NOTES AND OBSERVATIONS
ON
F E V E R
DURING SERVICE ON BOARD HER MAJESTY'S SCREW-
CORVETTE PYLADES, OF 21 GUNS,
ON
THE WEST COAST OF MEXICO, IN THE YEAR 1860.

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THE Pylades was of 1275 tons burden, of 350 horse-power, carrying an armament of eight-inch guns on the upper deck, and had been commissioned in 1857, at the outbreak of the Indian mutinies, for the East Indian Station, with a complement of 260 officers and men.

The first important service was at Calcutta, during the hot and the rainy seasons of 1858, the officers and the ship's company passing through a very sickly and trying period. Very opportunely, the Pylades left the river Hooghly in

November of this year for Vancouver's Island, the ship arriving on the 14th of February, 1859, at the beautiful land-locked harbour of Esquimalt, surrounded by its fine forests and snow-clad scenery. The change to this bracing northern climate proved most beneficial in every way. The ten months passed at Vancouver's Island witnessed a marked improvement in the general appearance of the ship's company, the climate of this hitherto but little frequented region proving most useful to the men who had been recently enfeebled by East Indian service. Vancouver's Island presents similar advantages to ships of war from the tropical parts of the Pacific sea-board, and its anchorages, having no ice barriers, are accessible at all seasons.

The following statistical statement is in illustration of the fever cases of the *Pylades* on the West Coast of Mexico in 1860.

Diseases.	Cases and days' sickness between certain ages.											
	15 and 25 years.			25 and 35 years.			35 and 45 years.			45 and 55 years.		
	No. of cases.	Days' sickness.	Average days on sick list.	No. of cases.	Days' sickness.	Average days on sick list.	No. of cases.	Days' sickness.	Average days on sick list.	No. of cases.	Days' sickness.	Average days on sick list.
Fever, Continued...	153	147	15.25	37	381	11.1	16	285	17.13	6	74	12½
Fever, Remittent.	9	9	7½	2	17	8½	1	21	21	—	—	—

General Abstract of the Sick List.

Cases added to the sick list in the year.	Discharged to duty.	Died.	Unfit for active service.	Total days' sickness on shipboard.	Daily average of each case on sick list.	Mean numerical strength of ship's company.
518	504	2	8	6448	12.4	225

Mean Proportion of all Ages on Board.

Between 15 and 25 years.		Between 25 and 35 years.		Between 35 and 45 years.		Between 45 and 55 years.		Total.
184		55		29		7		225

The disposition to febrile attacks was most observable, within the tropics, with the advent of rain and increased heat. The proclivity at different ages to fever and other illness has its etiological import. The statistical abstracts, from their limits, do not yield any very extended and practical inferences, but have their value as furnishing connecting links with other observations. Between twenty-five and thirty-five years of age appeared the most able period for active service. In advance of these ages convalescence proved more tedious, and the liability to febrile attacks increased; but this tendency was much influenced by previous tropical service. The higher per-centage of fever attacks was due in part to relapses, also to the accidental circumstances of some patients being long on the sick list, thus giving a greater number of days' sickness to the cases under treatment; the number of days that the men were on the sick list was no doubt influenced by the fact of being on an alien coast, where, without the ship, there were no available hospital resources. The actual attacks of fever which a service career may precipitate do not represent the chronic illness which too often follows, in broken health and premature old age.

The seasons on the West Coast of Mexico are the periodical "dry" and "rainy." These extend from Mazatlan to Panama. But little rain is yearly looked for at La Paz and at Guaymas, but in these positions it does fall in torrents, years intervening between these visitations. The geographical situation of La Paz and of Guaymas, the physical features of these sun-dried districts, and the absence of paludal exhalations, are not in favour of the prevalence of fever.

