Doctor Craigie with Kind Regards from the Author

Dr. FERGUSSON ON YELLOW FEVER.

(From the Medico-Chirurgical Review, No. LXIII.)

To the Editor of the Medico-Chirurgical Review.

Sir,—My attention having been called to a late number of the Medical Gazette, wherein the infectious nature of tropical yellow fever is advocated in a well-written paper by Mr. William Fergusson, Surgeon of the Royal African Corps, I feel myself called upon, in vindication of the pledge I recorded when I last wrote upon the subject, in reply to Dr. Fraser of Demerara, now to examine the facts he adduces and the arguments he brings forward in their support. I feel it the more incumbent upon me to do this with as little delay as possible, because Mr. Fergusson is known to be an officer of great professional merit, who has much distinguished himself by useful services on the coast of Africa, and whose opinions, founded on much experience and submitted with diffidence and candour, cannot fail, if allowed to pass unquestioned, to have great weight not only in the medical world, but amongst all who are interested (and who is not?) in ascertaining the true nature of the disease.

Mr. Fergusson at once and unequivocally admits that it never was imported into Sierra Leona, the fountain spring and head-quarters of yellow fever—that there it always arises spontaneously, being truly endemic when it does come, and never introduced or sporadic; but that in the other settlements of the same station it never has been seen unless when imported from Sierra Leona, and that in the majority of them it never has been seen at all! This is a strange and a bold assertion, and before it can be admitted as a medical truth demands the strictest examination. Another of his propositions seems to be equally extraordinary—that the disease after being imported often requires an interval from 28 to 33 days before it can be made to shew itself amongst the inhabitants of its new field of operation. This is so contrary to all the known laws of incubation in febrile diseases, or indeed in any other diseases, with the exception of hydrophobia, that it cannot be received without the strictest scrutiny, and indeed is negatived by himself in the instances of Monsieur Imbert and others who were supposed to have imported it, at the shortest contact, into the Island of Goree; but let us discuss if we can the first of Mr. Fergusson's positions before we enter upon the second.

Yellow fever is acknowledged always to spring spontaneously at Sierra Leona; then why may it not equally so arise at Gambia, Goree and Ascension, when

circumstances favour the development of the disease. Mr. Fergusson surely will not contend that Sierra Leona can possess an exclusive patent for the generation of yellow fever, and instead of this impossible incubation, would it not have been more reasonable to have allowed that the same causes which had produced the disease there had, in the course of a month, been ripening into such accumulation as favoured its explosion at the other settlements of the same coast.

The last of these, from the fact of the Ban frigate touching there, and landing sick of yellow fever from Sierra Leona in the year 1823, soon after which the disease spread amongst the garrison, has ever presented the most difficult stumbling-block to the anti-contagionist; but from what we have seen of the leeward bases of hills in every part of the West Indies, or indeed of their bases whether to windward or leeward, we know that, what with drainage from the higher land and the difficulty or total absence of perflation, their lower levels are ever in a state to become the most fertile fields of accumulated malaria. To this Ascension, nearer to the equator by several degrees than Sierra Leona itself, can be no exception, and on the last visitation of yellow fever in that island (1838), the well-known causes of the worst tropical fevers, viz: the great collection and rapid drying of waters, had become accumulated in such abundance as to account most amply for any invasion of malarious fever, such as that of Sierra Leona itself, without having recourse to importation. The first case—that of the fever breaking out soon after the Ban landing the sick of it in the island, is a much stronger one: but one swallow does not make a summer—nor can a single instance ever be taken for proof. An interval of fifteen years elapsed between the arrival of the Ban and the second outbreak of the disease, and in that long period did no vessels from the head-quarter station ever touch there with fever on board, and did nothing of the kind, no sporadic instances, ever occur but on the above-mentioned occasions? I know not whether they have or not, but I know that, to constitute an important contagion, the disease must unerringly ensue upon the introduction—if it fails as often, or oftener than it hits, then must there reside in the locality itself a cause stronger than the arrival of infected ships, which independent of any such aids will, according to laws of its own, cause the disease to explode under particular circumstances of atmosphere and locality, as yet beyond our ken, and leave us in wonder and dismay.

