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PART I.
ORIGINAL COMMUNICATIONS.

ART. I.—*Some Account of an Anomalous Disease which raged in the Islands of St Thomas and Santa Cruz, in the West Indies, during the Months of September, October, November, December, and January 1827–8.* By **GEORGE W. STEDMAN, M. D.** Member of the Medico-Chirurgical Society of Edinburgh, and formerly President of the Royal Medical Society of Edinburgh.

TOWARDS the end of September 1827, a disease of a very singular character suddenly made its appearance in the Island of St Thomas, and attacked almost every individual in the town, which contains a population of about 12,000 souls. As it was unknown to the faculty, the vulgar, as commonly happens, gave it names of their own; and, ridiculous as they may sound, they soon became the only appellations of the new malady. The English negroes in St Thomas called it the *Dandy Fever*, while the French vulgar called it the *Bouquet*, which again was corrupted into the *Bucket*. However ridiculous the names are by which this fever has been distinguished, it deserves, from the singularity, as well as the novelty of its symptoms, to be made known to the medical world.

The disease appeared so suddenly, and spread with such rapidity, and the suffering attending it was so great, that at first it caused universal alarm, and was considered a sort of plague that would probably ravage the whole country. It was soon, however, discovered, that although a very painful, it was by no

means a dangerous disease, and that, if the attack was rapid, the recovery was no less speedy. This at least was the general belief, until longer experience showed the troublesome nature of the secondary pains that constitute the third stage of the disorder. But though not fatal, it was sufficiently formidable, both from the pains that accompanied it, and the universality of its attack, to excite the deepest interest both among practitioners of medicine and in the public at large.

Not a day passed but hundreds were attacked; and of this the consequence was a great interruption to trade, in the most crowded port in the West Indies. It is well known that St Thomas is the great *entrepôt* for the trade of Europe and the United States of America to Columbia and the islands. Being a free port, and possessing one of the best harbours in the West Indies, it is always crowded with vessels from every part of the world, and from every civilized nation. That it should become the seat of a new disease cannot therefore appear wonderful.

The fever of which I now propose to treat was most distinctly divided into three stages, each of which was distinguished by characteristic and unequivocal symptoms. It was on this account at first reported that no person was safe until he had undergone three attacks of the disease. But longer experience convinced every one, that these apparently distinct attacks were only successive stages of the same malady.

The invasion of the symptoms was not less sudden than their progress was rapid. A person walking along the street might be suddenly seized with acute pain in one or both knees—in the ankles—the wrists—or in all of these joints at once—though in general only one was at first affected. Upon attempting to move the affected joint, he would find to his surprise that it was stiff, and that the least motion gave so much pain as to render a second attempt impossible. It is even said that when the disease first appeared in St Thomas, several negroes, who, being all at once attacked with the pain in the knees, had fallen down, were actually apprehended by the police for drunkenness.

The most usual mode of attack, however, which appears not a little singular, was the following:—A person in perfect health would suddenly feel a stiffness amounting almost to pain in one of his fingers, and most frequently his little finger. The stiffness increased, and was accompanied by an intense degree of pain, which spread rapidly over the whole hand, and up the arm to the shoulder. The fingers of both hands in a few hours became swelled, stiff, and painful, preventing all attempts at bending the joints.

This was followed in a short time by restlessness, depression of spirits, and a degree of nausea, ending in some cases in vomiting. Then came on shivering, succeeded by fever, great heat of skin, intense headach, most acute pain in the back, knees, ankles, and in short in every joint. But perhaps the most distressing symptom of this stage was the intense pain in the eye-balls, which appeared to the patient too large for the socket, and ready to start from the head. In some cases the first stage was ushered in by an irregular distribution of blood, so that while the hands and feet were cold, the rest of the body, particularly the head, was intensely hot.

The fever and heat of skin by degrees became established. The head and eyes now particularly suffered, and, together with the joints, the whole body was racked with pain, so that the unhappy sufferer could not tell of which he would rather get rid had he the choice. In my opinion, the pain in the eyes and back was the most afflicting; but most people experienced equal torture in every part of the body. In some the features were swollen and distorted, especially the eyelids; in others the fingers suffered most in this way; while in one or two cases, along with the swelling of the face, a profuse ptyalism took place.

Another peculiar feature of this disease is, that patients complained during all its different stages of a feeling of intense cold, and felt the warmest coverings scarcely enough. This feeling was observed even when the skin to the touch was intensely hot. When I had the disease I was obliged to cover myself with two or three blankets, although the weather at the time was sultry.

In every case, where the first stage was in any degree well marked, even patients who had suffered the most severely from the common fever of the country declared that they had never experienced, nor could have conceived, pains equal to what they felt in this fever. Not one inch of the body from head to foot was exempt from suffering. This, together with the restlessness, which in general forms the most disagreeable symptom in common fevers, and a distressing sickness of stomach, which also occurred in many instances, rendered this disease more painful than any that usually afflict mankind.

These symptoms, if not relieved by art, continued with more or less severity for twenty-four or thirty-six hours. The fever generally abated about that time, and, as the fever went off, the pains of the joints grew less and less severe, leaving the fingers, ankles, and toes last.

The patient then continued in a state of languor, irritability, and restlessness for three days, during which there was a com-

plete absence of fever. But, as happens after fevers in general, although there was no acute suffering, the feelings were very different from those of health. Added to these ordinary consequences of fever, this intermediate period was characterized by complete want both of thirst and hunger in some; while others who felt thirst had no hunger. The sense of taste seemed entirely lost, so that no difference could be perceived between the taste of a biscuit and a beef steak, or any other articles of food the most dissimilar. This was more distressing in some than in others; and those who had it most had, at the same time, little aphthous sores on the inside of the lips and on the tongue, which rendered eating painful.

