enamel which represents the iris is situated, vertically, three or four millimètres behind the most projecting point of the curve formed by the transparent cornea, so that the antero-posterior diameter of the artificial shell is diminished to the extent of the anterior chamber of the eye. The degree of atrophy which the globe of the eye undergoes in most cases where its function is abolished by a wound, allows the conformation of the normal eye to be followed in the enamel shell; but when the globe of the eye remains voluminous, or there exists a staphyloma of the iris or cornea, this mode of construction is no longer possible. The oculist ought to arrange so that the layer of enamel which represents the iris, in place of being vertical, should be curved, as in cases where, in the normal eye, this membranous disk is pushed forward by the increased volume of the crystalline. In this manner the depth of the enamel shell is increased to the extent of the projection of the interior chamber; and, if the artist has taken care, at the same time, to give to his piece all the amplitude possible, without its resulting in giving it the appearance, when placed under the eyelids, of an exophthalmia, he succeeds in concealing a deformity which, scarcely 20 years ago, was considered irremediable. The case of the lady who remained for eight years confined to her room is an example of this.

In our demonstrations we have preferred facts to assertions; for, as an ancient philosopher has remarked, a fact is a reason plus a proof—*un fait est un raisonnement plus une preuve*.

ART. VI.—*Observations on the Endemic Diseases of British Honduras*. A Thesis, read for the degree of Doctor of Medicine in the University of Dublin, February 16th, 1863. By J. B. HAMILTON, A.B., M.D., M.R.C.S.E., Staff Assistant-Surgeon.

I PURPOSE referring, briefly, to those diseases which may be properly called endemic, and, to a certain extent, peculiar to British Honduras; and, for this purpose, shall divide them, as usual, into Medical and Surgical—the former being, for the most part, the result of miasmata, and the latter, of the reptile and insect pests which render the habitation of Europeans in this climate so dangerous and unpleasant.

Of the former, the most important, by far, are those commonly called miasmatic, or, as their name implies, those induced by the

action of a certain subtle poisonous miasm or malaria; and, as a clear and simple proof of this, I may state that, during the year 1861, out of 283 admissions into the Military Hospital, no less than 139 were for fever of a remittent or intermittent type; and that of the deaths, which were only six in number, four were the result of fever, while one was accidental, and the other from delirium tremens.

A curious fact, and one not easy to explain, in connexion with this malarious influence is, that yellow fever is extremely rare; though hardly a year passes without an epidemic on the same coast, either to the north or south, and frequently both, within a few hundred miles. Remarking on the last epidemic of yellow fever, which took place in 1860, the principal medical officer in charge (Mr. Thornton) states:—"It was exceptional, being the only epidemic that had visited Belize (the chief town) for upwards of 13 years; but this year's epidemic appears to have extended over the whole of Central America, as various cities, north and south of the Honduras settlement, had suffered by one of those waves of the kind which pass over these countries, and it here found a sufficient *nidus*, as it were, in the extensive lagoons and rank vegetation to harbour itself, and spread devastation among the white population, far and near."

I shall now endeavour to explain the causes of these miasmatic diseases, as far, at least, as they are ascertained and understood.

In the first place, it may be laid down as a rule that these malarious fevers are always, to a certain extent, epidemic as well as endemic—that is, they rage at certain periods with tenfold intensity, though, owing to the swampy condition of the country at all times, they are never wholly absent. This period, which is well known there as the "fever season," is generally about the months of August, September, and October; and, to make the reason of this clear, it will be necessary to explain the different phenomena observed at different periods of the year.

The whole line of coast, for many miles inland, consists of alluvial soil and decomposed rank vegetation, and this is especially the case in and about the city of Belize, situated, as it is, on the "Delta" of the Belize River, which is entirely composed of alluvial deposits. As soon, therefore, as the rainy season comes on, which is generally about the month of April, the entire surface of the land becomes flooded, and continues in this state till the beginning of August, when the short, or, as the Creoles call it, the "maugre dry," sets in, with intense heat from the sun, the rays of which, falling perpen-

dicularly on the swamp, soon dry up the surface moisture, and, striking the alluvial soil beneath, engender miasmata to a fearful extent, to the great injury of the white, and, in a lesser degree, of the health of the black population. This having continued for two or three months, the rains again fall, to the general benefit, and continue to do so till January; and when they now cease the long dry sets in, and with it the sea breeze, which, with its invigorating breath keeps continually sweeping the malaria away; and, as almost the entire population reside on the extreme edge of the coast, it stands to reason that the effects of a sea breeze must be most beneficial.

Another great cause of these fevers occurring in the autumn is the prevalence of the *land-winds*, which, blowing from a nor-westerly direction, sweep the miasmata from the swamp right into the town and barracks. This land-wind is also of a most peculiarly chilly character, so much so that at 8, a.m., it is often bitterly cold, with the thermometer standing at 60°; then, about 10½, a.m., the wind falls, and during the greater portion of the day a dead calm prevails, when the average heat in the shade is about 91° to 93°, without a breath of air to temper the burning heat of the sun, which constantly, during these months, is at the enormous temperature of 130°.