I have never been in Western Africa, but I should think Gambia or any other settlement on the banks of one of its great pestiferous rivers must come under the same description as Sierra Leona; and Goree, when sufficiently peopled by Europeans to give scope to the disease, may be classed under the same head. This I shall now endeavour to prove, more especially in regard to the first of these, from the analogy of New Orleans in North America. Like the settlement of Gambia it is founded on the banks of a magnificent river amidst the alluvion of its mighty current, with the difference of its containing a crowded white population. For nine months in the year it may be called a healthy habitation, but when the heat of autumn ascends to that of the tropics, yellow fever appears with the regularity of the equinox and departs as regularly when it descends in the scale of the thermometer on the first approach of the winter rains. Being the greatest emporium of the Southern States, ships keep arriving from every part of the world at New Orleans, without regard to the state of its health, where they often lose their crews, but that is all—they depart with fresh men East, West, South, and North, and I never heard even the strongest contagionists assert that yellow fever was imported anywhere from New Orleans. The fact is notoriously otherwise. Her steam-packets meanwhile ascend the stream by hundreds, laden with fugitives from the malarious pestilence to the cooler localities above. When ill with the disease they vomit on the decks as they go along, but whether they live or die they neither infect their fellow passengers nor introduce the disease into the settlements of refuge. Now can Mr. Fergusson, when he reflects upon the fact

of yellow fever being in the instance just quoted purely a disease of season and locality, really believe that it must be an imported plague when it appears on the coast of Africa always under the same circumstances of climate as the autumnal season of New Orleans? but I will give him another instance. At Vera Cruz, the nearest great town to New Orleans, but within the tropic (latitude 19°) it is ever at home to the European stranger provided he stays all night; but should he chance to move the smallest distance into the interior, yellow Jack, as our sailors call the disease, although prepared to fold him within his closest embrace had he caught him in the dark shades of the evening, always makes his bow at the city gates. Nothing can induce him to give convoy further, nor attend the stranger a foot of his way. Gambia and Goree, when we look at the map, may be called geographically, neighbouring stations to Sierra Leona, and when the climate is the same and the locality is either naturally, as on the alluvial banks of the river, or through the circumstances of season, made favourable, need we be surprised that when it prevails in the last, where, in Mr. Fergusson's own words it is "ever the undoubted product of the colony itself," it should also pervade the latter without the intervention of ships carrying the disease? Many, indeed I may say all, colonists will strive to remove the reproach of pestilence from their own shores. They will greedily imbibe the grossest delusions—swallow and propagate the idlest tales of importation, and shut their eyes to the most obvious facts of native origin, for as long as they can make the favourite belief subservient to the character and interests of the colony, consequently to their own. At Sierra Leona when the pestilence was springing up rife from under their feet, and before their eyes, Mr. Fergusson tells us they strove hard to discover the ship that brought it to them—but it would not do. Gambia, however, thinly peopled by Europeans, more remote, and less under observation, had more of its own way and took the consolation of discovering the importers in the persons of Mons. Imbert and his friend. The flattering unction could not be resisted, and I regret to perceive it has pervaded even the enquiring mind of Mr. Fergusson. That all this at Gambia must have been a delusion, and that yellow fever in every situation must at all times have been a disease of high temperature and locality alone, let us now seek for what may be called European proofs nearer home, and better suited to the strictest investigation; and here I will take my demonstrations from the evidence of Sir William Pym himself, at Gibraltar, by far the most consistent and ablest advocate on the contagion side of the question. In his celebrated work on the Bulam fever, which has ever since so mischievously influenced all the health departments, indeed I may say the government of the country, at p. 51, he thus tells us how he arrested the progress of a yellow fever:—

"I directed a sufficient number of tents to be pitched outside the gates of the garrison, on the neutral ground, with a proportion of bedding, &c. and in the middle of the night without any previous information being communicated to the inhabitants, a strong guard with a sufficient number of carts proceeded to the infected district and conveyed the different individuals of the infected families *sick and well, with their baggage*, to the encampment which was established as a lazaret and kept in quarantine. I placed the sick in separate tents and appointed persons to attend them who had had the disease at a former period. A cordon of troops was also established round the infected part of the south district, which was kept in quarantine for fourteen days; proper persons were also appointed to superintend the purification of the houses, furniture, &c. and to report the slightest appearance of disease among any of the inhabitants—who were also paraded and inspected daily by one of the hospital staff."