The third or fourth day after the primary fever, but generally the third, was ushered in by a degree of fever more or less severe. For while some people were merely feverish, others had so smart an attack, as to be obliged to return to bed.

An efflorescence was perceived at the same time to begin at the palms of the hands, and to spread over the whole body. It is difficult for me to describe the precise appearance of the efflorescence; and I regret to say that I could get no one to delineate it for me. Some idea, however, may be formed of its general appearance, for it differed a good deal in different cases, by imagining a *blotch* or *wheal* of red-coloured skin between that of scarlet fever and that of measles. The efflorescence was accompanied in the severer cases by swelling of the feet, hands, and face, particularly the eyelids, and by a distressing tingling, which, as the eruption disappeared, became an intense itching, that almost drove the sufferers distracted. The efflorescence generally began to fade on the second day, and was entirely gone before the third morning. This was followed in almost every case by some degree of desquamation, which in a few instances, as will be afterwards related, gave rise to very troublesome consequences. This secondary fever generally disappeared early on the second day.

This is the second or eruptive stage, which, in my opinion, stamps the chief distinction on the complaint, and proves it beyond doubt to be one of the exanthemata.

After the eruptive stage, the patient began to recover his spirits and his strength; but in many cases a complete want of taste remained for some days.

Many people did not get rid of the pains in the joints for many weeks, the third or rheumatic stage coming on immediately after the eruptive. In general, however, the disease gave a degree of respite for three, four, and even in some cases six weeks, and then attacked the joints with more pain and para-

lysis than at first. These pains were not accompanied by fever; and they generally fixed themselves in one or two joints, and continued to excruciate the patient for weeks together. It is remarkable that they were always severest in the morning, and wore off in some measure towards evening. Some people, in addition to the secondary pains, were tormented by the most distressing itching of the skin; while in others the joints, particularly those of the fingers, became stiff, painful, and swelled to such a degree as to produce deformity.

The secondary pains were chiefly felt in the joints, especially in the joints of the fingers and toes, the wrists, the ankles, and the knees. Many people were rendered bed-ridden for several days. In these the slightest motion gave such intense agony as to call forth groans and shrieks of pain even from the most resolute. It was pitiable to see the patients who suffered the last part of the disease severely. Stout able men were to be seen lying flat on their backs, afraid to move even the little finger, and hardly venturing to breathe. To lift a hand to the head seemed almost impossible; and they were consequently obliged to have their food put into their mouth as if they were babies.

Except these local pains, and the general irritation which they naturally created, no other symptom of disease remained. The appetite was good, although the sense of taste was still somewhat blunted; and the unhappy patient, with most of the feelings of health about him, lay pinioned to the spot, like Gulliver when he awoke on the shore of Lilliput.

This description, it may easily be imagined, applies only to the severest form of the disease; for nothing more distinguished this malady than the infinite varieties of its severity, and the disproportioned violence of its different stages. For while some, who underwent the primary fever with the utmost mildness, had the eruptive attack with great violence; others, who had passed gently through both, and were congratulating themselves on their escape, were suddenly crippled by the secondary pains.

In a period varying from three to four or six days, however, the pains began gradually to recede, deserting one joint after another, until they remain fixed for some time in one. This process occupied several weeks, and was often attended by relapses, which brought the patient back to his former state of pain and weakness. It was universally observed, however, that the pains were intense in the morning, and generally became less severe towards evening. It was also remarked, that those whose unavoidable occupations forced them to exertion, or who had reso-

lution enough to exert themselves voluntarily, got sooner rid of the pains than those that gave way to them.

After the malady had raged for some time, and people were beginning to recover, it was not a little amusing to see almost the whole population limping about, some with their arms in slings, and others with their bodies half bent, and several on staves or crutches.

Besides these secondary pains, some persons were afflicted with a continual itchiness of the skin, which prevented sleep, and rendered life intolerable.

One old gentleman, nearly 80 years of age, who had undergone the primary disease with great mildness, had the eruption in a form so severe, that his skin came off in flakes like pieces of parchment, and left his whole body quite red. In fact, he resembled a boiled lobster in colour. This affection was attended with so distressing an itching, that he was in the utmost misery. He was cured by cooling purgatives, large draughts of a solution of cream of tartar, and a strong wash made of nitric acid and water.

In some old men the skin came off the scrotum, producing a most intolerable itching; while in others who had a tendency to swelled testicle, that part swelled to a great degree. Others, who were subject to the disease called in the West Indies the *Rose*, and which is nothing but the primary disease of which elephantiasis is a sequela, had a return of their complaint, terminating in several instances in extensive abscess.

One young gentleman, a patient of mine, was confined to his bed for nearly two months with acute pain in his left foot and ankle. The ankle at first seemed as if it were going to suppurate, for it was red, tender, and soft to the touch. These appearances gradually receded under the use of poultices, leaving the part as painful as before. It is only now upwards of two months since the commencement of his illness, that the unhappy patient is able to move about with crutches; and the least motion in the ankle-joint still gives great pain.

Though the description I have now given applies to the usual form of the disease, yet there were many anomalies in its mode of attack. Thus, in some few cases, the eruption occurred on the first or second day of the primary fever, while in other instances no eruption at all was to be noticed.

In one instance, Mr M., a manager at an estate near town, the primary fever came on, with an eruption of a most peculiar character, consisting of large blotches or rather wheals, that varied in size from a shilling to a half-crown, red, and raised perceptibly above the surface of the skin, and giving a distinct feeling of roughness and elevation to the finger when passed over

them. This eruption continued two days, and was accompanied by all the symptoms that peculiarly distinguish the first stage.

