not so far been found to be productive of tuberculosis in calves and other animals to which the milk was given.

It may be fairly assumed that in many of those cases of primary tubercular ulceration of the intestines or of tuberculosis of the peritoneum and mesenteric glands (tabes mesenterica), which occur in the human subject, the tubercular virus has been introduced with the food, and the absorption of the virus has taken place through some part of the digestive tract. These diseases are usually primary in young children; in adults they are mostly secondary to tubercular disease of other organs, especially of the lungs. On referring to the Registrar-General's Summary it is seen that in the ten years 1871-80 tubercular peritonitis and its allied disease, tabes mesenterica, caused amongst children under 5 years of age an average mortality of 2.55 per 1,000 per annum, which approaches closely the average mortality from measles (2.57 per 1,000) in the same period, and is more than twelve times as great as the corresponding mortality from these diseases of any other age-period of five years, from the age of 5 up to 100. Primary tubercular disease of the lungs in children under 5 years of age is a comparatively rare event. The average annual mortality from phthisis of children under 5 years for the decennium 1871-80 was only 0.77 per 1,000, and possibly some of the cases so registered were really secondary to primary tuberculosis of the abdominal organs. The extreme incidence of primary tubercular disease of the abdominal lymphatic system on young children is at once seen from these figures. In the matter of dietary there is one great distinguishing feature between this age period and all others. Under 5 years of age, milk—usually unboiled—forms the staple food of children.

Whilst not denying that the tubercular virus may find other means of reaching the digestive tract than through unboiled cow's milk, it appears to me that there are no sufficient safeguards in the management of town dairies to warrant us in assuming that milk from cows in an advanced stage of tuberculosis has no chance of being mixed with the milk of other healthy cows. In every dairy of any size there will probably be tubercular cows, some of them, perhaps, with tubercular deposits in the udders; and as it is the common custom with dairymen to mix together the milk yielded by different cows, it is not too much to assume that tubercle bacilli may be widely distributed in the milk supply of any town. It has been said that the tuberculosis of cattle is not the same disease as the tuberculosis of man, and that the absence of any proof of the human variety having ever been dependent upon ingestion or inoculation of the virus of the bovine variety tends to strengthen such a belief. To this it may be replied that the bacilli of bovine tuberculosis are identical—according to all bacteriological methods at present known—with those found in tubercular formations in the organs of man, and that although the disease presents anatomical differences in man and cattle, these differences may be explained as being due to differences of soil in the human and bovine tissues, the bacilli ingrafting themselves in those tissues which present conditions most favourable to their growth and development. Secondly, absence of proof may only mean want of observation or recorded data, and cannot be held to imply that at no future time will satisfactory evidence of the dependence of the human disease upon a bovine source be brought to light.

Having regard to all these considerations, surely the time has arrived when a radical change in the present methods of milk production and milk consumption is urgently needed. In the first place it should be rendered illegal for cows known to be suffering from tuberculosis to be kept in stock by dairymen and farmers for milking purposes; and, secondly, in no household should unboiled milk be consumed, more especially by children. No other animal food is consumed by civilised nations in an uncooked state; and by the light of our recently acquired knowledge it would appear that there is as much, or more, danger connected with the practice of drinking unboiled milk as of eating raw flesh.

Exposure to the heat of boiling water for five minutes destroys the life and action of the tubercular virus (Klein); and the same is true of the other specific disease poisons. By such simple means, then, is it possible to guard against an ever present source of danger, as well as to obtain protection from those possibilities of the introduction into our bodies of the viruses of enteric fever, scarlet fever, and the like, which the experience of past epidemics has taught us to be latent possibilities in milk, with powers of development at the most unexpected periods. If medical practitioners generally recognised the importance of these views, and

were careful to enforce them upon those entrusted with the care of delicate children of scrofulous diathesis or with hereditary tendencies to tubercle, a commencement would be made in the right direction, which would gradually extend itself through all classes of society.

CEREBRAL ABSCESS TREATED SUCCESSFULLY BY OPERATION.

By DAMER HARRISSON, M.K.Q.C.P.I.,
Honorary Surgeon to the Liverpool Northern Hospital.

THE case was one of traumatic origin, the injury having been received eleven years before urgent, and ten years before even slight, symptoms appeared.

The patient, a boy, aged 15, was admitted into the Northern Hospital, Liverpool, on December 22nd, 1887, with partial right hemiplegia and severe pain in the head. His parents gave the following history: Eight days before admission, he received a blow upon the right side of the head, which another boy accidentally inflicted with a pair of tongs. Three days afterwards, he was suddenly attacked with convulsions of the right side of the body. These appeared first in the arm, and then spread to the face and leg. When they had ceased, the patient found that he had lost more or less power on the whole of the right side of the body, and especially in the right arm. During the succeeding four days, he had eight similar attacks. These convulsive fits were accompanied by giddiness and pain in the head, but by no loss of consciousness. The pain in the head had increased in severity, and the paralysis had also increased, especially in the face and leg. Vomiting had occurred two or three times.