This great alternation between heat and cold is, of course, most prejudicial to the European constitution, and predisposes the body to the influence of the malaria; indeed, at this season it may be laid down as a rule that all Europeans are attacked, to a greater or less degree, in proportion to their acclimatization—those who have been longest resident generally suffering less than new-comers. Indeed, during the autumn of '62, I am not aware that a single white man in the place escaped without an attack of some sort or another, which could be distinctly traced to malarious influence; and in the military hospital the admissions among the troops (black) rose two or three hundred per cent., nearly all the cases being fever of an intermittent type.

Of the fevers themselves there is often the greatest difficulty in diagnosing the exact type; for what will one day present the characteristics of a tertian, will, in a few days, present those of a quotidian; then, perhaps, will suddenly become remittent, and often almost continued in its type. A peculiarity, very often observable, is the total absence of the cold stage, or else it will be so short as hardly to be recognized. Other variations are often met; and one of the commonest, and one which I have myself observed, is the absence

of perspiration, or, in fact, a want of the third stage. When this occurs there is often great enlargement of the spleen, which sometimes, in old cases, takes place to an immense extent; and in one or two rare instances I have observed it so large as to fill up almost the entire abdomen with one solid mass, often accompanied with anasarca. In more acute cases it is curious to observe the sudden enlargement, and equally sudden decrease, in the size of the spleen, according as the patient is or is not suffering from fever. The debility following these cases is most troublesome, and generally requires a total change of air and scene for recovery.

Another form of fever, and a not uncommon one, goes by the descriptive name of the *broken-bone fever*, so called from the patient having the unpleasant sensation of feeling as if all the shafts of the long bones were being gradually broken across. The other symptoms are generally of a remittent type, though sometimes it occurs in distinct cases of intermittent.

A very remarkable fact, and one difficult of explanation, is, that different persons get attacks of fever with the prevalence of different winds, though, as I have already stated, by far the most frequent time for fever is when the land winds are prevalent; yet I have known instances myself of persons being attacked during the prevalence of the sea breeze, and who expected it regularly at that time.

I shall now touch briefly on the general treatment of these malarious fevers.

In the first outset it is of the most paramount importance that the intestinal tract should be unloaded, for which purpose a full dose of the sulphate of magnesia is, perhaps, the most efficient; but if there is much irritability of stomach, a dose of the pil. hyd., from 5 to 10 grains, or calomel 10 grains, will generally have the desired effect. This should then be followed by quinine, in doses of from 5 to 10 grains, in combination with drachm doses of the sulphate of magnesia, to be continued or not as the state of the bowels indicates. I have found that quinine, in some cases, can only be retained when given in the form of a pill, which is easily formed by triturating the quinine well first, and then adding gum water; in this way pills may be made to contain five grains and not be very inconvenient in size.

If the irritability of stomach continue, the simplest and most pleasant remedy is very acid lemonade, which I have often found retained on the stomach when everything else had been rejected. Should there be much tendency to insomnia, a full dose of opium,

combined with hyosciamus, at bed-time, will have the desired effect; indeed an opiate in the outset of a paroxysm will often be of greatest use, cutting short the cold stage, and inducing perspiration. It is extraordinary what an immense quantity of quinine can be taken in these malarious fevers without "cinchonism" being induced; and in one case of severe remittent I administered the enormous quantity of 420 grains in 10 days, without affecting the hearing of the patient; indeed he seemed quinine-proof. The only explanation I can give of this fact is, that the more virulent the miasm in the same proportion can larger doses of quinine be given. .

I cannot finish this subject without paying a justly-merited tribute to the memory of those medical officers who fell victims to the yellow fever on this coast, during the year 1860, and will, for this purpose, quote the words of the Official Report for 1860:—"During part of the year yellow fever prevailed to a great extent among the civil population of Honduras, but does not appear to have affected the soldiers, no case having been recorded among the white, and only one, which, however, proved fatal, among the black troops. The officers were not so fortunate, one lieutenant and three assistant-surgeons having fallen victims to the disease (Drs. Carberry, Baggot, and Harris). The former died at Belize, two of the latter at Corosal (an outpost), and the other at Ruatan. In consequence of there being no qualified medical practitioners at Corosal, the medical officers gave their professional services to the civil population as well as the military; and, their strength being over-tasked by the amount of professional labour thus devolving upon them, they sank rapidly when attacked by the disease."