Now can any thing be more evident, from this quotation, than that the fever was one strictly of locality in the town of Gibraltar, and that even with the aids of the diseased bodies, and all their baggage, it could not be implanted at the shortest distance beyond the gates of the fortress; for had the disease been

small-pox or any other true contagion, it might, in the fomites of the sick, have been carried round the world.

The measure, whatever may have been the understanding and the motive, was one of great practical wisdom, and ought to have afforded an excellent lesson in all the subsequent invasions of the malady, for a move even to the shortest distance at once stopped the disease, and furnished the most unanswerable reply to the doctrine it was intended to establish. Wherever pestilence, whether malarious or not, takes up its abode, it is a maxim of old standing to depart as soon from the place, go as far and stay as long as convenience will permit; but when large bodies of men, such as a garrison, or encampment of troops cannot so migrate, the smallest change of locality, as in the instance before us at Gibraltar, will often suffice to stop the disease; and there ought always to be a supply of tents in the garrison adequate to the occasion, whenever the disease arises again, as unquestionably it will, whenever the temperature of the season and the state of the rock favour its explosion. It has been triumphantly asked, why, if Gibraltar hill in its different aspects of becalmed locality and leeward base be so favourable to the production of yellow fever, Cadiz, perfectly flat on a dry isthmus, should have been visited by the disease fully as often? and the reply is obvious. All walled towns become depôts of accumulated malaria in the countries where that element of disease exists. Their walls and defences impede ventilation, and render perflation all but impossible. The poison collects at the base of the fortifications, and lurks in the angles and ditches of fortified lines. Hence Seringapatam in the East, not very unlike Gibraltar in its form, has ever proved a most dangerous quarter to Europeans. Hence Barcelona has more than once been visited by true yellow fever,* and hence have Fort Bourbon and Fort Edward in Martinique, and Fort Fleur d' Epé and Fort Matilda in Guadaloupe, ever proved most deadly to their garrisons. I may be told that when all the circumstances just related have been found in the fullest operation, not only for a season, but for courses of seasons, no yellow fever has been produced, and but for its introduction by ships it never would have occurred. To the first I assent, but the second is an invention or a delusion. Who can say, in our more fortunate land, why malignant, epidemic erysipelas, or fatal puerperal fever, should pervade whole districts in one season, and in another of no perceptible difference, or even more favorable aspect, neither the one nor the other can be called into existence: and are we, when in malarious countries, because we cannot tell why yellow fever should absent itself for a long or a short period, justified in asserting, when it comes, that it must have been introduced from abroad; proclaiming, consequently, the advent of a new plague, and denouncing the sick as being unapproachable and dangerous, for once make the people believe in the reality of imported pestilence, and we shall call upon them in vain for succour and assistance to objects breathing forth contagion and death to all who approach them.

With this question of tropical contagious fever I have often grappled, and I shall now try to grapple again. True contagion is no respecter of persons but the negro race, indeed I may say the whole coloured population, the most numerous by at least ten to one of the inhabitants of our West India Colonies, never take the disease; and the native Creole whites and creolised inhabitants, relaxed by the climate and enervated in their constitutions, therefore less fitted

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* I will here venture to prophesy that, if ever the heat should amount to that of the tropics, and be continued for a sufficient length of time, St. Sebastian, from its form, will become the seat of yellow fever. Its beautiful tide river, through which our troops at low water waded to storm the breach, has hitherto to a certain extent been a safeguard.