On admission into the hospital, there was marked paralysis of the right side of the face and neck, the right arm and the right leg. In the arm the extensors of the wrist were principally affected, the biceps next, and the deltoid only slightly so. In the leg the quadriceps extensor and the long extensors of the toes were the muscles chiefly paralysed.

There was very severe pain over the top of the head, not referred to one side more than the other, and the intellect was dull. The tongue was protruded towards the right side. There was impairment of vision in the right eye, but sensation over the surface of the body was quite normal.

The reflexes on the right side were as follows:—Superficial: plantar markedly diminished, abdominal diminished; deep: knee-jerk much exaggerated, no ankle clonus. Numerous moist rales and sonorous rhonchi were heard over the right apex, and bronchophony was marked posteriorly on the right side.

Soon after admission all the paralysed muscles were convulsed for about five minutes. Upon examination of the head no spot tender to pressure or percussion could be definitely discovered, but a cicatrix was observed on the left side covering a somewhat uneven surface of bone, and a further inquiry from the patient's friends elicited the following history: Eleven years before, when between 4 and 5 years old, he had received a severe blow upon the left side of the head, causing a wound from which bone was removed; this injury was followed by no severe symptoms. During the last twelve months twitchings in the right arm had been observed, which were confined to the flexors of the wrist, the biceps, and the deltoid. There had, however, been no fits except those already described.

From the history of the patient and the personal observations I have related, my colleagues and I came to the conclusion that there was probably an abscess of the brain, situated in the motor region of the cortex, and an operation was determined upon.

On mapping out the side of the head by Thane's method the old cicatrix was found to correspond in position to the upper part of the left ascending frontal convolution, and the centre of the cicatrix was therefore chosen as the site of operation; and on December 23rd an inch disc of bone was removed, the centre of the trephine hole being three-quarters of an inch in front of the fissure of Rolando. The bone removed was very adherent to the dura mater, and was found to be of very unequal thickness, a ridge of bone occupying its centre, having evidently pressed in an abnormal manner upon the brain. The whole extent of the ridge not having been removed by the trephine, it was followed up with a chisel close to the middle line and removed, leaving an irregular opening an inch by an inch and a half in extent. Having removed what

might possibly be a source of irritation, and as there was no bulging of the dura mater, I decided to postpone further procedure, in the meantime keeping the wound open, so that further exploration might readily be made.

December 24th. The patient passed a quiet night, with complete relief from pain, and was more intelligent. The plantar and patellar reflexes had become normal. Pulse 60; temperature normal.

December 25th. He had had slight pain in the head occasionally. The plantar reflexes were more marked, the limb becoming firmly flexed, and remaining so for some minutes.

December 26th. He had passed a restless night, complaining of pain at intervals; the right lower limb was tonically half flexed, and could not be extended, the plantar reflex exaggerating this contraction for a few minutes.

December 27th. He was rather more apathetic, and inclined to be drowsy. The temperature during the night 97.2° F., the pulse 45. Paralysis was absolute. The contraction of the right leg was more marked, the patella tendon reflex was absent, and the plantar reflex delayed.

I now considered it necessary that a further exploration should be made. This was effected by a crucial incision through the dura mater one inch in length; then, with a tenotomy knife, a puncture was made into the brain in a vertical direction for one inch and a quarter in depth, until a drop of pus was observed to have made its way along the blade; an incision was then made one inch in extent, through which nearly four drachms of foetid pus rapidly flowed, as if under the influence of considerable pressure. The abscess cavity was syringed out with corrosive sublimate lotion, and a horsehair drain inserted.

December 28th. He slept all night, and had no pain. The patella tendon reflex was just perceptible.

December 30th. He had not been so drowsy. The drainage was unsatisfactory, one drachm of pus having collected. The horsehair drain was removed, and a small india-rubber tube inserted.

January 1st. The right leg had recovered some power; the plantar reflex was much less marked.

January 2nd. The hamstring and quadriceps extensor muscles of the leg had recovered more power; facial paralysis was less marked. On January 3rd, slight movement was observed for the first time in the right arm, and on January 5th he was no longer drowsy, had no pain, and was quite intelligent and quick in answering all questions. The right arm could be rotated outwards at the shoulder. The leg had power of flexion, extension, and adduction. On January 6th, a hernia cerebri protruded from the wound an inch in height. On January 10th he could flex the arm at the elbow.

January 13th. Pressure having been applied to the hernia cerebri, it was observed that upon relief of pressure during the dressing of the wound, the pulse would rise from 60 to 84, becoming again 60 after two hours of pressure.