The climates of Mazatlan and of San Blas have many features in common, the latter port being only two degrees south of the commercial roadstead of Mazatlan. The most healthy season at these places is during the dry weather, from October to May. The wet season is looked for between the months of June and September. At Panama, which is eight degrees north of the equator, there are usually showers throughout the year, and in the months of

July, August, and September, it rains nearly incessantly. In these intertropical localities, possessing their coast belts of low land, and their mangrove-sided rivers teeming with the rankest vegetation, fevers will prevail during the rains, but principally at their commencement and their termination. If the dry season is much prolonged into the months of July and August, the solar rays being screened by no clouds, the first sudden fall of rain will probably introduce fevers of a very severe type. Such was the fact at Mazatlan in September, October, and November, 1860. The Pylades, being at Guaymas, with the advantages of dry weather, escaped the long-expected rains at Mazatlan and the attendant sickly season.

The Pylades arrived at Mazatlan the 2nd of January, 1860, direct from Vancouver's Island. It is within the tropics, and is the largest commercial port on the coast under notice. The ship, the last day of this year, was in the Gulf of California.

There was a trip made to Panama during the months of February and of March. In returning, coals for steaming purposes were replenished at Acapulco on the 7th of April, where we found the yellow fever prevailing and very fatal. At this period yellow fever had been unknown on the coast north of Acapulco.

The first warning of being in the Mexican tropics, with the attendant increased heat and moisture, were some few cases of remittent fever. Some of the earlier symptoms were very distressing to the patient—an abdominal pain, perhaps a diarrhœa, was superadded. The usual symptoms, when the patient was first seen, were vertigo, epigastric and lumbar pain, frontal headache, a pulse quickened and compressible. The skin open and perspiring freely, but frequently cold and clammy. The face was flushed, and the features assumed a contracted appearance. Such were the prominent symptoms of some cases which yielded to treatment. It was sought to explain their origin from causes without the ship. The ship's company had leave at Mazatlan in January, many of the men committing excesses. But in

the great majority of those on the sick list I could not associate the prevailing sickness with any marked acts of dissipation.

A case of continued fever presented itself on the 21st of February, five days before reaching Panama, from which date up to anchoring at San Blas, the 14th of April, there were 35 additional cases of the same type of fever.

The duties of provisioning, receiving coals, fitting a new steam-funnel, refitting the ship, &c., involved much unavoidable solar exposure. The protection of British interests called for the presence of a man-of-war at San Blas, where the *Pylades* remained up to the 21st of June. This service lasted a period of 68 days. Officers, seamen, and marines, were landed, taking alternate 24 hours' duty at San Blas, being relieved by a corresponding force from the senior officer's ship *Amethyst*, of 26 guns. From this duty the officers and men of the *Pylades* were withdrawn the 28th of May, having been 38 days on this service.

The deteriorating agencies here at work were—disturbed night's rest from the attacks of sand flies, the excessive use of bad brandy, and exposure to the unclouded sun's rays. It was during this service that 45 cases of fever were added to the list. Towards the latter end of May, with increased heat of the weather, there was a sudden addition to the sick list. In the hotter month of June the usual rainy season near at hand exhibited more numerous attacks of fever.

Between the 24th of June and the 22nd of September there were 53 other cases of fever, the *Pylades* making the short passages to and from the anchorages at Mazatlan, La Paz, and Guaymas, and being at anchor 48 days at divided periods off the fever districts at Mazatlan; but from motives of prudence no general leave was given the ship's company at Mazatlan, having within reach at La Paz and at Guaymas more eligible localities for recreation open to them.

From the 27th of September to the 26th of December the *Pylades* was at Guaymas, profiting by the agreeable change there experienced from the hot summer winds to the cold season, commencing in November; these climatorial changes

being yearly looked for high up the Gulf of California. The men's health improved, there being only 8 other cases of fever, in which a catarrhal tendency was observed, easily controlled by treatment.

In a patient seen when threatened by an attack of fever the general symptoms observed were usually vertigo, disturbed rest, nausea or actual vomiting. Perhaps a rigor would be succeeded by hot sweating, thirst, and general lassitude; the pulse would be much quickened, but compressible; the skin usually hot and open; the tongue loaded and moist; the bowels and kidneys acting. Frontal headache, with increased heat of this part; lumbar pain, or aching; perhaps pain of the legs. These symptoms would usually usher in an attack of the prevailing type of fever.