I will here briefly mention the treatment adopted by the Spaniards in yellow fever; and, although empirical in its nature, there are so many well-attested cases of recovery, even when given up by the regular practitioners, that it is certainly worthy of note. It is simply a mixture containing about an ounce of castor oil, half an ounce of lime or lemon juice, and half an ounce of common salt, for each dose. I regret that I am unable to state more about it; but, from enquiries made by myself at Corosal, I am satisfied that it *did* effect cures, even in cases where black vomit had set in, and when the patient had been given over after the usual treatment of calomel and quinine.

The other medical diseases are those very commonly met with in the other West India settlements, modified, of course, by climate and season. Exanthemata are rare; but when an epidemic does broke out, it rages with fearful violence among the black population,

who seem to succumb to disease much more readily than Europeans; indeed, when attacked, during an epidemic of cholera, they seem at once to lose all hope, and seldom recover.

I shall now tersely describe those diseases which come under the head of surgical, and which, as I stated previously, are "the result of those reptile and insect pests which render the habitations of Europeans in those climates so dangerous and unpleasant." By far the most important of these are snake-bites; and so wild and uncultivated is the entire face of the country that they are of very frequent occurrence. The poisonous snakes of Honduras are, first, the crotalus or rattlesnake, the tamagass or tomagoff, and the coral or barber's pole. The former is well known, therefore I shall not mention it further than to state that deaths from its bite are rare, probably on account of the provision of nature, that, on being alarmed or angry, it gives notice of its presence by making a peculiar noise, like a child's rattle, and which, in the "awful silence" of those woods, can be heard to a considerable distance. The tamagass or tomagoff (specimens of which may be seen in the Dublin College of Surgeons) is by far the most frequent cause of death, because its general place of abode is among piles of dead leaves, where it lies coiled up, and is, therefore, apt to be trod on. Its bite is very fatal, death having been known to take place in 20 minutes; but, by a wonderful provision of nature, the antidote is always at hand, in a peculiar kind of vine, known by the name of "guacho," the juice of which is applied to the part and also swallowed, when an immediate remission of the symptoms takes place, of which coma is the most important. The bite of this snake has the peculiar property of generating a kind of purpura in the blood, as, even in slight cases and those which recover, there is generally extensive hemorrhage from all the *mucous* surfaces. Might not this "guacho" be tried, in the form of a tincture, in other countries—in India, for instance—where the bite of the cobra di capello is so frequently fatal? The coral or barber's pole is not by any means so fatal a snake as the tamagass, and there are few cases of death from its bite; but still children, or persons in a delicate state of health, would be very likely to succumb. Great numbers of scorpions and centipedes are met with, their sting causing great inflammation and fever for a few days. The Creole treatment consists of rubbing in a tincture of the reptiles themselves, for which purpose they put those they catch into spirits; but I should think that the efficacy consists solely in the spirit, which cools the part and allays inflammation.

The insect life is productive of many annoyances to man, many people suffering to a frightful extent from the bites of mosquitoes, and their smaller, but not less irritating neighbours, the sand-flies. One very remarkable case I may mention, of a lady who got much bitten by the latter, and who, having scratched the bite, converted her hands, arms, and legs into a series of diminutive sores. It chanced that her child had been just vaccinated, and by some means or other she got inoculated from the pustule, when every one of her own sores took on a distinct vaccine appearance, and ran through a regular course, without, however, leaving any pit behind; she herself bore good marks on her arm of previous vaccination.

The beef-worm, which is, I believe, peculiar to tropical America, is a most unpleasant affection. It first appears as a boil on the leg or feet, and sometimes on the back; when, in a few days, a short thick grub emerges or is pulled out, white in colour and quite hard; the sore itself heals up in a few days. It is as yet unknown whence it comes, but is believed to be the larva of some fly. The jigger, or, as the Spaniards call it, "chico" (which is, literally, "small"), is known also by the correct name of *pulex irritans*. In appearance it resembles a small flea, and is generally found where pigs are kept. It buries itself in the skin, where it, for a few days, excites a most intense itching, by some thought to be pleasant, but *de gustibus non disputandum*. In a few days it gradually increases in size; and, if not removed, bursts, when thousands of small ones bury themselves in the surrounding skin, when, if neglected, dangerous and even fatal consequences may result; many negroes lose their toes through not attending to them in time, and, what is more easily removed, dirt. The treatment consists in removing them with some blunt instrument, whole, if possible; but should the bag, as it is called, be broken, then turpentine or tobacco ashes should be rubbed into the part.

In conclusion, I may mention the rarity of deformities among the black population, owing, I suppose, to the children being so constantly in the open air; indeed I do not recollect seeing a single case of curvature of the spine in Honduras, and only one of clubbed foot, which I operated on myself successfully. It is often very difficult to know, in treatment, the strength of the various drugs, many of which, though only but a short time from England, become perfectly inert. Extract of hyosciamus and belladonna, for example, when once exposed to the air, become useless.

As these few notes are altogether from personal observation, I can vouch for their correctness in every way.