views expressed, but with the hope that it may serve, however unworthily, to direct attention to a branch of therapeutics which has hardly received its due share of consideration.

NOTES ON LEPROSY AS OBSERVED IN ANTIGUA, WEST INDIES.

By JOHN FREELAND,
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At this particular time, when leprosy is being brought so prominently forward in the medical and lay press of England, and the question is so frequently asked whether contagion takes any important part in the spread of the disease, I may perhaps be excused for wishing to record an experience of over thirty years in the observance and treatment of this most ancient and loathsome malady. And as such an authority as Mr. Jonathan Hutchinson has lately published notes on acquired leprosy, in which he states that there is far less divergence in professional opinion, and a far nearer approach to unanimity as to the cause of the disease than is generally believed, I take it for granted that his remarks represent, as near as possible, the opinions of the medical profession in England, where (owing to the rapid and easy steam communication which now exists between all parts of the world) imported cases for treatment or climate have lately become sufficiently numerous to give some weight and authority to the views which he so clearly expresses.

And, first, with regard to the disease. I have always recognised but two forms of leprosy—tubercular and non-tubercular; the mixed form being merely a combination of the two varieties, but with always such a decided and marked preponderance of the symptoms of one or the other that it may be easily recognised and classified.

It is by some considered that, in every form of leprosy, the specific poison (or bacillus lepræ, if you will) is usually deposited or finds entrance into the body through food in a certain state of decomposition, and that it may lie passive for years, or until it is perfected, or accidentally fructified, either by the entrance of another organism or through certain favourable circumstances by which it can only be rendered active; and it would appear that, so long as this agent continues dormant, it is not possible for its presence to be either recognised or suspected. So soon, however, as the necessary conditions are fulfilled and the poison set free, we have certain manifestations which depend solely for their character upon the locality where the poison is deposited; and indeed so marked and regular are those symptoms that we can at once foretell the particular form of leprosy which is about to be developed.

Tubercular lepra (or patches of hyperæmia) is always accompanied by pyrexia of a more or less marked character, and of such a decided nature as to indicate, or at least excite, suspicion in the mind of the experienced practitioner; but on this fever I shall not enter here fully, merely calling attention to its presence, and pointing out that all forms of leprosy are more or less ushered in, nourished, and fully developed by successive febrile exacerbations as we find occurring in the subjects of elephantiasis Arabum, or big-leg, of the tropics—indeed, the great similarity of the febrile exacerbations with which tubercular leprosy and the last-named disease are ushered in and accompanied has always appeared to me very striking. The eruptions or leprosy spots peculiar to both varieties of leprosy are also very characteristic, and in their early stages unquestionably hyperæsthetic, although they may afterwards become, although not invariably, perfectly anæsthetic.

When this eruptive or spot-patch stage has existed for some months, and has at intervals during that period been accompanied by febrile exacerbations, we know that the disorder is progressing; or the disease may at this stage be suddenly arrested, the febrile paroxysms lessening or entirely ceasing, and the patient becoming gradually able to resume his ordinary occupation—retaining, however, unmistakable spots, mappings, or even local paralysis, which, although disfiguring, tend in no marked degree to lessen his powers or debar him from his ordinary pursuits.

This unaccountable arrest in the development of the lepra poison, which sometimes occurs both in tubercular and non-tubercular leprosy, and without which the malady would in the one case run on to tuberculation and ulceration, and in the other to extensive destruction, sloughing, and necrosis, is certainly very remarkable, and would appear at first sight to depend solely upon

the non-appearance of the febrile paroxysms; for lepra poison, like that of elephantiasis Arabum, although it may lie dormant in the system, can neither make progress nor go through its various stages unless accompanied by successive febrile exacerbations; these exacerbations may, however, be so slight in non-tubercular leprosy as to be hardly noticed, but, if looked for when the disease is extending, will generally be recognised by a slight increase of heat following upon a marked and diminished temperature, attended also perhaps with only a little nausea and headache. In other instances, particularly when the tubercular symptoms predominate, the fever and its accompaniments may run high, with even a temperature of 105°.

The old island doctors who practised among the slaves many years ago used to say that the factor which developed or fructified the lepra poison from a dormant into an active agent was a specific fever, with successive paroxysms, extending over long periods; and at each exacerbation the poison was deposited either in the true skin (tubercular leprosy), or in the substance of the nerves (non-tubercular leprosy), and that the disease became intensified only in proportion to the continuance and degree of the febrile paroxysms. These good men, however, might possibly have attributed effect to cause, and *vice versa*.

On the subject of contagion I certainly agree with Mr. Hutchinson when he says that the profession divides itself into two camps, one asserting contagion, and the other denying it; but I think that the contagionists, or those who believe that contagion takes an important share in the spread of the disease, are, in this part of the world at least, in a decided minority. No one, I imagine, would absolutely deny that contagion might be artificially effected by inoculation, but the chances of such an event happening accidentally are so remote that it can hardly be taken into account.

