

plained of. A week later the above had almost completely faded, when the patient had a severe fit, after which there was an exactly similar condition to that above described. Borax had been suspended when the first rash appeared, and the patient was then taking arsenic and salicine.

Nausea, and in some cases vomiting, necessitated the temporary suspension of the drug; but, as before stated, often the drug could be resumed without again causing any such symptoms. In one case the vomiting was attended with abdominal pain, and in two there was diarrhoea. These patients were taking 120 grains in the twenty-four hours at the time when these symptoms showed themselves.

A considerable number of the patients became somewhat emaciated and pulled down physically after they had been on this treatment for any length of time, but in no case was there ever any sign of mental depression. One patient, who was also taking cod-liver oil at the same time, put on flesh in spite of being on the borax treatment for nine weeks, which suggests that this would be probably a judicious combination in all cases.

Case 8, a young woman aged twenty-five years, was attacked with pleurisy while taking the drug. The symptoms were pain, short, hacking cough, and rise of temperature; and a well-marked friction rub could be heard on auscultation. At no time was there any evidence of effusion, though there were several relapses after the first manifestation of the disease. The patient had never had a similar attack before, and as no history could be obtained of any of the usual causes of pleurisy, it might be suggested that the affection of this serous membrane was similar to that which we had seen in skin and mucous membranes, and depended on the baborate of soda.

As regards the treatment of complications, there is little to be said, as all that is necessary as a rule is to suspend the administration of the drug for a time. In cases where vomiting is a repeated symptom, small doses of cocaine given half an hour before the borax will be found to obviate this.

In conclusion, we may say that we do not wish in any way to compare borax to bromide in the treatment of epilepsy, but consider it well worthy of a trial, especially in those cases where bromide has failed or is badly borne.

CAUSE OF LEPROSY.

By SIR WM. MOORE, K.C.I.E.,

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I VENTURE to submit that there are cogent reasons for regarding leprosy as a phase of inherited syphilis, also for believing that when developed by heredity it is susceptible of conveyance to a healthy person so soon as it reaches the ulcerative stage. My reasons for these conclusions are as follows: Like syphilis, leprosy certainly possesses affinities to zymotic poisons, for it not unfrequently develops as an acute febrile eruption develops. The secondary eruptions of syphilis and the skin patches of leprosy have sometimes a vivid resemblance. It is true that various distinctions have been drawn relating to size, shape, appearance, anæsthesia, &c.; but the fact remains that they have frequently been confused, leading to the use of such terms as "leproid" and "syphiloid." What Hebra remarked is yet correct. He said that a positive opinion can only be formed after protracted observation. The sores of syphilis and the sores of leprosy have a still more visible resemblance. Hoarseness and nasal voice are symptoms of leprosy as of venereal. The palate and nasal bones are sometimes destroyed in leprosy as in syphilis. Nervous affections are a marked feature in leprosy, and that syphilis induces nervous affections is fully recognised. The so-called tubercles of leprosy and the deposits of syphilis have a pathological resemblance so close that they have not been satisfactorily differentiated. Erasmus Wilson long since stated that there is a close resemblance between the two diseases, and that they at least belong to the same family. Simon and Lindworm, if I recollect rightly, asserted the connexion, regarding leprosy as the offspring of syphilis. Various writers have described syphilitic leprosy, and most allow that the syphilitic taint, inherited

or otherwise, renders the subject a more easy victim of leprosy.

Of course, many objections have been advanced against the identity of the two affections. It has been stated that leprosy cannot be any phase of syphilis because the latter was not known till towards the close of the fifteenth century, while leprosy has existed from time immemorial. But there is as much reason to suppose that venereal is referred to in Holy Writ as there is that leprosy is referred to. It is true that one is mentioned and the other not; but the term "leprosy" is certainly applied to various skin diseases; just as was the case when, some centuries back, leprosy is said to have so much prevailed in England. Then persons with any kind of skin disease or sores were avoided as lepers. A synonym even came to be applied in other manners and to other things. We have Bacon writing of the "impurities and leprositities of metals," and Shakespeare of the "leprosy of disloyalty." In the old Sanscrit of *Sucruta* there is a description of syphilis. Greek and Roman authors often alluded to it; and in the Middle Ages Villafranca of Milan proved by his writing that he was well acquainted with it.

We are told leprosy and syphilis cannot be the same disease because there is a distinctive bacillus. There has been said to be a bacillus distinctive of tubercle, but Mr. Hutchinson has lately spoken of a bacillus common to both tubercle and leprosy; and some have regarded scrofula as the offspring of syphilis. The differences of shape in the bacilli of leprosy and those of syphilis do not appear sufficient to warrant the assertion that they are distinctive of a different disease, any more than the differences of the bacilli of tubercle and leprosy warrant such assertion. The leprosy bacilli are described as rods with slightly pointed ends, the syphilitic bacilli as rods with slightly thickened ends. But it is said that the leprosy bacilli possess the distinctive powers of lodging in the sheaths of the nerves, and so originating at least anæsthetic leprosy. But perhaps the same will be discovered with regard to syphilis bacilli, for there are such maladies as syphilitic neuritis, syphilitic nerve atrophy, &c.

