look so well, and had apparently lost flesh. The medicine was at once discontinued, and he soon regained his former condition of bodily health, and during three months he remained quiet. His excitement has recurred once since, but speedily succumbed to small doses of the bromide of *ammonium*; and on this occasion his bodily health was not appreciably affected. In consequence of the phthisical tendency of this patient, the case is recorded as illustrative of the power, rather than the suitability, of the drug (the bromide of potassium) in this particular instance.

Case 31.—A female, aged twenty-seven, the subject of chronic mania. Has, during the last year, gradually become more excitable and violent, and from her occasional persistence in attempting to attack the same person she has required more than ordinary care in management.

A course of bromide of potassium had the effect of calming her, and she has since been industrious and amiable, and in good bodily health.

Before this special treatment she had symptoms of ovarian irritation, and her excitement was in some measure due to this condition.

Case 32.—A female, aged forty-five, the subject of sub-acute mania. Is exceedingly giddy, and unable to stand or sit quietly a few seconds together; her eyes have a rolling motion painful to witness, the sclerotics are much injected, the face flushed, the head hot, the pupils contracted, bowels habitually sluggish, the catamenia regular. Talks at times coherently, at others not so, always rapidly and in a peculiar spasmodic manner. Appears to be conscious of her insanity; is extremely restless and sleepless, and very destructive to clothing; complains much of intense pain in the head.

In the medical treatment of this case purgatives and diuretics were freely administered, cold was applied to the head and upper part of the spine, and counter-irritation was also had recourse to. The result of these measures was to slightly alleviate the pain in the head, but not to induce repose during either night or day.

Morphia was tried, but, as was anticipated, it aggravated her sufferings; hyoscyamus, in full doses, gave some relief.

The bromide of potassium, in doses of ten grains, produced a decided and very beneficial effect, diminishing all the signs of congestion within the head, affording complete freedom from pain, inducing sleep, and restoring her natural cheerfulness.

Case 33.—An obstinate and severe case of melancholia in a female of middle age, characterised by incessant attempts at self-destruction.

Half grain doses of the hydrochlorate of morphia were given, and had an evident and beneficial effect. In the course of time increased doses of the narcotic were indicated, but, to avoid them, a trial was made of the bromide of potassium, at first alone, but later in combination with the solution of morphia. The results were singular and important; the patient appeared to be entirely free from the influence of the morphia, and was worse than she had ever been; the dose of the hydrochlorate was then increased to one grain, but with the same negative result; the pupils were dilated, the patient was restless beyond expression, and continually praying to be destroyed. The bromide was then discontinued, but the morphia, in grain doses, was given as frequently as before. In about three days it was observed that she was coming under the influence of the narcotic, and under these large doses she has since had a partial truce to her sufferings.

In another male patient, an epileptic, who is subject to occasional attacks strangely resembling "delirium tremens," and who is invariably benefited by opium, was on the last occasion not so, in consequence of having taken the bromide of potassium during several preceding days. About three days after this had been discontinued he again became susceptible to the influence of opium, and regained his ordinary condition. These two cases tend to show that the physiological action of bromide of potassium is the opposite of that of opium, and this view is in a measure confirmed by the beneficial effects of the bromide in Case 32, one which exhibited every sign of congestion of the brain, and was clearly, though not unexpectedly, aggravated by morphia.

The bromide of ammonium is now being administered to twelve other patients, all subject to more or less painful and dangerous excitement; and in ten of these a sedative influence is being evidently exerted. The action of this drug differs from that of the bromide of potassium, in being less rapid and powerful, producing no depression nor causing any diminution in weight. Of the two drugs, it is the more suitable in cases where there is emaciation or debility. The bromide of potassium exerts a sedative action on the organic functions of the brain, and probably indirectly on the intellectual functions; and if Schroeder van der Kolk's theory of epilepsy contains

any truth, viz. that through a disturbed state of polarity of the spinal cord an abnormal accumulation of nervous force takes place, analogous to the convection of electricity in the Leyden jar, we must attribute to these drugs an action on the spinal cord.

Various observers have reported differently concerning the action of the bromides in epilepsy.

These experiments tend to show that they exert a marked *temporary* power in diminishing the number of fits; but inasmuch as the mental excitement is in consequence increased, this property detracts from their value as therapeutic agents in the treatment of this disease when complicated with insanity.

Very probably they also exert a limited power in permanently reducing the number of fits.

The following table supports this view; it refers to the number of fits seven patients had during May, the month in which they took the bromide, and also the previous and following months. During the first *fortnight* in May, however, five of them were comparatively free from fits.

CASE.	APRIL.	MAY.	JUNE.
A.	39	32	43
B.	41	38	46
C.	13	9	11
D.	6	1	6
E.	7	9	10
F.	9	4	9
G.	6	3	4

Of six patients who were weighed before and after having taken the bromide of ammonium a month, it was found that two had lost 1 lb., and one 3 lbs.; the others had gained, one 4 lbs., and two each $\frac{1}{2}$ lb. In two of those who had lost weight the result could be accounted for by an alteration in their diet, rendered necessary by their obesity.

The bromide of cadmium was tried in eleven cases of mania, with a view to relieve severe temporary excitement.

A single dose of one grain was found to exert a very rapid and powerful effect, causing abundant vomiting, a brisk action of the bowels, diminution in the force of the pulse, and the induction of a state of mental quietude, in two cases bordering on depression, which, however, passed off in a few hours.

Summary of the results of these experiments.

The bromide of potassium is antiphlogistic, and a sedative to the cerebro-spinal functions. It subdues the force of the pulse; induces loss of flesh and debility; allays nervous irritability and mental excitement; exerts a powerful temporary, but slight permanent control, over the number of fits.

It diminishes congestion within the brain and spinal cord. It is physiologically antagonistic to opium.

It is an anaphrodisiac, being equally useful, as such, in both sexes.

It exerts a deterrent action on the excito-nutrient and excito-secretory functions.

That its action, when once established, continues an uncertain but considerable time, and may be kept up by short renewals.

The bromide of ammonium resembles the bromide of potassium in its action on the nervous system, but is less powerful; and it does not induce emaciation nor severe general depression.

The bromide of cadmium is probably an irritant to the mucous membrane of the alimentary canal; its brief but severe calmative effect being principally the depression following the action of a powerful emetic and purgative, and not the result of a sedative influence on the nervous system.

The rapidity with which the patients recovered from the depression would indicate this view, and doubtless the more persistent benefit they derived was attributable to the free evacuations induced.

The action of this drug resembles that of tartar emetic or sulphate of zinc, but is more certain, rapid, and powerful in its effect; having treble the power of the former, and twelve times that of the latter.

It is exceedingly useful in severe exacerbations of mania.

The bromides of potassium and ammonium supply a want long desiderated, in the treatment of a numerous and dangerous class of chronic lunatics.