The risks of contamination, as Mr. Hutchinson points out, are far other than those of contagion, and in these islands are considered and proved by experience to be only lengthened or prolonged contact, which includes eating with, wearing the clothes, sleeping in the same bed, breathing the same air for months, continued cohabitation, as well as washing the clothes or ulcerated surfaces of these unfortunate people for any lengthened period. And when a gentleman of such high attainments and experience as Mr. Hutchinson says: "We admit lepers into our hospitals and observe no precautions; we allow them to mix freely with their relatives, and permit leprous husbands to continue cohabitation with their unaffected wives, and no ill results ensue;" that there has not been in England within his knowledge a single instance of even suspected contagion, and that he has never seen a patient in whom the disease had not been acquired during residence abroad;—when I read such statements, and couple my experience with so high an authority, calling to mind at the same time leprous patients sent to London for advice and climate, who have continued for years residing in the same house, breathing the same air, and in more than one instance sleeping in the same bed with their English relatives, without propagating the disease, I feel borne out in my long-expressed opinion that cases sent to Britain for treatment seldom or never spread, even by the means which I have already related as acknowledged factors in this part of the world.

The question, then, arises, Does the leper poison become less virulent for want of something when it is removed from the surroundings in which it originated; or are the persons with whom the leper is sometimes (nay, often) thrown in contact after he leaves his home and country less susceptible of the poisonous influence? I feel convinced that the close and constant contact of the diseased with the healthy, such as I have described as frequently occurring to my certain knowledge in England, would as surely propagate the disease here as it appears unlikely to do there.

When leprosy was common throughout Britain, it was then, no doubt, quite as likely to spread there under the same conditions as we now consider it likely to spread here; but Britain is no longer the abode of leprosy; the necessary fertilising agent has apparently died out, for we see imported cases arrested at every stage; we see the leprous and the healthy living together and sleeping together for years without any ill effects following; in fact, the disease, as now seen in England, cannot be propagated or spread. The fertilising agent died years ago, and imported cases make little progress there, only retaining those character-

¹ The natives or negroes, as a rule, do not use knives or forks, but dip their fingers into the food.

istic signs of leprosy which they brought with them from a leprous country.

Mr. Hutchinson goes on to say, as leprosy can begin without inheritance, is not associated with poverty, dirt, climate, or hardships, and is, besides, with the utmost difficulty contagious, "he is driven to the conclusion that it must depend upon some very special kind of poison of rare occurrence taken in connection with food." Now there is unquestionably a great deal of truth in this statement, for, as he totally denies the possibility of leprosy being propagated in England even under the very exceptional circumstances recognised here, and which can hardly be called contagion, it leaves us to seek the true cause of the spread of the disease not only, as he says, in food, but in that particular kind of food which, although now entirely discarded, was formerly largely consumed by all classes in England. And may not that particular kind of food be some fish which has now entirely disappeared from British waters; or, like some of the fish still in our seas, which develop poison at certain seasons, and that poison rendered characteristic only when accompanied by decomposition?

The chief food of the negroes and lower orders here has been for generations past a salted fish called cod, but it might be anything else. It is imported from the United States of America. As health officer I can truly say that it does not always arrive or keep here perfectly sweet, nor did the effluvia from this food ever remind me very forcibly of the hay-fields of England.

INOCULATION AND VACCINATION FOR SMALL-POX AMONGST THE CHINESE.

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THE question of vaccination is apparently exciting attention in England just now; and that the anti-vaccinators are obtaining a hearing from the fact that a Royal Commission is at their instance to investigate matters, it is evident that an important scientific expedient is upon its trial. As all eyes are upon the question, it may be interesting to know what is going on on the other side of the world amongst a people who have known and practised inoculation for many centuries, and to whom also vaccination has been made known by foreigners for nearly 100 years.

In this article the following significance is attached to terms: (1) Inoculation means the direct infection of small-pox; (2) variolous lymph means material gathered from a person inoculated; (3) humanised variolous lymph refers to lymph gathered from a person through whom variolous lymph has passed; (4) active and passive humanised variolous lymph are terms meant to indicate the degree of power in lymph so named.

Inoculation.—Inoculation has been practised amongst the Chinese from dim antiquity, and its origin is lost in mythical genesis. At the present day, as from early times, three methods of the artificial production of small-pox are practised: (a) The scab from a dried small-pox pustule, after being pulverised, is blown up the nostril. (b) The clothes of a person suffering from small-pox are worn by the person to be infected. (c) The matter from a small-pox pustule is inserted beneath or on the abraded skin. By a mucous membrane, by the skin, and by the circulatory system directly sums up the category of the process of inoculation. The result in every case is similar—provided the process takes—except that in the last mentioned a special local pustule is developed in addition to the general eruption of pustules over the body, and it is from these special local pustules developed at the seat of inoculation that variolous lymph is gathered for further infection.

