by side, separated the tumour from the brain-tissue, and from this ring a few vessels could be traced running into the texture of the tumours itself. The vessels outside the tumour were all surrounded by a cellular infiltration of the intervening tissues, and the perivascular lymphatic sheaths were much distended by epithelial proliferation from their walls; the calibre of the vessels was much diminished by the surrounding cell-growth. Small masses of red corpuscles were seen, surrounded by a cell-growth extending to as much as twelve times the diameter of the calibre of the vessels, the growth being of a fibro-nuclear structure, arranged in a concentric manner around the calibre of the vessel, and limited externally by a finely fibrous investing membrane, no muscular coat being visible. In some cases, the vessel seemed to be altogether obliterated by this investing growth. Between the vessels was a fibrous cellular structure resembling that within the vascular sheaths. Outside the investing membrane of the tumour was the degenerated and infiltrated *brain-tissue*. This was much more vascular than the tumour itself, but the vessels did not present anything abnormal, there was no infiltration of their sheaths, nor was there of the vessels within the tumour, the perivascular proliferation being limited to those vessels found in the membrane surrounding the tumour and separating it from the brain-tissue around. Wasted nerve-cells, broken up nerve-fibres, and leucocytes (of inflammatory origin) infiltrating the tissue were visible in the cerebral tissue immediately surrounding the growths. The tumours then had a sarcomatous structure, of the variety described by Virchow as *glioma*. The changes in the blood-vessels around the tumours, and in the brain-tissue in the neighbourhood of the morbid growths, must presumably be the result of slow changes of a subinflammatory character.

REMARKS.—This case presents several points of interest on which a little comment is justifiable. First of all, we have to consider the question—

What was the cause of his disease? He himself attributed it to a blow which he received six years before his death. Was he justified in forming this inference? It is not unusual to have a history of this kind in cases of morbid growths, as, for instance, scirrhus of the mamma. In many cases, doubtless, the association of an accident with a morbid growth is quite an afterthought, a mental condition only resulting from an inherent desire to find out a cause for any given effect. But, putting aside such cases where the association of tumours with previous accidents is purely imaginary, there remain a large number of instances where the two are connected together in the relation of cause to effect. When we consider what takes place in all inflammatory processes, especially bearing in mind the results of recent researches by Cohnheim and others, is it surprising that injury done to certain tissues should result in an abnormal kind of cell-growth at sometimes protracted periods after the original accident which set up a local and, perhaps, a rapidly subsiding inflammation? The leucocytes which escape from the vessels may, perhaps, remain in a condition of dormant vitality, and afterwards gradually set up a process of cell-proliferation resulting in some of the varieties of sarcomatous tumours, or of the more highly organised carcinomatous growths. This patient, Parsons, did not have a fit till two and half years after the original accident, but he had occasional headaches during the interval, and had never experienced any similar symptoms previous to the time of the blow.

The *diagnosis* of his condition presents some points of interest. When he first came under observation, he complained of occasional fits, the first of which came on two and half years after the time when he received the injury. His age (38) was opposed to the idea that it was an ordinary case of epilepsy, a disease which rarely manifests itself for the first time between the ages of twenty and forty. Then, again, he complained at that time of deep seated pain always localised at the same spot, on the right side of the head. An ophthalmoscopic examination of the fundus oculorum was not then made, but, doubtless, it would have been of material assistance in enabling one to arrive at a diagnosis. The conclusion formed of his condition was that he had some thickening of dura mater, perhaps a spicule of bone projecting into the brain-substance on the right side of the head, which was setting up the irritation resulting in the epileptiform convulsions. Eighteen months afterwards, when he again came under observation, it was easier to come to a definite decision as to the cause of his symptoms. He then had decided mental deficiency, showing that the grey matter on the surface was considerably involved, the convulsions persisted, but were more frequent than before, and he then had an advanced condition of optic neuritis such as is usually found in cases of cerebral tumour. It was clear that an abnormal growth of some kind existed within the cranium, that it involved the surface of the brain in the right temporo-parietal region, and that the base of the brain was not involved. There was never any affection of individual nerves to be noted, and vomiting was never at any time a marked symptom.