If the case of fever was more highly developed, the patient complained much of giddiness, of severe frontal headache, sometimes involving the vertex and occiput, with increased heat of the cranium. Fits of epigastric pain, occasionally descending to the umbilical region; general pains of the limbs. In a few cases there was pain extending up the course of the spinal column to the occiput, the face becoming flushed and covered with a beady perspiration, sometimes giving the appearance of being half drowned in hot water, or, more rarely, the skin warm, but clammy. Restlessness, with attempts at sleep, but no refreshing rest. A milk-white, moist-looking tongue, with tremor on its protrusion, or presenting more rarely a reddish glazed appearance, in such cases usually presenting a tobacco-coloured coating at its base, extending down the mesian line to near its apex. The pulse much quickened, but compressible, rarely bounding; if so, only for the first forty-eight hours, denoting vascular excitement with nervous prostration. There was usually intense thirst, with a craving for acid drinks. The bowels were rarely constipated, but frequently there was diarrhœa; the excretion of urine was not diminished.

In the very great majority of cases that progressed favorably there would be, within the first three days after

being put on the sick list, less of heat of skin and of diaphoresis; less frontal headache and lumbar pain; the pulse less quickened, still compressible, but of steadier volume; the tongue cleaning; daily evacuations of urine and fæces; a coming relish, in small quantities at a time, for animal soup, wine, and farinaceous food:—such would be the ordinary course to a safe convalescence. Usually within the first week of treatment (excepting a lumbar weakness or chronic pain, and a general debility, much felt in the erect position) there would be nothing in the patient's case for solicitude as to its favorable termination.¹

Some few cases in the course of treatment were associated with much collapse; the stomach would become on a sudden very irritable; sordes would collect on the teeth; the features would put on a choleraic reddish-leadен hue; the tongue would be cold, dry, with a tendency to brown; the skin would be covered with a chilly, clammy, profuse sweat; the pulse weak, quickened, the intervals very short; some little dyspnœa, or irregular and laboured breathing. In some few other cases a very severe accession of frontal headache would be the prominent complaint, and usually augured a tedious convalescence. In some instances there were involuntary evacuations of urine and fæces, and incoherent muttering. If delirium set in it was never of long continuance, and was of rare occurrence.

Symptoms of irregular periodicity of varied severity appeared in cases not convalescing in the usual way. At the commencement of an attack of fever the patient's prominent allusion to a severe headache involving the entire upper surface of the cranium, or this symptom suddenly developed after some days of treatment, was often much dwelt on, and was not easily relieved. It would be, perhaps, accompanied with occasional chills and profuse clammy sweating.

¹ Dr. Musgrave, of Antigua, writes—"In comparing a mass of cases occurring in town and country with Creoles and Europeans, a continued chain could be traced, link by link, from the most concentrated form, as it invades new comers, to the simple intermittent which we frequently meet with among the slaves."—Vol. ix, p. 123, 'Med.-Chir. Trans.'

This symptom did not warrant the inference of the existence of meningitis. Yet the often enfeebled state of the vital powers prepared me for the possible contingency of cerebral effusion by exosmosis supervening on congestion.

Debility was very frequently and prominently complained of after the first relief of the acute febrile symptoms, which usually took place within the first three days of treatment. The patients would often report themselves as feeling a little faint, with a sensation of trembling in the abdomen. In but few instances was the lemon tint of the surface seen, and then only in a modified degree. One lad was afflicted with periostitis of the left humerus, after the subsidence of fever, followed by exfoliation of bone. Dyspnœa and a feeling of suffocation were not often complained of, and with the first reaction there was very rarely a return of these symptoms. As an occasional complication, acute thoracic pain, with a marked periodicity in its recurrence after the first ardent febrile symptoms had subsided, gave its difficulties in prognosis. How far the pericardium was involved in such attacks was not easy to determine. At other times a periodic pain would localize itself in the region of the liver, but more frequently in the vicinity of the spleen. In a few instances hemicrania was encountered. In one case there were periodic pains in the right lumbar region, but not traceable to disordered function of the kidneys. These sequences of fever mostly harassed patients by night. In a few cases a furious watery purging alternated with a prolonged horripilatio, and perhaps actual rigor. Intestinal pain was met with at intervals throughout the course of the majority of cases.