to resist any new infection, are infinitely less liable to be attacked than newly-arrived Europeans. I have read of negroes taking yellow fever when returning to the colonies after a residence in cold countries, but though I have twice in the course of my life sojourned for a course of years in the West Indies, I never saw it, nor met with any one who had actually seen it; and is the negro infection-proof? Have the true contagions of small-pox, measles, scarlatina, &c. no power over him? or typhus fever when in this country, or plague when in the Levant? and can he resist the infections of syphilis and scabies any where? These questions would be ridiculous, if seriously propounded, for it is notorious that whole plantations have often been ravaged whenever small-pox and the true contagions have been introduced. Why then does he resist the supposed contagion of yellow fever?—simply because it is not a contagious but a malarious disease; and against all malaria it is well known that he is fever-proof: but let us examine this question if we can a little more deeply. The contagion of fever does not readily take root under tropical heat—our typhus fever cannot easily be carried to the West Indies, or if it should in foul transport ships, perchance, be landed there, it is immediately dissipated by the heat of the climate. The high temperature is most prolific of fevers, but not of contagious ones. The late Dr. Henry, of Manchester, proved by positive experiment that of all disinfectants heat was the speediest and most infallible. He exposed the gross tangible contagious matter of small-pox, cow-pox, and scarlet fever to a heat of 140° of Fahrenheit, and found that they were thereby deprived of all infectious power; and in the case of typhus fever not being transportable to the tropics, we had, during the last war, more particularly in the ill-fated expedition of Admiral Christian, in the year 1795, proofs innumerable that the gaseous, ærial contagions were dissipated under a heat of between 80° and 90° of the same scale. Having been there, I speak from actual observation. We know, moreover, that the plague of the Levant disappears as soon as the high Summer heat in Egypt sets in,* and that it never yet has been carried beyond the tropic into the equatorial regions. Now should not these facts (for they are facts) weigh with Mr. Fergusson, before he propagates the dangerous belief of yellow fever, with the exception of Sierra Leona, (and why that exception) ever being an imported contagious pestilence, as if contagion could be the product of the disinfecting principle itself! I have never enjoyed the honour of his acquaintance, but I duly appreciate the usefulness of his life, and, in the hope that he may yet have a long career to run, I entreat he will give them the consideration they are entitled to, and then I am sure he will no longer lend himself to a delusion, which, wherever it can be made to prevail, must be attended with consequences at which humanity shudders. Let him reflect that the word contagion, always the word of fear, if pronounced by him, who has had so much experience, may prove the word of doom; and that it will be far more honourable to acknowledge that he may have been mistaken, than to persist in an error which, if received as a truth, must prove fatal not only to many of the present generation of Europeans inhabiting the tropics, but to thousands yet unborn.

I abstain from repeating the arguments I brought forward when I last wrote in the Medical Gazette, in reply to Dr. Fraser. They are dated February 24th and April 24th, 1838, and also United Service Journal for April, 1838, and I beg Mr. Fergusson will do me the honour to read them, and then, when he returns to the coast of Africa, the field of his usefulness and research, he will I hope, on the next invasion of yellow fever, take for his guide the emphatic words of my friend Dr. Gilkerest, of Gibraltar—PLACES NOT PERSONS—for they comprehend the whole history of the disease, in its source, nature, and

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* Vide Assalini.

progress. The cruel quarantine will then no longer be made to vex the coast, and the courage of the inhabitants, when they come to know what the disease actually is, will be assured. They will then, instead of denouncing one another, seek, in as far as they can, the only rational means of safety in a change of abode, but if the panic of contagion be kept up, then adieu to all the feelings of common humanity, no matter how humane and christianised they may originally have been, for self-preservation in all ordinary minds is ever the first law of nature. The sick will be deserted, thereby aggravating the malady a hundred fold, at the risk, too, of generating a temporary contagion of neglect and accumulation; for such is the nature of all febrile contagion (I speak not of the exanthemata) even within the torrid zone. All this will be in Mr. Fergusson's power whether for good or for evil, and I cannot doubt that he will choose the better part, for the superstition of contagion in tropical fever, the remnant of an age gone by, although still taught in our schools, is fast passing away, and I trust he will no longer be influenced by it. The doctrine is eminently antisocial, and if the facts and arguments I have adduced in the present and other writings to which I have referred him, are not to be refuted, I am sure he will acknowledge it to be equally unphilosophic. It is surely full time that the fumigators—the burners of bedding—as if the heat of boiling water at 212° would not suffice—and all the ill-omened hosts of quarantine, should be referred to the beautiful demonstrations of Dr. Henry, which must soon lay them to rest as effectually as the ghosts which frightened our forefathers were said to have been laid in the Red Sea. These experiments are pregnant with the most important results to the best interests of mankind in every part of the world, and will embalm his memory for as long as science and humanity are appreciated amongst the friends of the human race.

