SCIENCE.

FRIDAY, JANUARY 23, 1885.

COMMENT AND CRITICISM.

DR. E. RAY LANKESTER writes to *Nature* of Dec. 25 a letter denouncing Koch's claims in regard to the cholera bacillus, and denying his right to any more knowledge in regard to bacteria "than that which an industrious worker may be expected to have gained in the course of very special observations in regard to a limited class of these organisms (the pathogenic class), extending over a few years." Fortunately, Koch's reputation rests upon a more solid foundation than that which is conceded to him by some English and American writers, and his work is not likely to lose any of its value by accusations of want of knowledge. The writer in *Nature* gives a very distorted diagram of various organisms, — the bacillus of glanders, the bacillus subtilis, etc., — and lays especial stress upon the fact that Koch said nothing of the comma bacillus before reaching India, and that in Egypt an entirely distinct and straight organism was claimed as the cause of cholera. This is a distinct accusation, which does not seem to us to be justified by Koch's reports. Whilst in Egypt, the German commission found several organisms, one of which might be the specific cause of the disease; but no actual proof of the fact was offered or suggested. It was because they were in doubt, that they asked permission to carry on their investigations in India; and it was only after they had reached that country, and had had opportunities for further investigation, that special stress was laid upon the comma bacillus. The case, so far as Koch is concerned, is summed up in our columns of Dec. 19, 1884. His opponents might well choose an advocate less biassed than Dr. Lankester. The *disproval* of Koch's theories must come from actual work upon the subject, and not from literary efforts.

LATER REPORTS of the work of Drs. Klein and Gibbes (the English cholera commission) in India justify their conclusions more than what we had seen when speaking of it last week. Their results are summed up in the *Gazette of India* for Nov. 28, 1884 (*Lancet*, Jan. 3, 1885), and are as follows: 1°. They find 'comma bacilli,' so called, in other diseases than cholera, as epidemic diarrhoea, dysentery, and intestinal catarrh, associated with phthisis. 2°. They did not find the comma bacilli in typical cases of cholera in any thing like the numbers claimed by Koch: they never approached the appearance of a 'pure culture' in the ileum. 3°. They did not find the comma bacilli in the tissues of the intestines, or elsewhere, as Koch did. 4°. Klein was unable to discover that the comma bacilli differed from any other putrefactive organism under cultivation. 5°. They found peculiar-shaped bacilli, very small and straight, in the mucus-corpuscles found in mucus-flakes removed from the intestine soon after death from cholera: they found these same bacilli always, even when the comma bacilli were not discovered. 6°. These bacilli do not behave in any peculiar way under cultivation, and are not to be found in the tissues of the intestines, or elsewhere. 7°. They did not find any bacteria of any kind in the blood, or in any other tissue. 8°. Many experiments gave the following results: (*a*) Mice, rats, cats, and monkeys were fed with rice-water stools, with vomitus, with mucus-flakes from the ileum, both fresh and after having been kept for twenty-four hours (the animals remained in good health); (*b*) Inoculations with recent and old cultures of the comma bacillus, and of the small straight bacillus, as well as with mucus-flakes, were made into the subcutaneous tissue, into the peritoneal cavity, into the jugular vein, and into the cavity of the small and large intestine of rabbits, cats, and monkeys; but the animals remained perfectly well and normal.

The commission hoped to conclude its labors and to return to England in December, when a detailed report of its work would be passed through the press at once. This report will be read with very great interest, for Dr. Klein's work has heretofore been excellent in its conscientiousness. It will be seen, however, that all their results are purely negative, so far as can be judged from the abstract before us; and judgment upon the work should be deferred until the evidence is all in. With Koch's positive results so recently reported, and the result of his further work still to come, the problem cannot yet be considered to be definitely settled.

Should some serious effort not be made to preserve the American bison from total extinction? To save some remnant of the vast herds of this noble animal which even a few years ago existed, some speedy and effective action is needed; and posterity will surely find a just cause of complaint against the present generation if such action is not taken. It is a mistake to suppose that extensive herds still exist in the Canadian north-west or elsewhere. Last summer a few animals made their way as far north as the Red Deer River, and scattered individuals are still occasionally found in the broken region about Wood Mountain; but it is doubtful if at the present moment there exist as many as a couple of hundred in all the plain country north of the international boundary. If any herds worthy the name are still to be found, it is in the Upper Missouri and Yellowstone region; and, judging from published statements concerning the trade in robes, these are on the verge of extinction. The preservation of an animal with the roving habits of the bison is undoubtedly a difficult problem, but should not prove an impossible one. Even if the Yellowstone Park were wholly unsuited for the permanent residence of the bison, some other naturally bounded tract might surely be found, in which a small herd of these animals might be allowed, as far as possible, to retain their natural habits and yet be protected from slaughter. A conscientious attempt in this direction would at least save us the disgrace of being found altogether supine in the matter.

While the Yellowstone Park may not afford the environment most natural to the American bison, may it not be in reality the best refuge it is now practicable to offer it? In order to preserve any number of these animals from slaughter, obviously it would be necessary to restrain their wanderings. In short, any remnant of the once numerous herds we may desire to preserve would have to be kept in an enclosed park; and this, in order to enable the animals to retain in any considerable degree their natural habits, should be of large size. It is therefore a matter that the government may very properly be asked to take in hand, it being beyond the ability or means of individual citizens. So widely scattered are the small remnants of herds which still exist, and so distant are they from convenient means of transportation, that even the procurement of a small band of from twenty-five to fifty — a less number would hardly suffice — would entail the expenditure of much time and money, and could even now be accomplished only with great difficulty, while, if delayed much longer, might become practically impossible.

A bison preserve, wherever located, would necessitate not only a large outlay at first, in securing the herd and providing a properly enclosed park, but also constant expenditure in the way of providing proper keepers. Unless some more favorable section of country, both as regards proximity to the herds and environment, can be selected for the purpose, a portion of the Yellowstone Park should at once be set aside as a bison preserve, be properly enclosed, and stocked with as large a number of bisons as it may be practicable to procure. In this way, while we should not have the bison in exactly a state of nature, we might be able to preserve indefinitely a respectable remnant in a semi-domestic state; somewhat as the Auerochs, the old-world congener of our bison, is preserved in a government park in Lithuania.