ANTI-CHOLERA INOCULATION.

DURING the past summer the public has been made aware, through the medium of the newspapers, that a certain Dr. Jamie Ferran, hitherto unknown to fame, professes to have discovered a safe and certain method of securing immunity against Asiatic cholera by a process analogous to vaccination.

As most people know, the researches of Pasteur, Koch, and others, have, within the last few years, made it seem extremely probable that the whole class of contagious or zymotic diseases is the direct result of the growth in the body, and particularly in the blood, of certain exceedingly minute micro-organisms called bacteria. Each of these diseases is supposed to be caused by its own peculiar species of bacterium, and the course of the disease is understood to end when the supply of the peculiar element necessary to the growth of these bacteria is exhausted. If this element is one that cannot be reproduced, the disease cannot recur; and if by any means we can remove this element, and keep it removed, we can prevent the attack of the disease. This is what has been done in case of small-pox, and this is what Dr. Ferran claims to have done in case of cholera.

In considering the truth or falsity of this claim, three questions arise: First, Is cholera caused by the growth of micro-organisms in the body, and, if so, is it possible that the element necessary to their existence can be removed? Second, By what means does Dr. Ferran claim to have removed this element? Third, What has been his success?

From the researches of Koch and others, it does seem probable that Asiatic cholera is caused by the growth of the comma bacillus in the intestinal tract and in other parts of the body; for it has been shown that this bacillus is always present when cholera is present; that it is never found in the body unless cholera is present; and that in all probability its injection into the intestine would cause the appearance of cholera.[1] But there seems to be little reason to suppose that the element of the body which constitutes the proper food of the comma bacillus can be, at least permanently, re-removed; for one attack of cholera affords no immunity against a second. In justice to Dr. Ferran, however, it should be said that he only claims that his system affords temporary protection.

The means by which this protection is said to be secured are as follows: By methods only known to the discoverer, the comma bacillus is so cultivated that its spores are produced. From these spores, which are capable of enduring conditions that would prove fatal to the bacilli themselves, mulberry-like masses form, and these masses, in turn, give birth to a generation of true bacteria.[1] By introducing into the circulation a small quantity of liquid containing these spores, mulberry-like masses, bacilli, etc., it is said that those elements on which the comma bacillus feeds can be removed from the blood without much constitutional disturbance, thus securing immunity against an attack of cholera until these elements can be renewed.

But, to say nothing of the suspicious secrecy with which all this process is surrounded, it seems certain, from the reports of those who have sought to investigate or repeat Dr. Ferran's experiments, that he is entirely ignorant, or at least careless, of the nice technical details necessary to success in the study of bacteria, and that his so-called spores are sterile and disorganized products,[2] and therefore incapable of exerting any salutary effect as an anti-cholera inoculation.

The results obtained by Dr. Ferran in his experiments are more difficult to criticise than either of the preceding questions; for almost all that is known about these results is what he has chosen to tell, and his personal equation, so to speak, is an unknown quantity, unless it can be inferred from the character of a man who acknowledges himself willing to keep secret a certain means of securing safety from the attacks of a disease like Asiatic cholera, for the simple reason that he has not yet secured a suitable pecuniary reward.

His method of procedure seems to be about as follows: From twenty to fifty francs are first collected from the person who is to be inoculated. Then about one-half a cubic centimetre of the inoculating fluid is injected deeply into the outer and back part of the upper arm by means of a common hypodermic syringe. The results of this injection are, according to Dr. Ferran, local pain and swelling and slight constitutional disturbances, — fever, diarrhoea, etc., — all passing off in from twelve to twenty-four hours. This is followed by a re-inoculation at the end of about eight days, the same quantity of virus being injected subcutaneously. The patient thus treated is said to be safe from an attack of cholera for a considerable length of time.

Some of those who have visited Spain during the past year to investigate these experiments confirm these statements;[3] others say[4] that deep

[1] It seems probable that, in Dr. Klein's experiments to show the harmless nature of the comma bacillus, his methods of cultivation had rendered the organisms innocuous.

[1] *Zeitschr. klinisch. med.*, ix. 361-373.

[2] Virchow, *Deutsch. med. wochenschr.*, xi. 342.

[3] Van Ermingem, *Deutsch. med. wochenschr.*, xi. 498.