The disease proved fatal only in three instances, and, strange to say, they were in negroes, although this class of persons had the disease in general with infinitely greater mildness than the white inhabitants. This was an extremely fortunate circumstance; for, as the disease came on about crop time, had the negroes, who form the agricultural labourers, been as severely attacked as their masters, and suffered as much from the secondary pains, the whole crop must have been lost, and misery and wretchedness would have ravaged the country. Fortunately, however, the negroes in general had the disease in its mildest form, and were rarely afflicted with severe secondary pains. It is a remarkable circumstance which I may mention here, that the household servants had the disease, both primary and secondary, with infinitely more severity than their more laborious brethren of the field.

Of the cases which I have mentioned as fatal, two were children about five or six months old, who died from irritation consequent upon a most severe desquamation of the cuticle, followed by inflammation of the true skin, that, from head to foot, was red, raw, and exceedingly painful. The other case was that of a negro man, a field labourer, who, after passing through the first stage, was attacked with violent inflammation of the lungs, and died of it, although incessant attention was paid to him.

That this disease was contagious, I have not the least doubt, and I shall, I think, be able to bring forward sufficient evidence to this effect, when I come to treat of the disease more in detail. I shall there show its progress from house to house, and from estate to estate. In the meantime, the mode of practice must be detailed.

The cases, as they at first appeared in this island, were so mild, that during the first stage or stages of great excitement, I contented myself with prescribing purgatives, followed in the evening by the warm bath, or pediluvium and diaphoretic remedies. In many cases, however, I could do nothing but prescribe palliatives, as the patients declared that they could not take purgatives, owing to the pain which the least motion gave them.

Where the pain of the head was very intense, I applied a blister to the back of the neck, with great relief to the patient. Where the pain in the eyeballs was chiefly complained of, mustard cataplasms were applied for about half an hour to the temples with great benefit. Sometimes the back was the part most affected. In this case the pain stretched up to the muscles of

respiration, producing a difficulty and pain in breathing that might at first be mistaken for an affection of the lungs. This was entirely removed by the application of a strong mustard plaster to the small of the back. Perhaps nothing can show better the distressing nature of these pains, than that patients expressed pleasure when they felt the pain of the blisters or the mustard plasters, as these remedies relieved them from the deep-seated aching pain of the fever.

As the epidemic became more severe, I found it necessary to have recourse to bleeding, and the great success that at once attended the practice determined me to continue it. The following is an account of the first case in which I bled in this fever.

CASE.—C. S. Esq. aged 21, was suddenly attacked, on November 11, 1827, with shivering, intense pain in the knees, ankles, back, and head, accompanied with full quick pulse, heat and dryness of skin, and unusual thirst. Next day when he sent for me, I found him labouring under all these symptoms, and affected with the most agonizing pains in the head and back; his eyes had a peculiar yellowish muddy appearance, which in this climate is a sure sign of great congestion in the head. His fingers also pained him, but they were not so much swelled as in most cases.

I prescribed six grains of calomel and divided doses of Epsom salt to produce full evacuations; and directed the skin to be frequently sponged with cold vinegar and water. In the evening, although he had free evacuations, and had been sponged during the whole day with vinegar and water, the headach was not relieved; the fever still continued with unabated intensity; the skin was hot; and the pulse full and strong. At his own request, I bled him in the arm to ζ xij. with immediate relief to the fever, headach, and all the other symptoms. He rested well that night; next day he was out walking, complaining only of a little stiffness in the joints; and he subsequently went through the eruptive stage and secondary pains with comparative ease.

The bleeding in this case evidently cut short the disease, and produced such instant relief, as determined me to make use of the remedy afterwards in every case where there was any symptom of plethora.

Though I found bleeding of the greatest use, I made it a rule never to have recourse to it until the febrile excitement was fully established. During the period of partial congestion, which preceded the more severe symptoms in this as in other fevers, I had recourse to the general or partial warm bath with very beneficial effect. Brisk purgatives then followed. Nothing, however, seemed of so much use as bleeding from a large orifice. In using this remedy I was not always guided by the pulse; for

I found that though the pulse might be small and weak, the relief afforded was nevertheless great, and the pain in the affected parts much lessened. When the bowels were well opened, I used after bleeding in the severer cases, and even without it in the milder, to prescribe a dose of Dover's powder at bedtime, preceded by the warm bath or *pediluvium*. The powder I gave according to the strength of the patient. For a stout person I found gr. xij. not too much, while to few did I give less than gr. viij. To those who objected to the powder, I gave the *Haustus Anodynus Antimonialis*, and followed the dose in both with warm diluent drinks.

These remedies frequently produced perspiration and sleep, to the great comfort of the patient. Often when sweating could not be produced, sleep was procured; though it also happened frequently that neither the one nor the other followed. Bleeding and purging may therefore be considered as the chief remedies in the stage of excitement, while blisters, sinapisms, and sudorifics, especially the two former, were powerful assistants.

The relief afforded by bleeding was more speedy, and better marked in this complaint than in any other that I have seen; and after a few trials, the fame of the remedy spread so fast, that patients used to call for the lancet as soon as they saw the Doctor appear. Immediately after bleeding, the pains of the joints were greatly diminished, the pulse and skin became more natural, the headach and pain of eyes were diminished, and the patient expressed himself thankful for the load that was taken from his body. These good effects were not merely temporary, but seemed permanently to influence the disease, rendering each stage milder than it would otherwise have been. The eruptive stage, in particular, was much mitigated by bleeding on the onset of the primary fever, while the after-pains did not seem to be so much under its control.