The next point to be ascertained was—"What was the nature of the tumour?" The situation was not that occurring with *syphilitic* growths, which usually involve some of the nerves at the base; besides, there was an absence of history and of all the usual evidences of syphilis.

The presence of pain and tenderness, and the existence of frequent attacks of convulsions, combined with the traumatic history of the mischief, were points in favour of some chronic *inflammatory changes in the meninges*, but this alone did not seem sufficient to account for all his symptoms. The morbid process seemed too slow and too prolonged for any form of *malignant growth*, and there was an absence of any *scrofulous* changes elsewhere in the organism to justify the supposition of a scrofulous or tubercular growth. A fibro-plastic tumour, *i.e.* one of the forms of sarcoma, of which the most probable in nerve-tissue is *glioma*, would account for all the symptoms, and we were bound to arrive at a decision in favour of this form of morbid growth by a process of exclusion of all other frequently occurring abnormalities.

When he came into the house for the last time, the day before his death, he had paralytic and other symptoms superadded to those previously noticed. His condition of stupor, the inequality of the pupils, and especially the extreme dilatation of one, indicated that the central ganglia were becoming involved, but still there was no implication of any of the ocular muscles or of the parts to which the cranial nerves at the base are distributed (the optic nerves alone excepted). There was some pyrexia at this time, indicating the existence of inflammatory change within the cranium, and it seems probable that the aggravation of his symptoms and the acceleration of his death were due again to a traumatic cause: another blow which he had received eight weeks before his death.

As regards *prognosis* in a case of this kind, one cannot be too guarded. Having made the diagnosis of the existence of a cerebral tumour, and having surmised that it is of a non-malignant character, we should be justified in stating that the patient may live for years, but that he holds his life on a very uncertain tenure. Some vital part may be attacked, some inflammatory mischief may be set up, or, perhaps, hæmorrhage may take place at any moment, possibly during a convulsive fit. The uncertainty of diagnosis in all cases of cerebral tumour should render an usually guarded prognosis necessary in these cases.

The *treatment* is, unfortunately, the most unsatisfactory part of such a case as the one we are considering. After having included the supposition of a syphilitic origin to the growth, we are helpless to treat the disease itself. But, inasmuch as there is always scope for doubt as to the nature of cerebral growths, and as the beneficial effects of iodide of potassium in syphilitic growths is indisputable, it is always desirable to give the patient the benefit of the doubt, and ascertain if any good can be obtained from this drug. After having administered the iodide in gradually increasing doses, commencing at four or five grains and continuing up to twenty or thirty grains, during a period of three or four weeks, we may conclude that no good will result from further continuance unless some good results have already begun to be manifested.

Presuming that this treatment is of benefit, we have very strong ground for the assumption that the disease is of syphilitic origin; but the facts do not warrant a positive decision in favour of syphilis, for the drug tends to cause absorption of inflammatory exudations as well as of those of a more specific character.

Should our efforts to treat the disease itself be unavailing, we are compelled to do what we can to relieve any symptoms which arise during the course of the disease; our efforts must, therefore, be directed towards the relief of pain, the prevention of convulsive seizures, and the checking of any inflammatory and congestive symptoms which may arise.

ON MORPHIA IN SOME CASES OF INSANITY.

By W. J. MICKLE, M.D., Medical Superintendent,
Grove Hall Asylum, Bow.

I VENTURE to record, in outline, the influence exercised upon certain subjects of chronic melancholia, by the prolonged use of small or medium doses of morphia. Stimulant and tonic effects were sought; narcotism, or any modification of it, was studiously avoided. In this attempt, the views of Dr. Anstie, as to true stimulation by opium, and the treatment of lowered function and devitalisation as exemplified in pain or spasm, are, in some sort, applied to the management of the functional depression, or organic deterioration, inducing varieties of melancholia. By giving it in moderate and stimulating doses only, it was hoped that morphia would tend to rouse defective cerebral function, and restore healthy nutrition; that the benefits derivable from the stimulant action of the alkaloid on the cerebrum and circulation would be secured without any of the drawbacks attending narcosis, or flowing from de-

range of nutrition, or of the vagus. There is nothing new in this plan which, however, seems to present several obvious advantages, when compared with others frequently advocated.

