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 juvenia 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.

citement returned, and she would then pass the day in repeating the same expressions. This state continued for about a month, during which time she frequently refused to take food, declaring that she was unable to swallow; so that she was reduced to a state of great emaciation. Then she became quiet and comparatively calm, but still very uneasy and distressed in mind. For the first time, she complained of pain, all over her body. Her tongue was parched and dark brown; her pulse rapid and extremely feeble. After remaining for about a week in this condition, she gradually and quietly sank.

Post Mortem Examination Forty Hours after Death.—April 15th, Weather not warm. Along each side of the falx cerebri, the membranes were closely adherent to each other, and firmly attached to the side of the falx and to the skull a little beyond it. The entire brain was very small and particularly globular in shape. The veins on its surface were full of dark-coloured blood, and several large clots were found in the longitudinal sinus. Beneath the arachnoid, a quantity of fluid was found in the sulci between the convolutions, which in some places were extremely atrophied. At the vertex, over a somewhat circular area of about an inch and a half in diameter, on each side of the longitudinal fissure, the convolutions were so atrophied, that the spaces between them were in some instances three quarters of an inch in breadth. It was over this space that the membranes were adherent to each other, as well as to the falx and skull. The quantity of fluid which ran out from beneath the arachnoid was about two ounces and a half. The substance of the hemispheres was not at all soft. When sliced, the grey portion presented its normal colour and consistence, and was not unusually vascular. The lateral ventricle contained a small quantity of fluid. The right optic thalamus was decidedly smaller than the left, and somewhat soft. The corpus striatum on the left side was decidedly small, soft, and altered in shape, being bent, as it were, upon itself. The pons and medulla oblongata were very small.

REPORT ON THE SUPPOSED PRESENCE OF LEAD IN AERATED WATER FROM SYPHON-BOTTLES.

By JOHN ATTFIELD, F.C.S.,

Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain, etc.

IN a recent number of the BRITISH MEDICAL JOURNAL there appeared a letter, dated February 9th, 1874, and signed "M.D., F.R.S.," drawing attention to an examination of eight bottles of aerated water, each of which was stated to contain lead. The writer thought that the results of the examination should be made known to the medical profession and the public, he regarding such aerated water as a source of poisoning by lead. The Editor of the JOURNAL, commenting on the letter, suggested that, although the evidence as regards the presence of lead was strong, the metal was probably not present in all syphon-bottles of aerated water; thereupon the manufacturers of the metal fittings of such syphon-bottles (Messrs. Hayward, Tyler, and Co.) desired me to make an extended investigation of the subject, the results of which investigation I now describe.

Several specimens of aerated water taken out of syphon-bottles, of which some had been filled in London and others in the country, were first tested for metals generally—that is, not only for poisonous metals such as lead, but for iron and tin, metals of which cooking utensils and other vessels are made or lined, and minute amounts of which find their way occasionally into articles of food or drink, without, as is well known, doing the slightest harm to persons partaking of such food or drink. This preliminary testing showed, when the experiments were very carefully performed, that most of the specimens did contain a trace of a metal of some kind, but in such extremely minute quantity, that, whether harmful or harmless, could not be ascertained without further operations on large quantities of the water. About half a gallon of aerated soda-water was therefore made the subject of a single experiment. The still extremely slight amount of metal thus obtained was *not lead*; and further tedious experiments had to be conducted before its real nature could be definitively decided: *it was tin*.

While the experiments just mentioned were progressing, the water with which some of the specimens of aerated liquid were made was tested for lead or tin. Not a trace of either was present. The small metal ferrule in the syphon-bottles, with which ferrule alone is the aerated water in contact while in the bottles, was also analysed. It proved to be pure tin. The metal tap or valve forming the head of syphon-bottles was next subjected to examination. The aerated water is only in contact with this tap when the liquid is allowed to flow out into a drinking-glass, and therefore would not be likely to impart metallic impurity to the water; still, it is conceivable that by a culpable act of carelessness a tap might be so placed as to become corroded, and afterwards, without

being cleaned, be screwed on to a syphon-bottle. Neither of the taps that came under my notice gave any indication of ever having been so corroded. One tap, which had evidently been much used, was next carefully divided by a fine saw, and the whole interior thus exposed. Thorough scrutiny, by aid of a microscope, detected minute portions of a white powder adhering to the inner walls of the tap. Analysis of this incrustation showed it to be ordinary calcareous matter, such as commonly occurs in kettles and kitchen-boilers, and which is a common constituent of water used for drinking purposes. The tap itself proved to be pewter, the material of which metal drinking-vessels, such as publicans' pots, are made.