I have in no case bled more than once; and I generally took from twelve or fifteen to twenty ounces of blood, according to the strength of the patient. Whether bleeding in the other stages might have been of use I know not; for I never tried it, nor did I think that the symptoms warranted such a practice.

During the eruption I found cooling purgatives, and such beverages as tamarind beverage, cream of tartar in solution, along with the use of the nitric acid wash, of the greatest benefit. For the apthæ and soreness of the mouth, alum or borax washes were prescribed with good effect. The secondary pains were not much under the control of medicine, but they were in many cases relieved by the nightly use of the warm bath or *pediluvium*, followed by diaphoretics, and chiefly by sti-

mulating the joints with the volatile liniment, oil of turpentine, strong alcohol, &c.

I may mention, that although it is more than three months since the epidemic broke out in this island, many people are still suffering very much from the secondary pains, which have no doubt been prolonged by an unusually damp and cold state of weather, accompanied with frequent gusts of wind from the north and north-east.

Although I allow the influence of the weather in aggravating the secondary pains, and even the primary disease, I think there is evidence enough to prove that it is of a contagious nature; that it was imported into St Thomas, and from thence into this island. The proofs of this I will now proceed to detail.

It is often a matter of much difficulty to determine whether a disease, which is widely spread, owes its origin and progress to a peculiar constitution of the atmosphere, or whether it is conveyed by infection. In the former case, the disease runs with such rapidity from one individual to another, that though its cause may be meteorological, if I may be allowed the expression, yet it puts on many of the appearances of a disease propagated by infection; while in the latter case the progress of a contagious disease may be so rapid, and it may affect so many individuals at one time, that it may be difficult to prove that it does not arise from the state of the atmosphere or some other natural cause. Hence it is that the question of the contagious or non-contagious nature of some diseases has long divided, and still continues to divide, the medical world. A familiar example will occur to every one in the yellow fever.

There are, however, I think, certain tests by which a cautious and impartial inquirer may arrive at the truth, and which form a distinction between the two that cannot easily be overlooked.

These may be divided into the *negative* and the *positive*.

Of the *negative*, the first is where a disease which is ascribed to a particular state of weather is found to prevail during a state of weather and temperature quite different from that which is supposed to have given it origin. And a still better test is, where this same fever passes to a neighbouring district or country, and there takes root among the population, notwithstanding a state of weather opposite to such as was supposed to have produced it. The *second negative test* is where a disease which is supposed to have arisen from a great natural commotion, such as a storm or hurricane, not only comes on a long time after such a phenomenon, but also passes to a neighbouring island or country which had experienced a similar commotion of nature, before that country in which the disease

is supposed to have originated. When a disease occurs under one or both of these circumstances, we may safely pronounce it *not* to be dependent upon any peculiar state of the weather or atmosphere.

The *positive proofs are*, 1st, Its importation into a country by one or several individuals. 2d, Its proceeding from individual to individual, and from place to place, according to the circumstances of contiguity or intercourse.

Now it appears to me, that if we trace the progress of the epidemic I now describe, it will be found to tally completely with all the foregoing rules.

It may be necessary, however, for the better understanding of the proofs of the contagion, to give a slight topographical sketch of these islands.

The Island of St Thomas, where the disease first appeared, is one of the Virgin Islands, to the east of the large Island of Puerto Rico, and situated in longitude 64.51 west of Greenwich, and latitude 18.21 north. It is, as I have already mentioned, chiefly remarkable for the excellence of its harbour and its central situation, which, combined with its peculiar political privilege of being a free port, have raised it to the rank of the chief commercial port in the West Indies. The country is rocky and barren, containing only a few sugar estates. The town, however, is rich and populous, and contains a varied population from all parts of Europe and America.

The town is built on the sides of three hills that converge round the harbour, leaving a narrow strip of land towards the shore, where the principal street runs. This is well built and paved; but the rest of the town, from the local inequalities, is irregular and rugged. This situation exposes the town to a considerable degree of heat; for not only are the winds shut out from the landside, but the reflection of the sun's rays from the hills greatly augments the temperature. These circumstances, together with the crowd necessarily assembled for commercial purposes in a limited space, and the constant change that is taking place in a population chiefly composed of strangers, render St Thomas one of the most unhealthy situations in the West Indies, and one of the favourite seats of the yellow fever.

About thirty-five miles to the south-east of St Thomas lies the Island of St Croix, or Santa Cruz, the chief possession of the Danes in the West Indies, and the seat of the general government. It is about thirty miles long, and about six or seven broad, and contains a population of between 30,000 and 40,000 souls, of whom only about 2000 are whites. It is the very reverse of St Thomas in its physical and political character, being

as fertile and well cultivated as the other is barren, and being allowed but very little liberty of trade.

The population is chiefly employed in the cultivation of sugar; and to such a height is agriculture carried, that it is universally reckoned one of the most beautiful, best cultivated, and healthiest islands in the West Indies. So high is its reputation in the last respect, that it has of late years become a favourite resort for invalids from the United States of North America, where it is considered as the Montpellier of the West Indies.

It has two towns, the capital named Christianstædt, at the east part of the island, which has a good harbour, but of difficult access, owing to reefs near its mouth; and Frederickstædt, situate on an open bay, at the west end. Owing to its greater proximity, and from being the seat of government, there is much greater intercourse between St Thomas and Christianstædt than with the other two. It will not therefore seem surprising that the epidemic made its appearance in Christianstædt a week or two before it reached Frederickstædt.

