anything pungent. He told me he generally got his first warning whenever sherry felt burning as he swallowed it. After about two days of great discomfort he got relief by being able to hawk up very frequently dark, blood-stained lumps of phlegm. This he kept constantly doing all day long for about a fortnight. He at the same time had a good deal of pyrosis and great mental depression. As the attack wore off the blood-staining got less and less; and, as he invariably examined each mass of expectoration, he got cheered by seeing it become yellow; then the yellow mixed with something clear and gelatinous, with what he called dark spots in it. He very strongly emphasised the fact that he got no benefit from coughing; that only by hawking, in which he was quite an expert, did he bring the secretion up easily and quickly. This gentleman was of an intensely nervous, anxious temperament, seemed to be in fairly good health, not intemperate in any way—indeed, far too careful to keep up his tone, and had not got any thinner, felt himself very low, was very liable to be bilious, and in cold weather liable to attacks of extremely painful diarrhoea, passing many copious, offensive, white-coloured motions. An attack of this diarrhoea seemed to relieve his throat for some time afterwards, and the sanguineous expectoration stopped for awhile. He never had piles, and when a boy had many attacks of epistaxis.

Another interesting case was that of a young gentleman, a Mr. McK., aged 27, who was brought to me by his father, having been told by their family doctor that his son was suffering from an attack of hæmoptysis, which indicated commencing mischief in his chest and urged him to take a long sea voyage, or a stay on the Riviera. This young gentleman had had frequent free epistaxis when a boy, and was frequently bilious. Another case was that of a Mr. R., aged 52, of portly size, and, being a man of leisure and means, had been to a fresh physician for each recurrence, and now thought he would try me just to give me a chance. He had epistaxis when a boy, and told me also that he remembered getting innumerable powders in childhood, as his liver was said to be perpetually out of order, and his motions never pleased his mother or nurse either in colour or consistence, being always called pasty. The least indulgence in the good things of life gave him a bilious headache, and he had been told his heart was weak.

The diagnosis of all these cases rested on the fact of the entire absence of lung mischief, and on the microscopic characters of the sputum. The clear portion of the secretion consisted of large squamous epithelium from the mouth, and many small round cells from the entrance to the larynx, and a few pus corpuscles, the yellow portion of pus and fat cells, a few blood corpuscles, and in great abundance the large spheroidal cells from the pharynx, and a few cubes of common salt—when the phlegm was dark red, of course quantities of blood corpuscles and crystals of hæmaturia. There were no elastic fibres nor any distinctive epithelium from the alveoli or bronchial tubes. Two of the cases came under my notice since the discovery of the tubercle bacillus, and I need hardly say I could not find it. I may mention that as most of these cases were very nervous people the microscopic examination seemed to reassure them very greatly, and I would like to advise every practitioner as a routine thing the microscopic examination of the sputum. I have found nothing equal to it in obtaining the patient's confidence. There was nothing unusual to be seen in the pharynx except that it looked frequently anæmic in the early stages with enlarged veins coursing over it. Afterwards there were patches, especially laterally, of a very deep dusky-red colour. There were no signs of follicular disease, and the larynx was normal in every case. In nine out of the eleven cases the liver was slightly enlarged and tender.

Now what causes this condition? Is it catarrhal? I think not. I am inclined to think it hepatic in its cause. The epistaxis that most of these cases suffered from in childhood is, we know, associated with hepatic disturbance. There was a fairly continuous history of biliousness and liver engorgement, and as there were no piles, it seems to me that pharyngeal hæmorrhage of a passive character replaced the ordinary rectal leakage.

At first, thinking I had to do with a local disease, I used various astringent pigments and sprays chiefly of iron and tannin, but no benefit was derived from their use. I have found most relief in the irritative stage from painting the pharynx with a solution of carbolic acid and glycerine ($\frac{3}{4}$ ss to $\frac{3}{4}$ j), and using Allen and Hanbury's pastilles of chlorate of soda. As most of the cases were men of a flabby condition in addition to their biliousness, I have found a combination of nitric acid and extract of bark of the greatest value if continued for several weeks, adding a little tincture of

nux vomica if much flatulence troubled the patient; also limiting the amount of fluid taken to about half a pint with each meal, and the avoidance of cold bathing or sponging helped to maintain the gain derived from the mixture. The effect of alcohol was very marked in its positive injury. It was noticed by several that if they had been out to dine and had taken more wine—especially champagne or port—than usual, they knew that next morning their expectoration would be bloody. One gentleman noticed that he invariably had a relapse when abroad after taking *café noir* and cognac the night before.

I found in obstinate cases when the nitric acid failed, the somewhat old-fashioned prescription of sulphates of magnesia and iron with dilute sulphuric acid of great use. The use of a saline aperient, especially if taken after a little blue pill the night before, was extremely useful, and latterly I have always started the treatment with it. Thus it will be seen that as I treated the throat less and the general condition of the patient more, and, to use an old medical phrase, "looked after his liver," the better the result. Many times I have heard patients say that they could not get their medical men to do this. It seems to me that this important organ has gone out of fashion with the profession nowadays, and bacilli and endless neuroses absorb all its energies, greatly to the gain of the endless makers of pills and mineral waters; the numbers of aloetic pills and glasses of waters containing chiefly sulphate of magnesia, that are swallowed—too often unwisely—by the public is hardly realised by medical men.

THE COMMUNICABILITY OF TUBERCLE THROUGH COW'S MILK.

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THAT cow's milk is not uncommonly a vehicle for the transmission of infectious disease to the human subject is now well understood. The evidence in support of such a mode of propagation is in many cases incontestable. Enteric fever, scarlet fever, diphtheria, and a disease resembling the foot-and-mouth disease of cattle are known to have been spread by means of the milk-supply. There is one other disease, tuberculosis, in which cow's milk has not been definitely proved to have served as a carrier of contagion; but amongst those who have made a study of the subject the view in favour of such a mode of propagation is regarded as containing the elements of extreme probability.

Cattle are very susceptible to tubercle, and stall-fed dairy cows in towns are not infrequently found to be affected. Indeed, Professor Fleming has asserted that at least 25 per cent. of all dairy cows kept in towns are the subjects of this malady. These animals are stalled day and night in stables often uncleanly or badly ventilated, and they are perpetually being drained of large quantities of milk. Prolonged lactation in the human female is well known to be a frequent precursor of phthisis, and it is not to be wondered at that, under such circumstances, and with the additional factors of confinement, want of exercise, and bad air, cows should succumb to a malady to which they are in a high degree susceptible.

It has been found by experience that the best bred animals, which are also usually the best milkers, are those which are soonest affected. In the early stages the symptoms of the disease are ill-defined, the health of the animal is apparently not interfered with, and the milk secretion is as abundant as ever. It is not until the disease is well established that nutrition is interfered with; and even then, unless the amount of milk is seriously lessened, the dairy farmer continues to keep the animal in stock. So far as known at present, the milk of tuberculous cows is free from tubercle bacilli, unless there has been—as is sometimes the case—a deposition of tubercles in the glands of the udder.

It would be extremely interesting to know in what percentage of cases the mammary glands are involved in the process of tubercularisation, and at what stage of the disease such involvement usually commences. Milk which contains tubercle bacilli, when given to guinea-pigs and rabbits, causes tubercular deposits in the lymphatic follicles lining the intestinal walls, followed by tubercles in the mesenteric glands, peritoneum, liver, spleen, and general tuberculosis (Klein). Milk which is free from tubercle bacilli, although derived from undoubtedly tubercular cows, has

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.

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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