1. Some tin ferrules were placed in pure distilled water, in water containing the aerating gas, and in aerated water containing the carbonated alkali, generally present in aerated alkaline waters. Each of these liquids dissolved a trace of tin from the ferrules.

2. Into each of the three liquids named a tap was placed. Only in the distilled water was any metal from the pewter detected, showing that the aerated water of syphon-bottles cannot dissolve any of the pewter of the tap through which it flows when the vessel is in use.

3. A pewter tap, coated with silver inside and out, did not yield a trace of metal to either of the three liquids.

4. The three metals mentioned were exposed in the three liquids mentioned for one day and then tested, for two days and then tested, and for three days and finally tested. The results were as already indicated; namely, that only the harmless metal, tin, is slightly, very slightly, attacked by aerated waters—a trace, an insignificant trace, of the tin going into solution. A man would have to drink many glasses of such aerated water before he would have taken even a medicinal dose of a soluble compound of tin.

Conclusions.—1. The aerated waters of either corked bottles or syphon-bottles cannot, except by accident, contain lead. 2. Aerated waters in corked bottles may possibly contain in solution a trace of tin, derived from the manufacturer's mixing vessels—an amount smaller than that frequently found in food cooked in tinned saucepans. 3. Aerated water kept in syphon-bottles is likely to contain a trace of tin. 4. Makers of aerated waters may exclude even a trace of tin from the waters, not only by using manufacturing vessels silvered inside—a plan already extensively adopted—but also by silvering the tin ferrules of their syphon-bottles.

TEMPERATURE AS AN ASSISTANCE TO DIAGNOSIS IN SOME CASES OF ENCEPHALITIS.

By E. CHARLTON FOX, M.D., Redditch.

ON account of the difficulty of always accurately distinguishing between inflammation of the substance of the brain and inflammation of its membranes, and also because I believe that few cases of meningitis occur in which the brain itself is not, to some extent, implicated, I have, in these notes, used the term "encephalitis" in preference to "meningitis". Two years ago, while attending, in a large manufacturing town, a case of encephalitis (Mrs. B., aged 28), in which I took carefully the morning and evening temperature, I observed that the morning temperature was always higher than that in the evening. The following is the record of the case.

	Morning.			Evening.		
1st day	...	...	...	99.4 Fahr.	99.4	Fahr.
2nd "	...	...	99.8 Fahr.	99.0	99.0	"
3rd "	...	...	99.4 "	99.0	99.0	"
4th "	...	...	100 "	99.4	99.4	"
5th "	...	...	100.4 "	99.5	99.5	"
6th "	...	...	99.9 "	99.1	99.1	"
7th "	...	...	99.9 "	99.2	99.2	"
8th "	...	...	100.2 "	99.5	99.5	"
9th "	...	...	99.5 "	99.8	99.8	"
10th "	...	...	99.7 "	—	—	"
11th "	...	...	— "	99.0	99.0	"
12th "	...	...	99.4 "	—	—	"
13th "	...	...	98.5 "	—	—	"

Convalescence was now established.

It struck me that if this rule were constant, it would afford a valuable assistance in the diagnosis of the early stages of encephalitis, in which, as the following case shows, a combination of circumstances and symptoms may lead to erroneous conclusions.

Shortly after the occurrence of the case of Mrs. B., I was called to see a little girl, aged 13, "in a fit". Her mother said that a few weeks before she had had a slight one. From her age and appearance I imagined that the fits were hysterical, and caused by uterine disturbance; but the appropriate remedies for such a case did no good, and the cerebral disturbance grew worse. One morning, calling to see her,