It has been said that the local ulcerations of leprosy are more severe than syphilitic ulcerations. But, in former years, I have seen very bad ulcerations from syphilis, ending in loss of parts and necrosed bone, bearing a very strong resemblance to what I have since seen caused by leprosy. An author—who, perhaps, was not much acquainted with leprosy—has also said that it differs from syphilis in not presenting the periods of quietude and inaction characterising syphilis. But, as a matter of fact, this is exactly what leprosy does present. In every leper asylum some may be found in whom the disease has become quiescent. Persons affected with leprosy sometimes live to old age, the disease being quiescent at intervals. It has also been advanced that leprosy is not syphilis because mercury does not cure leprosy. Perhaps it is doubtful whether mercury cures syphilis. I remember the time when this was denied, and when we were all to be taught in Edinburgh how to cure syphilis without mercury. But another cyclical change has now occurred. Again, it is said that leprosy comes on later after birth than hereditary syphilis. But a child may be born with a syphilitic taint, and not develop the disease for an indefinite period, or develop it in very different manners; and it is the same with leprosy. Then we are told that leprosy is caused by eating fish, and therefore cannot possibly be syphilis. Now, I lived and worked many years among the inhabitants of the semi-desert districts of Western India, who never see fish. The sea is hundreds of miles away, and there are no lakes or rivers. Even dried fish did not penetrate into those remote districts. Fish was practically unknown as an article of diet. Yet there is a considerable amount of leprosy in those countries. At recent meetings of the Medical and Physical Society of Bombay the subject of leprosy was exhaustively discussed, and the members were unanimous in discrediting fish as a cause of leprosy. The members, being both native and European practitioners, private, and in the public services, who are constantly seeing leprosy, are perhaps better qualified than any body of men to give an opinion on this matter. In the districts of Western India above referred to salt is made from the earth at most villages. The people have as much salt as they want. Yet leprosy has been attributed to an absence of salt. It has always been ascribed to a vegetable diet, to new rice, and to diseased grain. But the kind of food does not appear to influence the disease further than, like insani-

tary conditions, insufficient food, and food deficient in required elements, that it induces a state of constitution rendering the subject more liable to almost any malady. Again, it has been advanced that leprosy is not, like syphilis, contagious. But the communication of leprosy has certainly been proved. Direct proof seems to have been afforded by the experiment on the criminal at Honolulu. In the case of Keanu, bacilli were found to have multiplied at the seat of inoculation. There is the case of the boy Miller, who pricked himself with a needle used by a leper. There is the case of the medical student at Bombay. A man who had never left Ireland became a leper after close association with a person who had acquired the disease in the East. I mentioned in my "Manual of the Diseases of India" that I believe I have traced the conveyance of leprosy to an Indian female. There are also various other more or less well-authenticated cases which might be cited. Leprosy very frequently commences on the extremities. Natives in India do not generally wear shoes and stockings; their feet are thus very liable to become abraded or wounded; a leper's slippers may easily be taken by mistake, and conveyance of discharge is, I believe, thus frequently accomplished. Those acquainted with the habits and customs of the lower orders of Indians will readily discern various manners in which leprous discharge may be conveyed from one to another. It has also been advanced that leprosy differs from syphilis in not being hereditary. Now I believe that leprosy is hereditary. Carter found that 30 per cent. of the lepers in Kattywar had a direct or collateral history of leprosy. The existence of so many leper families in India cannot be ignored. All children of lepers are not lepers, any more than all children of persons affected with other hereditary diseases are affected with the same disease. The evidence which may be brought forward in favour of leprosy being hereditary seems to be equally conclusive as that which may be brought forward in favour of contagion when leprosy presents open sores. Again, it will be advanced that syphilis has maintained itself in countries from which leprosy has disappeared. But I presume the treatment of venereal is better understood than it was years ago. And the environments of the population of England, for instance, are infinitely superior to what they were in former times. Of the miserable condition of the population in this country when leprosy prevailed we have been told by the Rev. Mr. Jessop, in his "Village Life Three Hundred Years Ago." Improvement of treatment and improvement of sanitary surroundings, which includes lodging, food, &c., may have eradicated one form of heredity.