By adopting it, as is done by some practitioners, we escape the necessity of progressively increasing the doses, and pushing the use of the opiate, until enormous amounts are taken each day; and we avoid inducing an artificial toleration of the system for toxic quantities. Its tonic and stimulating influences flow most readily from moderate doses of the powerful neurotic in question, and continue so to do, when happily adjusted to the wants of disease. The amounts of it, which exert such influences, are not constant and definable by rule; they must be ascertained for each by experiment, and vary according to the quality and condition of the nervous system in different individuals.

A number of patients at Grove Hall, under care for melancholia during the last sixteen months, have taken moderate doses of morphia for lengthened periods. Excluding a few instances of acute melancholia, and melancholia with stupor, the persons thus treated were examples of one or other of two symptomatological forms. In one form, the patients were sorrowful and cast down, having chronic melancholia of a quiet character, with known suicidal tendencies, or overt suicidal attempts in eighty per cent., with melancholic delusions of the usual varied character, often with hallucinations, especially auditory hallucinations, and not unfrequently with refusal of food. The subjects of the second form had chronic melancholia, with some excitement, and many were more or less sullen, peevish, morose, and irritable, or, in occasional outbursts, became quarrelsome, threatening, or impulsively violent, under the influence of hallucinations or delusions. Such symptoms, though prominent on occasion, did not much affect the general character of the cases in question. The background of feeling, the mass of ideas, still presented the features of decided melancholia, though thus tinged with maniacal characters. Compared with the former class of quiet patients, the manifestations in the latter were those of greater objective hostility, of readier attempts to set themselves in opposition to their imaginary world of troubles, and to resent their fancied injuries. Four-fifths, however, were suicidal at one time or other during their malady; but the self-destructive impulse of several arose only at the acme of some melancholic paroxysm. To compare the influence of morphia on these two chronic forms of melancholia, it is convenient to make use of the results obtained in the last ten instances of each thus treated, or in twenty altogether. These twenty patients were males, and nearly all of them young or middle-aged soldiers. They were unpromising cases for any treatment. Their ages ranged from twenty-one to thirty-six years, with the exception of two, who were elderly men. The morphia treatment was pursued during periods varying from two to eleven months, or five months on an average. The stated duration of insanity, prior to this treatment being commenced, was from three to thirty-six months, or nine months on an average; but there is reason to believe that some had been insane much longer than was certified. The usual dose was a fourth or third of a grain of hydrochlorate of morphia, three times a day, and it was almost invariably prescribed in mixture with quassia or quinine, and dilute nitro-hydrochloric acid.

Morphia seemed to influence the mental condition of the ten patients of the quiet class as follows. In general terms, one was decisively relieved, and recovered; five derived indisputable benefit, the mental symptoms being much ameliorated, though recovery is still incomplete; two were slightly improved, their depression and distress growing less obvious; and two experienced no mental change. To avoid tedious statistics, we merely mention that, in the same ten cases, the aggregate effect on the bodily health was similar to that exercised on the mental condition. In many, it was noticed that when nutrition was improved, and the frame grew more robust, the cerebral powers also were re-suscitated, and these changes progressed with equal pace as a rule—a rule, however, to which there were many, and even striking, exceptions. The tendency for nutrition and mental power to be similarly affected by this special treatment was less noticeable in the second class of men above-mentioned, whose corporeal ill-health was more improved, on the whole, than was their mental derangement. Indeed, the *physique* of the second class, the more morose, irritable, and excitable persons, was affected quite as beneficially as that of the first, or passive class; while their mental aberration was less favourably influenced, on the whole, than was that of the quiet patients. This statement is very greatly strengthened by the fact, that the class now under consideration took morphia, in much the same doses as the others, during a period of more than six months, on an average, for the ten individuals; while the average length of the opiate treatment of the more passive patients was three months and a half. The more prolonged and thorough testing of morphia, therefore, in the persons of the irritable, surly, impulsive melancholics, was less successful, in reference to the mental symptoms, than was its

administration for a shorter period to those suffering from quiet depression.