Inoculation is only practised when an epidemic of small-pox is actually in the midst of a community; at other times it is impossible to get the Chinese to listen to the benefit of preventive measures. This is only a further proof of the semi-civilised form of Chinese government and their empiric attempts at science. But inoculation is a rare event, and it is only when the supply of humanised variolous lymph has run out that the process is reverted to. In the community of Hong Kong, even when native—that is, humanised—variolous lymph is no longer available, the vaccinators (Chinese doctors) will fall back on vaccine matter as supplied by foreigners rather than employ inoculation. It will therefore be readily seen that the same humanised variolous lymph may be used for years—may, in fact, have been at

Hong Kong when the place was first taken by the English nearly fifty years ago.

We have no knowledge from careful inquiry amongst the very oldest Chinese doctors—and some of their experiences date from the peopled history of the island—other than that they are dealing with the lymph then introduced. In fact, what is now being used is passive, not active lymph. The power of lymph is known to behave as do ferments; and as with ferments, so there is a history of increased activity, gradually tending to decline, and finally to a loss of fermentation power. From what is observed as to the protective power of humanised variolous lymph, this process of activity and passiveness is the only possible explanation to be advanced to explain the enormous prevalence of small-pox amongst the Chinese. When a Chinaman is asked if he ever has had small-pox, he answers, "Not yet," implying thereby his likelihood of catching it. He regards small-pox, in spite of all his professed practice of inoculation, as we do measles.

In Hong Kong in November and December, 1887, and January and February, 1888, there prevailed one of the worst small-pox epidemics ever known. Suffice it to say that there were "known" to have died of small-pox in Hong Kong in the month of December, 1887, as many people as died in Britain during the whole of 1887. The population of Hong Kong is but 200,000, that is, about the size of the town of Hull. Moreover, there was an epidemic in at least two large towns in England during that year.

What inferences are to be drawn from this statement?—

1. That the preventive measures against small-pox, though believed to be known and practised amongst the Chinese, are neglected.
2. That the lymph they are using is passive, humanised, variolous lymph, that is, lymph which, though fit to raise a bastard pustule, has lost the power of protecting the subject against not only catching small-pox, but that it renders no protection against a fatal issue.

3. That preventive measures used in the height of an epidemic, at any rate as attempted by the Chinese, are useless to stay the death-rate. All this is easily understood when it is remembered that in Hong Kong they may be using lymph derived from its parent source fifty years ago.

4. Reinoculation—what we call revaccination—is never practised; and from what we know of infant vaccination it would seem to confirm the belief that a single insertion in infancy is valueless for adult protection.

Vaccination.—Vaccination amongst the Chinese, at any rate in Southern China, has been practised since the end of the last century. The East India Company brought vaccine matter from India to Macao (a Portuguese settlement at the mouth of the Canton river), and vaccination was practised upon the Chinese there, and in Canton. Whilst a small-pox epidemic prevailed, which it did with more or less severity annually, there was no difficulty in getting subjects; but when the scare was over the Chinese did not see the necessity for vaccination. Lymph became exhausted now and again, and a fresh supply had to be obtained. This fresh supply was obtained from India or from Manilla. Manilla, the farthest outpost of Spain, was in the early days more in touch with the Pacific shores of South America than with the Asiatic littoral, so much so that vaccine virus was conveyed from South America to Manilla to replenish the played out stock there. A long, long way to reach its destination was the precious fluid carried. From Spain across the Atlantic, and then across the broad continent of South America and over the treacherous Pacific, was the route chosen, without steam to aid its advance, and the dense jungle tracts impeding its reaching its destiny. Such was the belief, however, in the efficacy of vaccine matter as a preventive of small-pox, and such the care of His Most Catholic Majesty for his distant subjects. The lymph was many times freshened on the way by reinsertion, so that by the time it reached Manilla an active lymph was obtainable. From the two sources enumerated was vaccine lymph introduced, not only to Macao, but to Canton. We read that A-He-Qua, a Chinese vaccinator, was engaged in the practice of his art in the Hall of the British Merchants in Canton in the year 1800. Lymph was brought by the East India Company ships to replenish A-He-Qua's supply, enabling him to practise vaccination many years. By this method vaccine matter was introduced into Southern China, and the practice is now widespread.

Revaccination and Reinoculation.—As stated above, revaccination and reinoculation are not practised by the Chinese. During the epidemic of small-pox in Hong Kong, referred to above, only two adult Chinamen were, to my knowledge, revaccinated. These were educated