Having now, I believe, replied sufficiently to the letter of Surgeon Fergusson, I shall proceed to some general considerations of the nature of tropical fever.

In the examination of this question it seems hard that we, who have lived for years under the direst scourge of the disease, and sustained its attacks in our own persons under the most appalling forms, should always after a time be set aside as if we had never spoken nor written on the subject: and that the schools teaching contagion without ever having seen yellow fever, and the home authorities should, like the resuscitations of animal magnetism, again reassume their sway—setting at nought the evidence of experience and the accumulated testimonies, all but unanimous, of the fleets and armies who were so severely victimized by it in the course of last war. In the year 1795 England put forth her strength, and a magnificent armament that might have turned the tide of war on the Continent was arrayed under Sir Ralph Abercrombie for the recovery of sugar islands and the conquest of St. Domingo. To the latter I was attached, and its fate was the same as has ever attended, and ever will attend, a European army proceeding to the West Indies—the troops died by thousands, and if ever yellow fever and black vomit reigned supreme, it was then and there: but did that make us contagionists? On the contrary, it unmade us I may say to a man, and cured us for ever of the delusion that had been imposed by all the schools and authorities at home.

Dr. Bancroft has given the history of contagion and its short-lived reign in the windward colonies—Doctors Jackson and M'Lean that of St. Domingo; and although nearly half a century has elapsed, the inspectors general, Doctors Theodore Gordon, Sen., Borland, and Warren, who served with me there, are yet alive to prove the non-existence, the impossibility of contagion, and this I can confidently say was the thorough conviction of all, whether medical, military, or civilian, who had been obliged to remain a year or longer in the country. What we saw every day of our lives was la fièvre *Européenne* of the French—(la fièvre des blancs)—that most emphatic comprehensive phrase which in one word truly defines and characterises the disease. All history too confirms it:

turn to our annals, and it will there be seen that the expeditions to Carthagena, the Havanna, St. Domingo, and indeed every other to the West Indies, whatever might be the event of war, had but one termination—the burial of the troops from yellow fever. Hereafter Great Britain, unless she means the same tale of woe to be rehearsed for ever, must condescend to conquer, and more especially to preserve her conquests, with the black man's instead of the white man's arm —so much for the Army.

In the Navy it may fairly be supposed that the medical staff shut up in the same ship with the sick could scarcely fail to know whether the distemper was contagious or not; and although not so unanimous on the subject as an experienced army medical staff, are yet by a great majority anti-contagionist. The dissidents are to be accounted for from the comparative rarity of yellow fever on board-ship, (for it is a land-disease,) where they only see it as it is brought from the shore, or as it comes in bursts or explosions arising from the state of the hold or cargo or greenness of the timbers; and if it be the first of the kind witnessed, it may be difficult for any one, whether medical or not, to discriminate between the current of epidemic and contagious disease. I have already, in the Medical Gazette of last year and other publications, given the history of imported yellow fever at Barbadoes in the instances of the Regalia transport and the Childers sloop of war, both under my own particular care and direction, and shewed the impossibility of their being so much as suspected, after the freest communication of having communicated any contagion; and to illustrate these points still further, I shall here relate two experiences of what I may call marine yellow fever—the first occurring to myself, the second to a professional gentleman* now in Windsor.

In the year 1816, while yellow fever was raging at Barbadoes, it was my lot, I suppose, from being an old seasoned subject, to be taken with very violent but irregular intermittent fever. Admiral Harvey invited me to go on a cruise with him amongst the islands in the flag-ship, and soon after leaving Carlisle Bay, yellow fever broke out amongst the crew. There were, if I recollect right, seven very bad cases; but Mr. Neale the surgeon, a sensible and excellent officer, at once negatived the smallest idea of contagion. The assistant-surgeon, Mr. Byrne,* brought up his cot from the cockpit and slung it in the sick-bay, in order that at all hours he might be near his patients. Their comrades were allowed the freest access, and the officers of the ship were encouraged to visit and shew them every attention. The consequences were the happiest; for although the cruize lasted several weeks, we did not carry back a single case of the disease to Barbadoes.