Leaving now the comparison of the effects on the two varieties of patients, we may conveniently notice, under several heads, any improvement or change which occurred in the mental symptoms of the twenty men.

1. The effect of morphia on the delusions of melancholia may be thus described briefly. One had no delusion; thirteen of the remaining nineteen derived no marked or permanent relief from their delusions; while in six there was very great improvement or recovery in this respect. When delusions disappeared during treatment, the accompanying, though perhaps independent, hallucinations or illusions usually faded away also. Depression and emotional distress, though almost universally much lessened, did not undergo such decided or so early amelioration as the hallucinations or delusions of these patients.

2. With reference to the changes in the hallucinations of melancholia; hallucinations existed in fifteen cases, in six of which they disappeared during treatment, and in others were improved. As might be expected, the cessation of hallucinations was usually associated with decided, though sometimes only temporary, relief from delusion.

3. With regard to the alterations in the emotional characteristics of melancholia; three emerged from their cloud of depression while taking morphia, and ten became less depressed or anguished. On the other hand, while two became less excitable, irritable, and morose, these symptoms were aggravated, or the tendency to them developed, in three. The progressive increase of such a tendency is a connecting link between these and maniacal patients, and characterises a form of melancholia verging towards mania.

4. This leads to a consideration of the relation of morphia treatment to impulsiveness, or a threatening hostile disposition, on the part of these patients. Such symptoms were uninfluenced by morphia in three of the ten in whom they existed at one time or other; in three, they became less evident under morphia, or did not exist until after it was omitted; while in four they became more prominent, or arose whilst the patients were under the constant influence of the opiate; but one of the last became so extremely irritable, when the drug was experimentally stopped, that he was allowed to resume its use. Does a study of the physiological effects of morphia give any clue to this apparent variation in its effects on mental aberration? Dr. John Harley, in his work on *The Old Vegetable Neurotics*, has fully illustrated the position, that, on the brain, morphia in full doses has what he calls "two opposite effects—a hypnotic and an excitant"; the specific and individual effects being determined by peculiarity of nervous constitution, so that, while in some the two effects are nearly balanced, in others one or other of them preponderates. Thus, insomnia, restlessness, and delirium may ensue instead of sleep. He also theorises as to the production of delirium, cramp, or convulsion in one individual, by a dose which induces tranquil sleep in another, and an increase in the rate and force of the pulse. Assuming a similar variability in the influences of smaller doses, this view would suffice to explain why, in some instances, the calming tonic effect of morphia on the nervous-centres should be replaced by a disturbing operation, leading to hallucinations, irritability, or impulsiveness. Happily, these obnoxious results are rare, and may be avoided by the substitution of smaller doses, and perhaps without any sacrifice of the utility of the drug; for the effects in question may mean, not that the alkaloid, but the amount of it employed, was ill-adapted for the restoration of power in the particular case. We may briefly notice the influence, or apparent influence, of morphia on the general bodily health of the patients treated therewith.

In contrasting the two classes of cases discussed in the earlier part of this paper, it was mentioned that the aggregate beneficial influence exercised by morphia on the mental state of the subjects of quiet melancholia, was almost the same in degree as that exerted on their physical powers, nutrition, etc.; while, on the other hand, most of the somewhat irritable or impulsive patients—those whose melancholia verged towards mania—derived greater benefit to the bodily than to the mental health. Combining the two classes for examination, with reference to this point, we find that out of twenty, nutrition was immensely improved in two, decidedly improved in eight others, and slightly in four. A share of this physical improvement may fairly be placed to the credit of the ordinary tonics given with the morphia.