On the 17th of August 1827, the Island of St Croix was visited by an awful hurricane, which drove the vessels ashore, threw down houses, tore up the strongest trees from the roots, and laid all the canes flat on the ground, causing an immense damage to the crop. Although the loss was great, yet, from the great strength of the buildings throughout the country, the population suffered little compared to what they used to suffer at a more remote period, when the island was not so highly cultivated as at present. This hurricane was partially felt at St Thomas, but it was not until the 27th that they experienced the full severity of a gale. This did a great deal of damage to the shipping, driving the greater number ashore. The town, however, escaped comparatively unhurt, as all the principal houses are very strongly built.

The new fever did not make its appearance, as far as I can learn, until towards the end of September, or beginning of October. Strange rumours of a plague that struck people down at once reached us from time to time; and it was not until it had raged some weeks that the nature of the disease began to be understood. It was then considered a highly painful and contagious disease, but accompanied with no danger.

It is a remarkable fact, that in a population of about 12,000 souls, who occupy the town of St Thomas, scarcely a single individual escaped.

All the medical men were attacked one after the other; and those who had escaped yellow fever in its most concentrated form found that they had no exemption from the new malady.

The contagion was supposed to be brought by a vessel from the coast of Africa, which touched at St Thomas. This, however, is not ascertained. The disease had been raging for a week or two at Christianstædt before it made its appearance at Frederickstædt, where I reside.

The weather during the months of September and October was extremely warm, the thermometer often rising to 90° of Fahrenheit at noon. We had a few partial showers, but the weather on the whole was dry. We had two days of universal rain in September, which produced the usual concomitants of fever, accompanied with cough and other symptoms of cold. The fever was generally severe, the skin very hot, and the headach intense. These were removed by the tepid bath, blisters, and antimonials; and when the fever assumed the intermittent form, by the exhibition of bark or quinine. Inflammations of the eyes were very common, and with difficulty gave way to the most active antiphlogistic treatment. A slight form of dysentery was also very prevalent, especially among the negroes.

These diseases soon gave way as the warm weather again returned; and at the time the new fever appeared among us, the weather was very warm and clear, and the health of the people very good. The disease appeared in Frederickstædt about the beginning of November.

The first patient I saw was a mulatto woman, an attendant of two young ladies, who had come from St Thomas on a visit to a family in this town. One of the young ladies had the first stage of the new fever a day or two before she arrived. Her attendant had one day of fever before she left St Thomas. I was called to see her on the third day, when I found her labouring under violent pains of her knees and ankles, but not much fever.

The next patient I saw was Mrs F. the wife of Mr F. who keeps a store for the sale of various articles about 200 yards distant, on the opposite side of the street from the house where the mulatto woman above-mentioned resided. As Mr F. has frequent occasion, in pursuit of his commercial occupations, to go to Christianstædt, it is not wonderful that the complaint early appeared in his family.

Mrs F. had intense fever, pain of head, heaviness and wateriness of eyes, much heat of skin, great pain of the wrists, knees, ankles, and soles of the feet. I saw her for the first time on November 2, 1827, and ordered for her a cooling powder, composed of four drachms of Epsom salts rubbed finely down, with one scruple of magnesia. Her daughter, a child about 7 years

of age, was affected much in the same way and at the same time, only the fever was not so violent.

In the evening, I found Mrs F. somewhat better. The medicine had operated freely, and still continued to operate. The skin was cooler, but still warm, and the pains of the knees and wrists still continued severe. I recommended the tepid bath, both for her and her child. Next day (3d November) she was free from fever, but still complained of pain and stiffness in the joints, particularly the knees. The medicine had operated during the greater part of the night, and she seemed rather weak. The child was altogether better.

Two other of the children were attacked in the same way with violent fever and pains in the joints, particularly a boy about 8 years of age. He complained chiefly of his head, back, and knees. The heat of his skin was very great. Purgatives and the warm bath soon cured these symptoms, and he was better next day.

On the 7th of November, I was called to see Mrs F. and also the daughter who had been first affected. On the preceding evening, an efflorescence, partaking in some measure both of the character of the efflorescence of scarlet fever and measles, had appeared on the neck, feet, and arms, both of mother and daughter. The eruption in neither was painful; but Mrs F. described a large spot on her leg, which she said was about the size of a dollar, and gave her great pain when touched. The eruption had come on in both with a return of the fever, though slighter than at first. The child's eruption had disappeared when I saw her about 11 A. M. but her mother's still continued, accompanied with the peculiar watery and heavy appearance of the eyes, which I have already described. She complained also of pain and stiffness in her knees and wrists, and of great heaviness in the head, with an overpowering inclination to sleep. I ordered her twelve grains of Dover's powder.

The rest of the family, who had the primary disease, got the eruptive fever also; but I was not called to see them, as the symptoms were not considered severe enough to require the attendance of a physician. Mr F. himself subsequently, with every member of his family, including servants, got the complaint.

I have written in my note-book at the time, "This disease does not appear to depend on the state of the weather; for although we have had some partial showers, the weather, on the whole, has been very dry, and the heat very great."

I have mentioned already that the disease was brought over from St Thomas's by some strangers. It is a remarkable circumstance, in confirmation of its infectious nature, that it ap-

peared first at Major S.'s, where the ladies from St Thomas's went to reside ; and that, with the exception of Mr F.'s family, who got the disease from another source, it raged there almost exclusively for some time. The following account of the cases as I noted them at the time will serve to prove the regular progress of the disease.

CASE I.—Sunday, November 4, 1827. LUCY, a black woman, æt. 40. Fever, headach, pain of knees, ankles, and arms ; tongue foul. Remedies.—Purgatives, warm pediluvium.

Monday, 5th—Better ; fever gone ; great stiffness of joints, especially knees.