The other experience to which I allude took place at Kingston, or rather Port Royal, Jamaica, where my friend was taking his passage along with a detachment of artillery and some officers of a West India regiment to Belize, in the Bay of Honduras, in the Recovery brig, commanded by Captain Hamlin. The yellow fever had been raging in Jamaica in the same manner as at Barbadoes, where the Recovery had buried three of her crew; and on the second day of the voyage, the 1st mate sickened and speedily died, under the most appalling form of the disease. The crew were panic-struck, and, reporting themselves sick, lay down upon the decks, and the captain, believing himself doomed, took to his bed. My friend luckily, having when at sea amused himself in taking observations, assumed the direction of the ship's course, and, favoured by the

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* Mr. H. Moore, Dentist.

* I write from memory, and trust that I do not mistake his name, for his conduct was beautiful. I know no better term to express this tribute of my respect, and if in life I hope he will accept it. I believe he afterwards sailed with Capt. Basil Hall, as surgeon of the frigate he commanded.

winds, she reached Belize, where, as soon as the pilot had made his report, her arrival was looked upon as that of the death-ship, and she would either have been kept in the deadening quarantine or forced to sea again, had not the quarantine master, Staff-surgeon Thornton, fortunately been a man of observation and knowledge. He visited the sick, and declared that there was not a case of yellow fever nor any thing like it amongst them—they were merely panic-struck, and as soon as they received the hospitality and succour of the port, which they did without precaution or reserve, they were speedily all well again. Now in the first case, when the epidemic presence was upon us, had the medical men on board lent themselves to the delusion and cried contagion, we might, I verily believe, have unmanned the British flag, and converted the admiral's ship *(silvæ filia nobilis)* into a pest-hulk; and in the second place, there can be little doubt that had the ship been kept out at sea, or laid up in quarantine with the plague-mark upon her, disease would have done its work amongst the terrified people, and we then should have had a new edition of contagion, as in the celebrated case of the Hankey, arising from the deceased mate of the ship. One instance can never be taken for proof, nor do I wish what I am going to say to be held for more than it is worth, but on this cruise, and on other occasions, I saw hospital patients with ordinary diseases exchange beds with the sick dying of yellow fever, without any consequences resulting. I have even in the course of my life been obliged, through necessity and fatigue, to submit to something of the same kind myself, and I declare that, but for the personal impropriety, I should not feel the smallest hesitation to do it again, or to sanction its being done by others. In the St. Domingo army the disease, from some unexplained peculiarity of the time, rarely attacked the women attending upon and sleeping with their dying husbands, and the number of the latter some of these females had expended, for short as their wedlock had been, their widowhood was far shorter, became a constant source of jocularity and remark.*

That there are anomalies and difficulties in regard to the question of yellow fever—its sudden bursts and invasions—its disappearances too when within the Tropics, without in so far as we can see, any adequate reason, there being no such bursts within our recollection in Bengal, nor on the shores and islands of the East Indian seas, I freely acknowledge; but it has not been altogether unknown there, for one of its earliest designations was the *maladie de Siam.* In the East they have never dreamed of contagion in any tropical febrile disease, and that it ever should have become our creed in regard to the West must have been occasioned by European troops being landed there in large masses, and despatched on service throughout the colonies in crowded ships, thereby generating, it may be, although I can scarcely believe it under such a heat, for the passing day, a contagious atmosphere of accumulation. I will even go so far as to admit the possibility of this occurring in densely populated towns and garrisons such as Gibraltar, but the difference of a contagious atmosphere and a contagious individual is this. In the first almost all will be liable to fall under its influence while they remain in the place; but in the latter case, take the worst of the sick that can be selected out of the contaminated locality, and you may approach him as safely and receive as little contagion from him as you would from a marble statue or a graven image. True contagion infects at the shortest interview, and through the instrumentality of the smallest particle even of an invisible gas, in all situations and places: but factitious temporary contagion can only acquire power through the medium of a crowd generating ac-