The behaviour of the digestive system under morphia may be noticed in this relation. In nearly all the tongue remained unchanged throughout, or the glossal changes were slight. In several, the tongue showed a tendency to become slightly larger, paler, and more flabby or tremulous. Two persons refused food while they were under the course of morphia; but, on the other hand, one or two who had declined their

diet, before the beginning of morphia treatment, did not do so during its continuance. Again, the appetite of one patient had not been disturbed by ten months of morphia, but shortly after the omission of the latter he refused to eat, and the mental condition retrograded. Another, who had partaken well of ordinary sustenance, while taking a grain of morphia daily for four months and a half, refused his diet, and became more vexed and tormented by hallucinations and morbid fancies, shortly after he ceased taking the opiate; and there is almost precisely the same story to tell of a third. The appetite of some grew better while they were taking the morphia mixture; many experienced no change in appetite or digestion; while four suffered from temporary gastro-intestinal derangement, as evidenced by constipation, abdominal pain, or anorexia, retching, etc. It may be mentioned here that the gastric disturbance, not infrequently caused by opiates, is often prevented or relieved by bromide of potassium. Dr. Da Costa of Philadelphia was the first, I believe, to announce or insist upon this. In some female subjects of melancholia, under notice some time ago, morphia and other opiates produced such effects as headache, giddiness, faintness, nausea, and vomiting. About thirty grains of bromide of potassium were directed to be taken in flavoured solution three hours before each dose of morphia, and a grateful relief was usually thus obtained from the unpleasant and disturbing effects of the latter. Several examples might be given in illustration, but one will suffice. Half a grain of acetate of morphia, twice a day, was prescribed for a female, aged 60, suffering from melancholia of some duration. Nausea, retching, and giddiness followed, but were always entirely dissipated by half a drachm of bromide of potassium, taken three hours before each dose of morphia. To prevent such disturbing and undesirable effects, various other modifications of the morphia treatment have been suggested. The hypodermic injection has been advocated, but on several of the occasions when it was employed, I have found the very derangement of the *vagus* ensue that we were attempting to avoid. Nor does there seem to be any advantage from the proposed substitution of meconine, or narceine, for morphia, under these circumstances. Dr. Blandford recommends the bimeconate, as the salt of morphia least apt to derange the stomach. Dr. J. Harley suggests, when hypodermic morphia causes distress, that one-ninety-sixth of a grain of sulphate of atropia should be injected in combination with it; the action of atropia being first induced, if necessary, by the injection of a similar quantity a quarter of an hour before the introduction of the combined dose. Hyoscyamus is said to prevent, to some extent, the deranging action of opium on the *vagus*; and Harley also states that conium will be an useful adjunct when "the hypnotic influence of opium is foiled by its excitant action on the motor centres".

Space only permits the insertion of a few of the leading results obtained from an investigation into the precise effects of the above doses of morphia on the temperature of the body.* Eight of the patients already mentioned were carefully examined in reference to temperature every morning and evening throughout three distinct periods. During the first, they had no medicine; during the second, they took a third of a grain of morphia three times a day; and during the third, no medicine again. In the first period, the average morning temperature ranged from 96.62 deg. to 98.16 deg. Fahr. in different individuals, and the total mean of the eight was 97.68 deg. Fahr.; while the total mean of the eight average evening temperatures, for the same period, was 97.6 deg. Fahr. In the period that morphia was taken, the average morning temperature rose slightly in seven of the eight persons, the increase varying from .03 deg. to .45 deg. Fahr., and averaging nearly a fourth of a degree in the eight cases. The average evening temperature was slightly elevated in all, while morphia was taken. The evening increase ranged from .08 deg. to .79 deg. Fahr., and was about two-fifths of a degree on an average. The mean temperature of the air, however, was about 3 deg. Fahr. higher, when morphia was being administered to the patients, than it had been during the preceding period. In the third period, the mean of the average morning temperatures was a minute fraction of a degree lower than in the first period, and the mean of the average evening temperatures was infinitesimally higher, showing that the effect of morphia in augmenting temperature was only temporary.

The mean of the average pulse of the same eight persons, during opiate treatment, was 68, both in the morning and evening. The usual effect was to reduce slightly the frequency of the morning pulse, while that of the evening was as often and as much accelerated as retarded. When morphia was curative in several other cases, presenting symptoms of active anguish and agitation, I found the pulse-rate fall when the drug was given, and rise as soon as it was omitted. On the other hand, morphia tends to increase not only the force, but also the frequency,

of the slow and feeble pulse of many a dejected and, perhaps, intensely suicidal patient.