CASE II.—PHILLIS, a black woman, æt. 30. Fever, heat of skin, pain of chest, knees and feet ; fore-finger of right hand swollen and painful.

Remedies.—Purgatives.

CASE III.—CHARLOTTE, a black woman, æt. 50. Fever, pain of hands, extending up to the shoulders ; intense pain of knees and ankles ; skin hot.

Remedies.—Purgatives.

CASE IV.—JOHN, a black boy, æt. 8 years. I saw him three hours after he was attacked ; he had fever, drowsiness, heat of skin, pain of one hand, and of knees.

Remedies.—Purgatives.

Tuesday, November 6th.—LUCY. Up ; some fever, some pain of joints ; tongue foul and red at the edges ; headach gone.

Remedies.—Five calomel pills, followed by Epsom salts.

PHILLIS.—Fever continues as yesterday ; pain of head ; fingers in both hands swollen, so that she cannot shut her hands ; the fingers are very painful, the pain extends up to the arm-pits and shoulders ; pains in the feet, ankles, and knees ; tongue cleaner. Has had salts this morning, which operated well.

Remedies.—Warm pediluvium ; Dover's powders, gr. x. followed by warm beverages.

CHARLOTTE.—No fever ; no pain any where ; pulse, tongue, and skin natural ; a little stiffness in the joints.

Remedies.—Epsom salts.

JOHN.—Fever as yesterday ; he seems very heavy ; complains of great pain in his head and eyes ; his eyes resemble those of a person labouring under a severe cold ; great pain in his wrists, ankles, and knees. Bowels open by medicine.

Remedies.—Pediluvium warm ; Dover's powders, gr. viij. followed by warm beverages.

Wednesday, November 7th, 1827.—LUCY. Up ; No fever ; some stiffness of joints and redness of tongue ; breath foul ; refuses any more medicine.

PHILLIS.—Up ; no fever, no pain ; bowels open ; stiffness of joints continues ; finger better, but still stiff. Sudorific of use last night.

Remedies.—A Dover's powder.

CHARLOTTE.—Convalescent.

JOHN.—Sweated well last night ; no fever ; stiffness of joints continues ; otherwise better.

Remedies.—Salts.

CASE 5.—NELSON, a black man, æt. 22.—This morning felt pain of his back and knees, succeeded by fever, headach, pain and stiffness of fingers, the pain stretching up to the shoulders ; great pain of head ; skin hot ; tongue red at edges.

Remedies.—Has had six calomel pills this morning. To have Epsom salts, and if they have a good effect, a dose of Dover's powder of gr. xij. at night.

CASE 6.—Miss A. S. daughter of Major S. had boasted to me yesterday that she at least would escape the disease that was raging in their house. She was then in perfect health. About seven P. M. yesterday (6th November) she was suddenly seized with pain in both knees, extending down to the soles of the feet. This was immediately followed by shivering, and then intense heat of skin, *pain of the fingers and wrists*, the back, and the head. She spent a restless and sleepless night, tormented by fever and pains in every part of the body.

When I saw her to-day (November 7) at eleven A. M. the pulse was upwards of 110, tense, firm, and small ; there was intense pain of head ; eyes heavy and watery, like a person suffering under a severe cold ; intense pain in the eyeballs ; the tongue was foul ; great anxiety of countenance, and restlessness ; fingers somewhat swelled, very painful, and incapable of being wholly closed. When she attempts to close the fingers, she complains of intense pain across the wrists, the pain stretches up to the shoulders ; great pain in the knees and ankles. Complains most of the pain in her head and back. I proposed the warm bath ; but with this she would not comply, as the moving from bed, she said, would give her too much pain. She feels most at ease when she keeps herself warm.

Remedies.—Has taken six calomel pills without effect this morning. Let her have a dose of Seidlitz powder, and a dose of Dover's powder at bedtime.

Evening.—Symptoms much the same, but restlessness and fever less. Calomel operated well ; vomited the Seidlitz, and refuses the Dover's powder.

Remedies.—Let her have a tea-spoonful of antimonial wine at bedtime, and the warm bath.

November 8th.—The antimonial wine produced a little sickness, but along with the bath gave rise to a perspiration which afforded relief. Passed a better night ; fever less ; tongue clean ; eyes still watery, but less so than before. Still complains of great pain in the eyeballs ; head not so painful ; fingers less swelled, but painful and stiff ; great pain still in back and knees.

Remedies.—A Dover's powder.

November 9th.—All the symptoms relieved ; she walks about ; fever gone, but still complains of some heaviness in the eyes, and stiffness, particularly in the fingers, wrists, and knees.

This lady continued gradually to improve, although she complain-

ed of want of taste and appetite, and of considerable feebleness in her limbs, until the 13th of November, when she found, on awaking, that her fingers were stiff, and that she could not bend them without difficulty and pain. There was also a feeling of tension and fulness, particularly in the palms of the hands. She had some fever, and her hands and arms were copiously covered with an efflorescence, which partly resembled measles, and partly scarlet fever. This eruptive fever lasted one day. Next day the eruption began to fade, and the fever had altogether ceased. The stiffness and weakness of the joints continued several weeks after the primary attack.

Having thus described this case, which was one of the severest that first occurred, I proceed with the history of the epidemic.

NELSON, on the evening of November 7, suffered great pain of the head, back, knees, and ankles; his fingers were swelled and stiff. Fever continues. Eyes heavy and watery; heat of skin intense; tongue foul. The medicine has not operated well.

Remedies.—Let him have Epsom salts, and omit the Dover's powder.

HENRY, a black boy, *æt.* 8 years.—Seized about seven P. M. I saw him at half-past eight P. M. He first complained of pain of fingers, particularly the little finger of left hand, and of pain of knees, back, and head; eyes heavy and watery; pulse quick; skin intensely hot; tongue foul.