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* The case was widely different at Barbadoes in the year 1816, when the women, more especially those of the newly-arrived Queen's Regiment, died fully as fast or faster than the men.

cumulation. In the East the approach to its coasts was interdicted to all colonists under the monopoly of the old East India Company—crowds of Europeans never went and never resided there—nor do they even now; but when the suburbs of towns come to be filled with them, as at Gibraltar, it will then be seen, for it is eminently the disease of high temperature, whether the maladie de Siam may not again arise even in Calcutta.

These questions become deeply interesting when we reflect upon the present condition of by far our richest colony of the West (Demarara), where one of our finest regiments is reported to be under a course of speedy extermination from yellow fever—while I write even now the work may be accomplished. When it ravaged that colony, three years ago, Doctor Fraser, the quarantine master, true to his calling, declared that it was imported from Kerrynane,* or some such name, that it was fearfully contagious, and that all were Atheists who did not believe it.† To have imported the disease into such a place would indeed have been a work of supererogation, for a deeper—a mightier swamp I never contemplated. It may be called the deepest in the world, and the terms and periods of healthiness, instead of unhealthiness, at Demarara constitute the wonder: and here I feel myself called upon to speak of malaria as emanating from marshes and of vegetable putrefaction as constituting its element. When at the head of the medical department in the West Indies during the years 1815, 16, and 17, I made it my business, and I considered it my duty, to explore in as far as was practicable every swamp in the inhabited quarters of the windward and leeward colonies, and the result perfectly corresponded with that stated in the Government medico-statistical report—that even the most declared open swamps did not at all times produce disease amongst the inhabitants dwelling in them or near them. My experience led to the conclusion that for as long as they were filled with water they were generally harmless, but whenever they, or part of them, came to a dried or an advanced drying state, they were as generally pestiferous. In regard to vegetable putrefaction, as evinced by the smell, it absolutely meant, or at least produced nothing, no matter how strong the fætor, and as I have stated in former publications, I have experienced it so strong as to deprive me of sleep. The most declared swamps in the fullest process of vegetable growth and decay were under the above circumstances innoxious, but so were not the deep ravines—the dried watercourses of hills, or the leeward bases of mountains, which perflation could not reach—these I may say were uniformly pernicious to all the white race of mankind. Swamps do not always produce malaria in tropical climates, but these never fail, and I believe never will fail, either there or in America or Europe, for as long as the steady atmospheric heat without rain amounts to between 80° and 90° of Fahrenheit. I am not pretending to say what malaria is, nor whether it be the same element as marsh miasma or not—the marsh so abounding in one may, when approaching to dryness, emit both—the ravine, if there be two elements, only one: the marsh, when filled with water, may prove as habitable as any other land—the ravine, more especially its bouchure, never: the marsh is notorious for producing ague, and the lesser grades of what has been called malarious fever—the ravine only the higher; it would even appear to be incapable of giving rise to the former, and when the time for invasion arrives, makes itself felt in bursts and explosions, often without previous warning, of such fevers as have destroyed our armies and devastated our West India colonies: the cleanest lands will not at these times save the inhabitants; for the dry rocky watercourses—the purest

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* I had heard of Derrynane, but where Kerrynane is I have never been able to discover.

† This is much such an argument as was used by Lord Peter in Swift's Tale of a Tub.