Numbness of the lower extremities was noticed in some protracted cases. Constipation in one case was the precursor of complete paraplegia below the knee-joints in the second week of fever. In another case there was a spasmodic irregular action of the colon, some uncoagulated florid blood being passed, alternating with occasional constipation. This was the only fatal case of fever that occurred; the subject was a seaman between thirty and forty years of

age. He died in the third month of illness, in a state of distressing debility.

In only one instance, at San Blas, did I suspect the presence of black vomit. The ejected contents of the stomach being mixed with dirty water and other refuse, nothing decidedly diagnostic could be arrived at. As the vomiting in this interesting case did not again appear, there was no opportunity of pronouncing on the question of black vomit. It is due to record, from all inquiries I made at San Blas, Mazatlan and Quaymas, that "black vomit" (*el vomito prieto*) was unknown in the fevers of these commercial towns.

The treatment of the sick in fever committed to my charge I feel to have been most successful. I secured fresh breathing-air by a removal to the upper deck, when the heat and closeness of the men's sleeping deck became oppressive to the sick. Personal ablution was enforced for the double purpose of cleansing and cooling. The hair of the head was close cut. The fullest supply of cooling drinks was permitted, either of lemonade with chlorate and nitrate of potash, or of nitro-muriatic acid and water, the mineral acids being preferred to relieve the thirst attendant on profuse diarrhoea. The most urgent symptoms were immediately attended to. The head was quickly cooled by pouring sea water over it, giving the sensation of coldness to the hand of the by-stander. A sedative effect was thereby produced, which would last, perhaps, two or three hours. If the surface of the body was covered with a profuse hot sweat, the patient was washed with soap and cold water, varied by ablution with a little vinegar and water. If the sweating was chilling and clammy, warm ablutions were indicated and freely used. In some instances, where there appeared but little tendency to reaction, with a loaded tongue, an emetic of half a drachm of ipecacuanha, with twenty grains of the sesquicarbonate of ammonia, was early given. Constipation was not frequent either at the commencement of the fever or in the course of its treatment. There was often, with patients when first seen, diarrhoea with abdominal pain, which it was expedient at once to relieve; and purgatives, excepting in a few instances,

were not admissible, the patients not bearing the attendant depression. Mustard sinapisms, chloroform liniments, dry cupping, and blisters, had their uses for the relief of lumbar or abdominal pain and head symptoms.

In the treatment of fever the sesquicarbonate of ammonia in conjunction with the chlorate of potash was early given, in from ten to twenty grains of each, with lemon juice, three or more times in the twenty-four hours. The employment of ammonia was suggested from a West Indian experience at the Royal Naval Hospital, Jamaica, between the years 1845 and 1847, from observing that the fatal cases of climatic fever usually terminated by cerebral and spinal effusion. At Calcutta, in 1858, I had to notice the very sudden end to cases of fever by serous apoplexy. This tropical experience pointed to ammonia as a very valuable medicine, from its known property in preventing coagulation of the blood, and from its action in stimulating the heart and arteries without unduly exciting the brain. If diarrhœa with abdominal pain were present, laudanum and antispasmodics were given in conjunction. If the purging and cold sweating were very severe at the onset, the acetate of lead and Dover's powder, brandy, and arrowroot, were called for. Counter-irritation was applied; the bowels quieted; the ammonia and chlorate of potash were given with opium. The ammonia treatment was persevered in with the usual good results, the pulse becoming less frequent, and of steadier volume; the tongue cleaner, with the relief of hot or clammy sweating; less frontal headache; and refreshing sleep. Regular evacuations were established from the kidneys and bowels; a little castor-oil with grey powder producing full bilious stools.