Remedies.—Has had salts, which operated slightly. To have more.

Thursday, November 8.—NELSON. Salts operated during most of the night; tongue foul; eyes heavy, and face still a little swollen; headach less; skin hot. Complains chiefly of back, of knees, and of fingers, which last he cannot bend with ease.

Remedies.—To have salts immediately, and a sudorific at night.

Major S. *æt.* 70.—About eight P. M. November 7, felt in the instep of the right foot a sense of weight, which gradually became a pain increased by pressure. The whole leg soon became very heavy, and the pain began to creep up the leg. About twelve at night a severe fit of rigors was immediately succeeded by violent fever, accompanied with headach, pain of back, knees, and fingers. He slept little, and was very restless.

The symptoms on the 8th, when I saw him, were great pain of head, back, knees, and especially on the right instep, which had a red and erysipelatous appearance. There was great pain also in the other leg. The eyes were heavy; skin intensely hot; tongue foul.

Remedies.—Has taken five calomel pills and some Epsom salts. To continue the use of the salts, and to drink plentifully of a solution of cream of tartar.

CORDELIA, a black woman, *æt.* 30.—Was attacked about four hours ago with pain and stiffness of fingers, followed by pain of head, back, knees, and soles of feet. Complains chiefly of head and back, and cannot move. Tongue foul; skin intensely hot; eyes heavy and watery.

Remedies.—To have Epsom salts immediately.

It would be tedious to go minutely through every case that occurred, those that I have already detailed being sufficient to show the symptoms of the disease when it first appeared. Suffice it to say, that every member of the S— family got the fever with various degrees of severity. The Major had it nearly three days, and on the 13th November relapsed, and had fever, accompanied with a copious efflorescence, which partly resembled the efflorescence of scarlet fever, and partly that of measles. The pains returned at the same time, but not with so much violence. The pain of the head in particular was not so intense. The efflorescence began to fade on the second day, and the fever went off at the same time. The pains and stiffness in the joints, however, continued to afflict this old gentleman for upwards of two months after the primary attack.

All the members of this family had a secondary fever, coming on the third or fourth day after the primary fever, and accompanied with the peculiar efflorescence already described. They all suffered for many weeks from the after-pains.

Many of the servants also had the secondary fever on the third or fourth day after the first attack, accompanied with a sense of tingling, and a glossy appearance of the skin. This was certainly the eruption, although the nature of their complexion prevented it from being visible.

The next family that was attacked was that of Mrs F. who lives next door to the family last mentioned. It first attacked her daughter, a girl about 11 years of age, on the 10th of November. It spread through the whole family, and attacked all the servants in succession.

The disease now rapidly spread through the town, but always according to the degree of communication among individuals.

The family of Captain S. the son-in-law of Major S. was next attacked, and then the families in their neighbourhood.

The disease soon attacked our family. My father had been called over to St Thomas's to see the governor-general, who had been attacked with the remittent fever when on a visit to that island. He returned on Sunday the 4th November. On Monday evening he was seized with pain of back, knees, ankles, and in fact all his joints. His tongue was foul, and his breath of a bad odour. In two days he was better, and had apparently recovered, when another paroxysm of fever came on, accompanied with a copious efflorescence, like that above described. This paroxysm was accompanied with violent pain in all the joints, and also in the fingers. It lasted one day. The fever

subsequently degenerated into an intermittent fever, which was aggravated into a remittent that nearly cut him off.

A servant of ours, named Margaret, had been employed in nursing a child of Mrs H. in our neighbourhood, in whose family the disease was raging. She was shortly after attacked with the disease herself. She complained of pain in all her joints, particularly her knees and fingers; also of pain in the back and head. She had intense pain in the eyes; her face was swelled; and what is curious, she had considerable ptyalism. The fever continued two days, and then abated, leaving her stiff and tormented with pains in the joints. From this woman it spread through our whole establishment until all the servants, twenty-two in number, had taken the disease. It first attacked a woman named Grace, Margaret's mother; then a woman named Rebecca, who assisted Grace as cook; then a woman named Janet, who lived next door to Grace; and so on until it had gone through them all.

My sister, Mrs B., was the next subject on whom the disease fell. From her it spread through all her family and servants.

Mr A., a gentleman who lives opposite to us, was the next subject. He was bled for the disease with great relief to all the symptoms. His lady and her sister were next attacked. They also were bled with great relief. From these it spread through the whole family, and to all the servants.

The disease now began to spread into the country, and it is observable that those estates suffered first that were nearest the town, and which had most communication with it, either from the residence of a family or from other causes of communication. Mr B. has two estates, one near town and another about four or five miles distant. The negroes on the estate nearest town got the disease first, and shortly after those on the more distant estate, *at a time when the disease had not spread to the other estates in the neighbourhood.* This earlier communication of the contagion is easily accounted for, from the circumstance, that the negroes of the two estates sometimes work together, and have altogether more communication than any two estates at such a distance from each other. This is a remarkable fact, and one that strongly confirms the contagious nature of the disease.

In short, the disease spread from family to family, and from estate to estate, exactly in proportion to their contiguity, or to the intercourse that might happen to exist. When it entered any family, it seldom happened that any individual escaped.

At the same time that the disease was so universal, it affected individuals even of the same family very differently. While

some had it in the most severe form, others were so slightly attacked as hardly to be aware of the primary fever, and only to be convinced of their having had it by the second or eruptive attack. In every one of the cases which I have recorded the secondary pains came on in a period varying from two, four, to six weeks, from the end of the first stage. I myself, after being able to go about for more than a fortnight, was suddenly seized, and for a time crippled by the after-pains; while Mr A. escaped for five or six weeks, and then was so severely affected by them as to be unable to lift his hand to his head. To such an extent did these pains prevail, that all society was at a stand, and nobody thought of stirring, except about the most indispensable business.