From this time the history of the case is simply an uninterrupted progress towards recovery. The hernia cerebri, which at one time assumed the proportions of a large walnut, entirely subsided under the influence of elastic pressure. The temperature was generally subnormal, and only reached 100° F. upon one occasion.

The patient was allowed to get up on January 29th, and could walk with some assistance; about a fortnight afterwards the drainage-tube was finally removed.

At the present time, April 15th, the patient is perfectly well—the only difference when comparing the opposite sides of the body, being found in the grip of the hands, the right hand grip being 27, the left hand grip being 28½ kilogrammes. Optic discs are normal.

REMARKS.—The duration of the latent period, eleven years, forms an interesting feature in this case, as I understand that there are not many recorded. The symptoms of localised disease during the latent stage, as shown by the twitchings of the right arm, and afterwards by the convulsions beginning in the arm before spreading to the face and leg, clearly point to the arm centre as the focal area of the abscess. The order in which recovery took place also supports this view. 1. The face and tongue. 2. Neck. 3. The leg. Lastly, the arm.

The localisation was much facilitated by the presence of a cicatrix indicating the point of original injury, but, in the absence of this, the extensive nature of the paralysis, which implicated so rapidly the face, tongue, and neck (the centre for the latter in monkeys being the first and second frontal convolutions), would

have led to the choice of the ascending frontal, rather than the ascending parietal, convolution as the seat of disease.

In diagnosing abscess rather than tumour, the factors chiefly taken into consideration were the original injury and the prolonged latency, afterwards followed by acute symptoms, accelerated by a recent blow, the symptoms bearing the character of a rapidly increasing focus exerting great pressure on surrounding parts.

The operations and after-treatment of the wound were conducted with the most careful antiseptic precautions. I regret that no ophthalmoscopic examination was made on the patient's admission, but his condition at that time would have rendered any satisfactory examination extremely difficult. The horsehair drain was a complete failure, but the india-rubber tube gave perfect drainage, showing that drainage by silver tubes is not absolutely necessary.

OPHTHALMOLOGICAL MEMORANDA.

EYE OPERATIONS: BROMIDE OF POTASSIUM.

THE JOURNAL has recently contained several contributions describing methods of employing cocaine in squint operations, the aim being to render the operation painless. Mr. Browne says: "Squint operation, even on nervous, frightened children, can be done painlessly." Immunity from pain is not enough for the "nervous frightened" child, whose fear must be allayed. Cocaine will not banish alarm. We are all, however, familiar with the soothing influence of bromide of potassium in emotional disturbance, and yet the virtues of this drug do not appear to have been utilised in relation to operations. It is now my practice to give to children who are to undergo operation a full dose of the drug, and operate during the calm which ensues. I now speak not of squint operations merely, but of eye operations in general. The suggestion I make commends itself; it does not need much advocacy. I shall mention only one recent case: C. H., aged 5, had double congenital cataract, a considerable portion of the lens being transparent. For both eyes the procedure was the same—needling, and several days afterwards linear extraction. On each of the four occasions cocaine was instilled, bromide (40 grains for the extraction) administered, the operation performed without difficulty, and followed by sound sleep. I tried to tear the capsule of the second eye without bromide, but the boy was unmanageable.

DAVID MCKEOWN, M.D.

Manchester.

TOXICOLOGICAL MEMORANDA.

TOXIC ACTION OF EXTRACT OF EUCALYPTUS.

A FEW days ago, a male patient, aged 25 years, took by mistake about five drachms of extract of eucalyptus, at 10.45 P.M., and laid himself down in bed again, after going to attend to a sick relative in the same room. Near 12 o'clock he felt faint and giddy, and as if he was being lifted up by the heels and his heels pulled up over his head. He also began to feel inclined to say all his thoughts aloud, and found some twitching going on involuntarily in his fingers. Thinking dreamily he might be poisoned, he drank a large glass of cold water, but did not vomit. His wife, aroused to his condition, came for me, and at 1.20 A.M. I found him with weak, rapid pulse (120), but quite sensible, and complaining of the above symptoms. Free vomiting (smelling and tasting strongly of eucalyptus) was caused by administration of mustard and water.

On page 840 of Dr. Lauder Brunton's *Materia Medica*, he says: "Eucalyptus acts chiefly on nerve centres; depression of brain, medulla and heart; drowsiness, feeble respiration, lowered blood-pressure, and fall of temperature.....Death from paralysis of respiration." At page 798 of the same book, caffeine is said to—"stimulate medulla and cardiac centres, and raise the blood-pressure."

As I was unable to find in any book, or remember an antidote for eucalyptus, I hastily prepared a hypodermic injection (Martindale and Westcott) as follows: Caffeine, 20 grains; salicylate of soda, 17½ grains; water, 1 drachm. After the emetic had acted, I injected into the arm six minims of the solution. All unpleasant symptoms speedily disappeared, and we sat talking till 3.30 A.M. when I left him apparently recovered.