It will be suggested, that the results effected by small or medium doses of morphia, in the twenty cases dealt with in this paper, are not highly encouraging. Several, who seemed to be improving under the alkaloid, failed in the onward advance towards full recovery after a certain point was reached. Their general health did not deteriorate, but morphia was unsuccessful in making any further decided impression on the mental state, although its use was prolonged, and the quantity was sometimes augmented to one grain and a half daily. It was with some disappointment that I compared the effects produced by morphia, in the men whose cases are discussed here, with the results derived from its thorough and prolonged use in certain females suffering from melancholia of some duration, and previously under notice. Of a series of twelve such, five apparently obtained great and curative benefit from morphia; while in three, the benefit was decided, though not so extreme. It is only fair, however, to restate the fact, that the males now under consideration were highly unpromising subjects for treatment, as regarded complete recovery. There is some difficulty in deciding how much of the benefit, apparently derived, was due to the bitters and acids combined with the opiate, and to such *juvantia* as the extra diet and wine allowed to some. The physical condition usually indicated the use of ordinary tonics; their local, as well as their constitutional effects, were presumably advantageous, in view of the gastro-intestinal derangement not unfrequently following the use of all opiates; and it was preferred to give the patients the advantage of every means likely to aid in securing a favourable issue.

A CASE OF MANIA, WITH ATROPHY OF THE BRAIN, ETC.

By J. LOCKHART CLARKE, M.D., F.R.S., etc.
Physician to the Hospital for Diseases of the Nervous System.

MRS. G., aged 76, was exceedingly emaciated, and had for many years suffered severely from asthma, for which a seton had been inserted, fifteen years back, in the left arm. The paroxysms of asthma gradually diminished in strength and frequency, and for the last two or three years had almost disappeared, so that the seton was removed. Some months after the removal of the seton, she fell down without losing consciousness, but was unable to get up, or to speak, during the space of half an hour. After this attack, she frequently complained of giddiness and loss of memory. Some months later, the giddiness increased; she became weak and thin, and was somewhat excited, but suffered no headache whatever. One morning she fell down immediately after getting out of bed, and was quite unable to raise herself, but she retained consciousness. She soon got better, and continued to improve for a few months, when she suddenly became extremely excited, sitting up in bed and throwing about her arms or wringing her hands in apparent mental distress or despair, although, as I ascertained from her family, she had no actual grounds for any feelings of the kind. When I asked her what she wanted, she replied that she wished to die, that she had been wicked, and frequently she concluded by saying that she did not know what she wanted. On every other subject she was perfectly rational. She scarcely ever slept for long together without opium. This state of excitement lasted about two months, and was succeeded by greater weakness, by further loss of memory, and by giddiness. About six months later, another period of mental excitement commenced. During the whole day and night, except when she happened to fall asleep for a short time, she would try to get out of bed and wander about the house, or would sit up in bed throwing about her arms and turning up her eyes as if in despair, and crying frequently aloud—"Oh dear, what shall I do?" She was wholly unable, however, to give any definite or intelligible account of her mental suffering. Morphia and chloroform procured her some sleep at night. At the end of about three weeks, she became impressed with the notion that the house was on fire, and would frequently get out of bed and attempt to go downstairs for the purpose of escaping from the supposed danger; but, when prevented from so doing, she would sit on the side of her bed and repeat, almost uninterruptedly, from morning till night, the following statement: "It is as I tell you; it's fire; it is as I say." On all other points she was quite rational, and knew every one that approached her. This state of excitement was subdued for a time by the inhalation of chloroform, which was used every night, but without inducing complete unconsciousness. About half an hour or an hour after the inhalation, she would fall soundly asleep until about five in the morning, when the same ex-

* In some respects, these results are similar to those obtained by Dr. Clouston in his admirable investigation into the effects of tincture of opium on the temperature of the body in cases of chronic mania.