sands, after they have been saturated with water, and the hard mountain basin, where vegetation never grew, become its constant abode, *provided always that they are to leeward and cannot be ventilated.* Vegetable putrefaction! as if our dung-heaps and pig-styes in every part of the world did not teach us better. Where was it in the arid plains of Spain, long denuded of all vegetation, when our armies were paralysed by autumnal fevers?—where is it even now in the dried pestiferous Campagna di Roma?—and why did it sleep when in healthy, (comparatively speaking,) because rainy seasons? I visited and reported upon the putrid marshes of Trinidad, Berbice, Guadaloupe, Tobago, and St. Lucie. Malaria is in fact the production more or less of the earth's surface—never of the ocean's—in every hot season or climate. It is certainly absorbed by water and dissipated by the winds, but when these agencies fail, it accumulates into force, and spreads disease and death around. We do not yet understand it, and never will understand it until we can clear our heads of the long-cherished superstition (for it deserves no other name) of vegetable putrefaction being the sole and only source of malaria. The leaven of the false creed will otherwise continue to prejudice our minds, and when disease, for which in the absence of marshes we can discover no cause, makes its invasion, constrain us to seek refuge from the trouble of thinking in the doctrines of contagion, and the monstrous safeguards of quarantine—a quarantine, in fact, against the heat of the season calling into existence a morbific element of the natural world. I am not pretending to lay down the law to others—I am only telling what I myself have experienced; and if the testimony of an eye-witness can be of any avail, the authorities, when Gibraltar again falls under the dominion of pestilence, as fall it will whenever the drought and calms are long continued, the garrison numerous and the heat great, may, if they choose to enquire, find the source of the disease in its hollows and fortifications and leeward base, without seeking for its importation from beyond the Atlantic: the fabled poison of the far-famed upas tree is but a type of malarious locality. I believe it grows in the unventilated mountain-hollows of dry rocky deserts, where the malaria is so deadly, but the tree itself, though exuding, when wounded, a narcotic poison, under the form of a white milky juice, is as safe to approach and to handle as ever a yellow-fever patient was in St. Domingo, and I believe I may add with confidence, in Gibraltar: and is this all declamation, and have we no remedy? It stares us in the face. Let yellow fever for ever be expunged from the list of importable and transportable contagions; the whole world of its range, as we see at this moment at New Orleans, Mobile, Augusta, &c. (and can a ship, with incomprehensible punctuality, have gone to all these places just at this season, as if for the express purpose of dropping yellow fever) is every year proclaiming the impossibility—dismiss, in as far as that disease is concerned, the ministers of quarantine, for they are paid and appointed to deceive—wherever it prevails seek the only possible safety in removing from the locality, so often a very limited one—and when that cannot be done, firmly await its sure extinction in the changes of the season, and eschew for ever the unchristian, I may in its consequences call it the atrocious doctrine, of excommunicating the sick, for in that way you may, through neglect and accumulation, generate a true contagious pestilence, which atmospheric heat without ventilation will neither dissipate, nor cold extinguish. Do this—I address myself to our rulers—and the whole race of importers and expurgators and fumigators* will no

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* God forbid that I should be supposed to utter a word in derogation of discipline and cleanliness, but of all absurdities fumigation against we know not what (for who can tell the nature of those vapours that convey diseases) seems to me the greatest. In the application of caloric we possess a certain and immediate disinfectant, and in the admission of light, air, and water, we

more be seen, for men's minds, redeemed from panic and prejudice, will then be turned to the lessons of true philosophy, and the British name be rescued from the reproach of having so long cherished a delusion so discreditable to the national character, and injurious to our best commercial interests.

I am now past the age and the ability of active service, and must leave the swamps and ravines of the Tropics to be explored hereafter by abler men; but I can still stand sentry at the gates of the printing office, and when illicit matter, pregnant with delusion upon the public mind, is passing through its engines, refuse it currency until subjected to examination, and bearing my protest: and with this protest I shall conclude, although I believe that, even at the risk of being deemed garrulous, I shall trespass on your pages with another letter, for even while I now write fresh matter, the recollections of times long ago keeps rising to my mind, which (from self-partiality it may be) I cannot help thinking may prove further illustrative of tropical fever—its sources—its phenomena—its prevention and treatment.

W. FERGUSSON.

Windsor, October 10*th*, 1839.

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have others equally sure but of slower operation, and indefinite with respect to time—why then resort to fumigation, even if it were proved to be a disinfectant (which it is not), unless to mystify the people. The trick has had its day, and is becoming stale—it has been too long practised, as I know from experience, for on my last return from the West Indies, in the year 1817, I was subjected to personal fumigation on three succeeding days at the quarantine station in the Isle of Wight, and in confoundedly cold weather too, lest I should introduce the yellow fever into England!!!

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