

serum, published in the *British Medical Journal* of October 10th, from which the following information is taken, is of much interest.

The author tells us that tetanus, or lock-jaw, is a malady common to man and many animals. It was recognized in ancient times, and it has long been known that it was likely to follow the soiling of wounds with earth, dust, and similar material. It was, however, not until 1889 that Kitasato succeeded in securing a pure culture of the *bacillus tetani*, and in proving that it alone was the causal agent of the disease.

The *bacillus tetani* is widely distributed in nature, being found in the soil of most cultivated areas, in the streets of cities, and in fact in any place where there is faecal contamination. It is found in the faeces of horses, in the excreta of cattle, so frequently indeed that an investigator regards it as a normal inhabitant of the intestines of these animals. Tetanus antitoxin has also been found in the blood of adult cattle in more than 50 per cent. of the cases examined. It has been found in the vads of blank cartridges, the spores of the *bacillus* have been found in the water in which strawberries sold in Berlin have been washed, and it is said to have been found in the mud of the Dead Sea.

"This wide distribution of the organism emphasises the necessity for extreme care in cleansing all wounds, but especially those which have come in contact with street dust, road sweepings, the soil of cultivated fields, garden earth, manure, &c.

"Bahreson (cited by Anders and Morgan) stated that during the American Civil War he was put with other prisoners into a shelter that had been used for horses, and that all the wounded placed there who did not die as a direct result of their wounds developed tetanus, and all of them died."

Dr. MacConkey's object in publishing the present article is to call the attention of those who have not specially studied the question to "the value of tetanus antitoxin, which is inestimable when the serum is used properly as a prophylactic." He writes:—"It is to be hoped that at the present time systematic use will be made of this remedy so that one, at any rate, of the hazards run by those who are offering their all on the battlefield in defence of their country may be reduced to a minimum."

CURATIVE USE.

"*Premonitory*" Symptoms.—"In all diseases, the earlier the treatment is commenced, the greater the chances of a favourable result. If we could recognize tetanus in a stage as

early as we can diphtheria, it would no doubt be possible to obtain just as good results from serum treatment. But tetanus, unlike diphtheria, has no characteristic lesion which appears early in the attack and gives an indication of the nature of the disease. . . ."

K. Evler relates 13 cases of tetanus, with two deaths, which came under his personal observation, he himself being one of them. He describes these premonitory symptoms as being very varied and changeable.

A day or so after the infection there may be general restlessness, changing suddenly to a desire to rest.

Sleeplessness with distressing dreams, and it may be nightly delirium.

Difficulty in micturition due to spasm of the sphincter vesicae, which may last from a few minutes to half an hour.

Temporary giddiness, violent headache, excessive yawning.

The facial appearance changes and the patient looks anxious, though there is no risus sardonicus yet.

There may be trembling of the tongue, which is put out to one side.

There is often a profuse sweating, and darting pains in various parts may occur.

The patient may have a feeling of chilliness, and there may be some swelling, without redness locally, of the injured member and throbbing of its arteries, notwithstanding that the limb is raised.

Slight jerking may follow pressure on the flexor tendons, and these muscles may be noticed to be in a condition of increased irritability.

If symptoms such as these are present with a history of possible infection with the tetanus bacillus, Evler considers that the administration of serum is justified. The later symptoms include:—

Increased flow of saliva.

Reflex cramps of oesophagus.

Ocular symptoms; for example, nystagmus, strabismus.

Ear trouble, and spasmodic cough.

Tremors and clonic spasms which are not painful and which may not attract attention.

Pain persisting after muscular contraction induced by effort.

Swollen and reddened lymphatics, enlarged glands and tenderness in the infected region.

CONCLUSIONS.

The author concludes:—

"Tetanus may be cured by the administration of antitoxin, provided that the serum treatment is begun early in the attack and is

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