theritic bacilli, as many as five or six micro-organisms being sometimes enclosed within one cell. Some of these intracellular bacilli appear to be perfectly healthy, staining and retaining aniline colouring matters well, whilst other micro-organisms, also contained in amoeboid cells, show signs of degeneration varying from a mere difference in the power of retaining gentian violet, to complete disorganisation and destruction. The description of these changes I must reserve for another occasion.

Many amoeboid cells in the membrane, more especially those present in its most superficial part, show distinct necrotic changes, many of them losing the power of retaining colouring matter. The nucleus breaks up, does not stain at all even with strong log wood or carmine, the surrounding protoplasm swelling up, becoming more yellow, and not unfrequently vacuolated. In later stages they show distinct signs of breaking up. Many of the degenerated cells contain bacilli in their interior, whereas others are quite empty.

The bacilli lying between the cells in the fibrin and coagulated exudation fluid are for the most part quite normal to all appearances. Occasionally, though very rarely, one is met with presenting signs of degeneration similar to those found in the bacilli contained in amoeboid cells. I do not think it justifiable to argue from this that the inflammatory liquids present in the membrane possess a microbe-killing power, but, judging from the number of dead leucocytes present in the membrane, it is far more probable that, in all probability, these partially-digested microbes were originally contained in a leucocyte which had died and undergone liquefaction.

I conclude from these observations that:—

1. The bacilli of diphtheria are present in the most superficial part of the membrane only, that is, in a place where they are well within reach of medicinal agents—an observation not without interest from the point of view of treatment.

2. In the diphtheritic membrane there is an active struggle taking place between the amoeboid cells in the membrane and the micro-organisms. In other words, the diphtheritic membrane is a battle-field for amoeboid cells and the pathogenic microbes of diphtheria.

3. The reason why the bacilli do not actually penetrate into the tissues is probably that as soon as they try to do so, they are arrested by the amoeboid cells present in the diphtheritic membrane.

ALLEGED DEATH FROM THE APPLICATION OF AN ARSENICAL PLASTER.

By SIR CHARLES A. CAMERON, M.D.,

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C. F., a woman of the peasant class, aged 53, residing in the County of Wexford, was affected with cancer of the right breast. Dr. Shee, who examined her, recommended an operation for the removal of the cancer, but the patient declined to submit to it. On March 31st, 1890, she drove on a car a distance of 30 miles to be treated by a Mrs. J. W., who enjoys a great reputation as a cancer curer. Mrs. W. placed a plaster upon the affected part, and Mrs. F. returned home. It appears that the double journey of 60 miles occupied nearly 18 hours, and the patient reached home in a highly fatigued condition. On her way home she complained of sickness in the stomach, and she vomited once or twice. She remained ill, and had severe retching, and much diarrhoea (the discharge was greenish) until her death, which occurred on April 8th, at midnight. Dr. Shee, who, with the assistance of Dr. De Benzy, made the *post-mortem*, found that the part of the breast in contact with the plaster was ulcerated superficially. Dr. Shee had noticed that previous to the application of the plaster the skin was unbroken.

The stomach, portions of the liver, kidneys, and small intestines, and the right breast of the deceased, and also the plaster which had been placed on her breast, were delivered to me for analysis. The plaster was found to contain a large amount of arsenious acid. No arsenic was detected in the viscera, but the tissues of the breast contained it in decided quantity.

As a result of the inquest held on the remains of Mrs. F., Mrs. W. was committed for trial, the coroner's jury having found the following remarkable verdict. "We find that the said C. F. died at Saltmills, Parish of Tintern, of poisoning by arsenious acid, commonly called white arsenic, on the 8th day of April, 1890; and that said poison was absorbed from a plaster placed upon the

right breast of said C. F., deceased, at Kinteady, on the 31st March, by Mrs. J. W., whom the said C. F. did feloniously kill and slay against the peace of our Lady the Queen, her crown and dignity. We desire to add that to our certain knowledge Mrs. J. W. has conferred much benefit by her plaster on many persons resident in and near the locality."

Mrs. W. was tried and acquitted at the Wexford Assizes on July 17th. It was stated that the deceased had been for a long time delicate, and that she had on two occasions been ill in her stomach. Her counsel suggested that the gastro-enteritis, which the symptoms of the case and the *post-mortem* examination had demonstrated, might have been the result of the fatigue and cold caused by her long journey. For the prosecution, the medical evidence upheld the theory that the deceased's death was the result of arsenical poisoning.

In 1883, the viscera of a man, residing in the County of Cavan, who had died with symptoms of irritant poisoning, were submitted to me for analysis by the authorities. A plaster had been applied by a quack to a tumour from which the deceased suffered. After the death of the deceased the quack was arrested and placed in prison. Arsenic was detected in the liver and kidneys of the deceased, and a portion of the plaster which had adhered to the tumour was found to contain arsenic. In this case there was no doubt of the absorption of the poison from the plaster. Shortly before the time fixed for the trial, the accused died in prison.

Quite recently, in the county of Kilkenny, an embrocation was applied to the back of a cow, which shortly afterwards died with symptoms of poisoning. The embrocation was found to be a concentrated solution of arsenic, and arsenic was detected in the stomach of the animal, and in a portion of the flesh to which the solution had been applied.

PARAGUAY TEA.

By T. CRANSTOUN CHARLES, M.D.

PARAGUAY tea, called also *maté* or *Yerba maté*, from the name of the cup in which it is infused, consists of the dried leaves of the Brazilian holly, *Ilex Paraguensis*. This plant is most extensively used by the whole population of South America. It is said to possess many of the good qualities of tea, but a long indulgence in its use has been stated to induce diseases similar to those following the abuse of alcoholic drinks. I have also been told that dyspepsia is a frequent result, which I can easily understand, seeing that the common practice is to take it immediately before meals; in fact, it is taken at every possible opportunity.

Lately I was presented with some specimens of this tea by my friend, Mr. Chapman, who had been a resident in South America for several years. By his kindness I was also provided with the *maté*, or cup, in which the infusion is made, as also the *bombilla*, or tube, through which it is sucked. The tea is first placed in the gourd, in which it is well shaken; a little warm water is then added, and the leaves stirred up; the gourd is next filled up with boiling water, and in a few minutes the liquid will be ready for drinking. It is to be stirred up from time to time, and more hot water added as necessary, on account of the slowness with which exhaustion occurs, care being taken to prevent the loss of the aroma by never letting the infusion cool down.

As to the pain or discomfort of the stomach said to be produced by its use in the case of beginners I cannot say that I have yet noticed more than a slight discomfort in one or two individuals. By Mr. Christy's kindness I have also received other specimens of the *maté* tea, and I beg here to thank him for the information he was good enough to send me. I have lately made several chemical examinations of this body, as I found that the analyses published of it varied very greatly. The alkaloid present is caffeine, identical with the caffeine found in tea and coffee; there is also a tannic acid present in large amount. I have determined the percentage of both these bodies, as also the percentage of ash in tea, coffee, and *maté* after the same methods. Although in some respects *maté* is closely allied to coffee, yet it yields up its active principles in a different way. It was not until after I had discovered this for myself that I found the same had been previously shown to be the case by Conty and Mournet at the Vulpian laboratory. Percolation by alcohol, for example, furnishes the largest quantity of soluble substances; and it is also much slower than coffee in yielding up its nutritious principles to boiling water.