The facts now detailed constitute what I have to offer as the positive proofs of the contagious nature of the disease. They might have been made much more ample and circumstantial; but I have refrained, in order not to draw too much on the patience of the reader, which I am afraid has already been sufficiently tried.

I now proceed to apply the negative proofs.

The first of these is, that the disease appeared in Santa Cruz at a time when the weather was warm, still, and even sultry;—that it continued to rage, certainly with increased violence, after the weather had become cool, rainy, and windy;—and that it again declined, and appeared to have lost the violence of its symptoms, during a continuance and even aggravation of the cold blustering weather.

It may appear singular to speak of cold weather in the West Indies; but it is well known that our feelings of heat and cold are relative, and cannot be measured by the thermometer. Thus the people of the West Indies, accustomed to the intense heat of the climate, with their pores relaxed, and their bodies enfeebled from long residence, are more affected by a damp atmosphere, with the thermometer ranging from 74° to 77° , than a hardy Briton would be by a much colder atmosphere in his native country. During the month of January the disease has been much rarer in its attacks, and these have been of a milder character than before, though the weather has been cold, damp, rainy, and windy; such in fact in every respect as might be supposed to give rise to such a fever.

Now it appears evident, that, if this fever owed its origin to a cold and damp state of the atmosphere, and was propagated by it, it would *not* have broken out in the island during a warm, dry, and sultry state of weather, nor would it have begun to disappear at a time when the weather was moist, cold, and damp.

Did the disease again originate from the hurricane it would have broken out in Santa Cruz before it began in St Thomas, and it would not have waited twelve weeks before it appeared in the former island. For I have already mentioned that the hurricane took place in Santa Cruz on the 17th August, while the new fever did not make its appearance until the beginning of November.

Some of the physicians here seem to consider this fever the same as that described by Dr Rush, under the name of the Break Bone Fever, or the Bilious Remittent Fever, for the description of which see Rush's works, Vol. i. p. 126, *et seq.* I think that it will be evident to every one who pays the least attention to the symptoms, that the diseases, though somewhat alike in a few symptoms, are essentially different.

Four circumstances chiefly distinguish the fever that I have described. *1st*, The suddenness and peculiarity in its mode of attack; *2dly*, The well-marked distinction between the different stages; *3dly*, the peculiar eruption; *4thly*, the peculiar nature and duration of the after-pains.

It is impossible that circumstances so very evident could have escaped the notice of so keen and accurate an observer of disease as Dr Rush, a man to whose genius medicine is so much indebted. It is true that he mentions a difficulty of moving the fingers, but this occurred only *in one instance*, and did not form one of the most common symptoms of the disease, as it did in the new fever. A rash is also spoken of, but only as an occasional and fortuitous occurrence; while the whole description of the fever shows that it was truly what Dr Rush called it, a form of the common bilious remittent fever. It does not appear, too, that the fever was contagious, but, on the contrary, that it depended altogether on the state of the weather.

That new diseases arise from time to time while others die out, the history of the scarlet fever, measles, small-pox, and leprosy, fully prove. And it may be observed, that it is chiefly contagious diseases whose first origin can be traced by history.

The small-pox, scarlet fever, and measles, were brought by the Saracens to Europe, while the venereal disease rewarded the discoveries of the western hemisphere. On the other hand, the leprosy which was once so common in Europe is now almost extinct, so that its very symptoms have become a matter of controversy.

I will conclude this paper by proposing a name for the new fever, which appears to me to characterize it tolerably well. As the chief symptoms are the pains in the joints and the eruption,

I think that the Eruptive Articular or Rheumatic Fever would not be an inappropriate name.

This, however, is a matter that can be better settled by my learned brethren of Europe. I therefore conclude with the hope that I have done my duty in endeavouring to record a disease attended with so many curious symptoms, as justly to challenge the attention of every medical man, and particularly of those who are destined to practice in tropical countries.

ART. II.—*Observations on the Coagulation of the Blood.*

By JOHN DAVY, M. D., F. R. S., Physician to the Forces.

FOR some time past, as opportunities have occurred, I have repeated many of the experiments which have been made relative to the coagulation of the blood, and I have instituted some new ones, the results of both of which I shall now communicate, with the anxious desire of avoiding error and arriving at truth on a subject of considerable interest, as it concerns many physiological doctrines, and of no trifling importance in relation to some parts of the practice of physic.

1. *Of the effect of violent agitation on the blood.*

Dr Bostock, in the first volume of his *Elementary System of Physiology*, remarks, “It is well known that if blood, as it is discharged from the vessels, be briskly stirred about for some time, the process of coagulation is entirely prevented from taking place, either in consequence of a more complete union of its parts with each other, which prevents their future separation, or from the fibrin, after it has been for some time discharged from the blood, losing this peculiar property by which its particles are attracted together.”

To ascertain if a brisk motion does really prevent the coagulation of the blood, as is asserted by this respectable and learned author, I made the following experiment, preferring it to the means mentioned by Dr Bostock, as we know that by stirring the blood its fibrin merely is separated, and not its property of coagulating destroyed.

About two ounces of blood were received into a large vial, and immediately shaken violently, and the agitation was continued without intermission for ten minutes, which was two minutes after the blood at rest coagulated. The result was, that the blood thus shaken acquired a scarlet hue from being mixed with, and from the action of, air, and appeared to be liquid.