With the cessation of active symptoms—debility and lumbar pain or weakness alone being complained of—quinine and iron usually and speedily concluded the treatment of the cases. Sometimes a little chronic diarrhœa required at this period to be arrested by the nitro-muriatic acid with laudanum. In those cases in which periodic pains followed the stage of debility secondary means were needed.

A good animal soup was early given, with wine or other

stimulant; in the period of convalescence the best dietary was administered that could be relished and digested.

These observations on the treatment of fever mainly with the ammonia and the chlorate of potash have the material advantage of being confirmed by my experience during a ten months' service in the Gulf of Mexico in 1862, as surgeon of Her Majesty's screw-frigate *Phæton*, during the Anglo-French and Spanish mediation in the affairs of the Mexican Republic, when the total fever cases for the year were 209.¹ In 1863 I had a further ten months' experience amongst the West Indian islands, confirmatory of the ammonia treatment; the total fever cases in this year on board the *Phæton* being 109. Such is the value I attach to this agent that I now never feel any security in the treatment of tropical fever until the blood has been more or less saturated with the volatile alkali, after which quinine, singly or in combination with iron, cannot be dispensed with.

¹ In 1862, with an average complement of 509 officers and men on board the *Phæton*, there were added to the sick list 1146 cases, and the total days' sickness of these cases were 11,124. There were sent to hospital 20 cases; 5 deaths on board; 38 sent home as unfit for active service on the station; discharged to duty, 1108. With the 209 fever cases in the year, there were 24 of cynanche tonsillaris; of diarrhœa, 101; of erysipelas, 7; of phlegmon, 113; of abscess, 71; of ulcer, 105; of whitlow, 3. The seamen and marines in the year were 237 days on salt provisions.

In 1863 the average complement was 459, when there were added to the sick list, 812; the total days' sickness were 7323. There were sent to hospital 32; 5 deaths occurred; 15 were reported unfit for active service and sent home; 772 returned to duty. Of the 109 fever cases, 72 were recorded as ephemera; of diarrhœa, 117; 1 of erysipelas; 56 of phlegmon; 46 of abscess; 37 of ulcer; 7 of whitlow. The seamen and marines were 149 days on salt provisions.

In 1864 there were 80 cases of ephemera; 6 of continued fever and 8 of intermittent; 20 of cynanche tonsillaris; 80 of diarrhœa; 5 of whitlow; 45 of phlegmon; 48 of abscess; 25 of ulcer; 5 of erysipelas. The total additions to the sick list were 721; 3 deaths occurred; 41 were sent to hospital; 5 were unfit for service and sent to England. The total days' sickness were 5533. The *Phæton*, this year, was stationed at Bermuda, at the Hampton Roads, (Virginia), and in the Gulf of Mexico. The seamen and marines in the year were 169 days on salt provisions.

In vessels of war, where large numbers of men are living much under the same hygienic conditions of breathing-air, dietary, and solar heat, it will be found that there is with fever cases much allied zymotic illness evidencing low vitality.

Of the 518 cases of sickness in 1860, in the *Pylades*, on the west of Mexico, there were ten cases of cynanche tonsillaris; 36 cases of diarrhœa; 28 of ulcer; 58 of abscess; 14 of phlegmon; 1 of erysipelas; 3 of whitlow. These cases, with the 162 of fever, yield a total of 312. Of accidents, there were 94, so that 112 cases in addition conclude the sick list of 518. A pathological classification of blood ailments I have found practically useful in suggesting similar constitutional treatment, especially in diarrhœa, erysipelas, and acute cynanche. The health of men on shipboard and of a community on shore is to be easily judged of by the prevalence of diarrhœa and by the existence of purulent integumentary affections. They are collectively nature's efforts at elimination, and the general precursors and companions of the fever lists on board Her Majesty's ships and vessels of war in all quarters of the world.