Many medical officers think there is a connexion between the two diseases, but I think they are identical; or, at least, as identical with the parent as an hereditary disease can be. There may be differences in the manifestations of leprosy and syphilis, but scarcely more than there are between the manifestations of hereditary syphilis and of acquired syphilis. I have long regarded leprosy as a phase of inherited syphilis, which, like other inherited taints, is partial in its distribution, and may not develop in one generation, although it may appear in the next, the development being determined by some constitution or temperament, or perhaps vulnerability, with which we are unacquainted, aided by favourable surrounding circumstances of life. But, as before stated, when developed into the ulcerative form it may prove contagious. I feel sure that one of the principal means of prevention of leprosy is the prevention of venereal disease; but this is just what has been stopped in India by the action of the British Parliament. When surgeon-general in the Presidency of Bombay ending 1888 I had control of the Contagious Diseases Act, Bombay. The amount of locally contracted syphilis was reduced to *nil* among the sailors and to a minimum among the soldiers, the difference being explainable by a very sufficient reason. Now, no protection of the kind being afforded, venereal disease has alarmingly increased. With this increase, besides extension of present sickness, there will be, I fear, the germs of future development of leprosy. I am, however, quite ready to modify my views should sufficient reason be shown by the exhaustive inquiry which it may be hoped will be soon initiated. It has been remarked that all theorists believe anyone else who has any doctrine on the subject to be wrong. If this is a rule, I claim to be an exceptional proof; but, having seen a good deal both of syphilis and of leprosy, I have no hesitation in expressing my views tentatively.

Portland-place, W.

NOTE ON THE LEPROSY REVIVAL.

By W. J. COLLINS, B.Sc., D.P.H. LOND.

WHILE there can hardly be two opinions as to the need of further knowledge respecting the intimate pathology of leprosy, of better provision for lepers, and of more strenuous effort to reduce the prevalence or limit the extension of the disease, it might possibly ensure that such laudable efforts should not be baulked of success if rather more mature consideration were given to the proposed plan of campaign. All would agree with His Royal Highness in "sincerely trusting that the proposed fund would not attract impoverished lepers to this country;" for while it is probable that the conditions of British living in the last decade of the nineteenth century would be unfavourable soil for the reception of such exotic, it is becoming increasingly evident that the question of contagion has not been finally disposed of by the report of the Royal College of Physicians. The economics of the matter would surely lend no credence to the hope that comfortable quarters, Royal patronage, provision for life, along with a little mild experimentation thrown in, would act otherwise than as a bait for the friendless leper who could secure his passage hither. I cannot find in the scheme before us adequate provision against such contingency, although apparently it is desired that such result should be obviated. Probably in no case, with one exception only, has pathological research been more successfully baffled by the accident of nomenclature than in the case of leprosy. Originally intended by the Greeks to express a rough (*λεπρος*) condition of the skin, and later differentiated by them to mean no more than psoriasis vulgaris, among the Arabs it came to designate a morbid condition of a very different nature. Its use in Leviticus, in Kings, and in Matthew does not serve to elucidate the matter. The rules of diagnosis elaborated by Moses (Lev. xiii.) apply apparently to some malady, often curable, running an acuter course than the leprosy we see to-day, and further characterised by a "rising, a scab, or a bright spot" (v. 2), a tendency to ulceration "in sight deeper than the skin" (v. 30), and to alopecia (v. 41-43), and possibly venereal in origin. Moreover, as accentuating the looseness with which the term is used, we read (ch. xiv., v. 37 *et seq.*) of leprosy attacking the walls of a house "in hollow strakes, greenish or reddish, which in sight are lower than the wall"—possibly the "dry-rot" (*polyporus*),—which was taken as an indication for scraping and remortaring (v. 42). It is evident very different phenomena have been confounded under one name, and it must strike a visitor to a leper hospital that it is more than possible even the leprosy of to-day is not one thing, but many. To assert a hard-and-fast specificity for leprosy is not philosophical, in spite of the discovery by Hansen of a bacillus luxuriating in leprous tissues. When in Norway last summer I paid two visits to the Spedalsked hospital and asylum, and was shown round by the veteran, Dr. Danielsen. The old asylum, built of wood, is shockingly defective in its sanitation, ventilation being quite unprovided for, attention to cleanliness sadly required, and the diet anything but appetising. The stench of many of the rooms I entered was overpowering, while the conscious inferiority and listless hebetude of the poor wretches were not less depressing than the loathsomeness of the disease. I inquired of the attendants whether any of them had taken the disease, or whether they knew of any such infection, but they replied in the negative. To attribute the decline of leprosy in Norway to compulsory isolation is entirely erroneous. In the first place, no such powers exist or are likely to be sanctioned by the Norse democracy; if they did exist, it would be impossible without further accommodation to segregate even the reduced number of lepers in Norway at the present time. Indeed, I met many lepers in the streets of Bergen and on the quay, going about their usual vocations. It is not that segregation is stamping out leprosy in Norway, but the increased material prosperity of the people, the growth of foreign trade, the intercommunication with town life, and the opportunities these give for better and more varied subsistence, which have doubtless effected beneficent changes in this direction. Yet even now the squalid poverty and filthiness of the tenants of some of the up-country wooden huts are indescribable, and how they can scrape an existence out