[4] *Brit. med. journ.*, June 9, 1885.

ulcerations, septicaemia, pyaemia, etc., are caused by these inoculations. But as these dire results are mentioned by only one writer, and are explicitly denied by other unprejudiced witnesses, they seem hardly worthy of credence. It furthermore seems certain that no one has contracted cholera by being inoculated according to Ferran's method.

When we come to consider the statistics as returned by the French and German officials who have been sent to Spain to investigate Dr. Ferran's experiments, we find numerous obstacles in the way of arriving at a satisfactory conclusion. In the first place, there is no accurate census report on which to base the calculations; in the second place, the number of inoculations actually performed is not exactly known by any one except Dr. Ferran, and it is chiefly from him that our information comes as to the relative number of deaths and inoculations; and, in the third place, the total number of deaths is not known with any certainty. Yet the figures are of some interest, as showing what those who have had the best opportunity to investigate the matter think of the efficacy of anti-cholera inoculation as practised in the villages of Alcira (*a*), Alberique (*b*), and Algemesi (*c*). They read as follows:[1] —

	Official population.	Probable population.	Non-inoculated.				Inoculated.			Re-inoculated.		
			Minim'm.	Maxim'm	Attacks.	Deaths.	Number.	Attacks.	Deaths.	Number.	Attacks.	Deaths.
a	16000	23000	5500	12500	374	169	10500	37	7	3011	35	6
b	5000	.....	4000	.....	192	173	938	10	2	....	3	..
c	7856	10500	6600	9300	484	208	1202	21	5	623	1	1

It was in these three towns that Dr. Ferran carried on his experiments most extensively, and, if it could be proved that these statistics were accurate, a very strong point would certainly be made in favor of anti-cholera inoculation; for it would be almost inconceivable that chance should give results very far from the truth, where so large a number of individual cases are concerned. But when we consider the *a priori* improbability that a disease which by its first attack confers no immunity against a second attack can be guarded against by any form of inoculation, and when we consider the alleged nature of the process by which this wonderful result is said to have been reached, and the character of the man who says he has reached this result, the inference seems very clear that there is something wrong with the statistics: in other words, it seems more reasonable to suppose that Messrs. Brouardel, Charrin, Albarran, and others have been mistaken or deceived in regard to the facts, than that anti-cholera vaccination as practised by Dr. Ferran is a success. F. S. BUNKER.

[1] *Bulletin acad. med.*, xiv. 902-933.

THOMAS BLAND.

THIS well-known naturalist, after an illness of some two years' duration, died August 20, 1885, in Brooklyn, N.Y.

He was born in Newark, Nottinghamshire, England, October 4, 1809. His father was a physician, and his mother related to Shepard, the naturalist. He was educated at the Charter house school, London, and had Thackeray for a classmate. Subsequently he studied and practised law. He went to Barbadoes, West Indies, in 1842, and later to Jamaica; visited England in 1850, and in the same year accepted the superintendency of a gold mine at Marmato, New Grenada. While a resident of Jamaica it was visited in 1849 by Prof. C. B. Adams of Amherst, and, stimulated by his friendship and enthusiasm, Bland began those investigations of the land-shells for which he afterward became so distinguished. In 1852 he came to New York, which, for most of his subsequent life, became his home. Mr. Bland was of a studious and rather grave demeanor, but notably courteous, and always ready to assist young students or others interested in his favorite pursuit. In spite of his extreme modesty, Mr. Bland was several times called to posts of honor and responsibility. By those privileged to know him, he was held in high esteem, which was not lessened by his bearing under tribulation and poverty during his later years.

Mr. Bland was the author of more than seventy papers treating of the Mollusca, especially of the United States and the Antillean region. His work was not confined to description of species, but comprised valuable contributions to their anatomy, classification, geographical distribution, and the philosophy of their development. No American student has shown a more philosophic grasp of the subject; and his discussion of the geographical distribution of the land-shells of the West Indies, published in 1861, gave him a wide reputation. He several times returned to this subject in later years, and always with marked success. Since 1869 Mr. Bland was associated with Mr. W. G. Binney in several important works, especially the 'Land and fresh-water shells of North America,' issued by the Smithsonian institution. Mr. Bland was a fellow of the Geological society, and an active member for many years of the New York lyceum of natural history. A convenient bibliography of his papers and contributions to malacology was prepared by Mr. Arthur F. Gray in 1884.