

Fernandez (Aug. M.)

Contributions to the  
diagnosis of yellow fever.

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CONTRIBUTIONS TO  
THE DIAGNOSIS OF YELLOW FEVER.<sup>1</sup>

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It seems at first sight incredible that after three hundred years of study of yellow fever, a dozen physicians can not be found in any city holding the same opinion in regard to its true nature and treatment. Even in places where this disease is endemic, and has been known for over a hundred years in uninterrupted succession, there also exists a variety of opinion among practitioners. Probably there is no medical society that has paid more attention to the subject than the Academy of Medical, Physical, and Natural Sciences of Havana, Cuba,—an unpretentious scientific body, full of good faith and disinterested love of science—yet, I believe it would be difficult to find among its members half a dozen sustaining exactly the same opinion in regard to all the phases of yellow fever.

The maxim of Dutroulau—that in this disease it is necessary to see a great deal in order to see correctly, ought to be supplemented by adding that it is necessary at the same time to take very minute clinical notes in order to see intelligently, for all

<sup>1</sup> Read before the Orleans Parish Medical Society, New Orleans.



epidemics do not bear the same characteristics, and even all the cases of the same epidemic do not present the same symptoms; there are epidemics so malignant that for a person to fall sick is equivalent to die, in spite of all kinds of treatment, while there are others so benign that even expert diagnosticians confound many cases with other diseases possessing very analogous symptoms. In fact, a typical case of yellow fever, as it is described in the text-books, is very rare; hence the difficulty of the diagnosis.

It suffices to see but a few yellow fever patients to become convinced that this formidable malady constantly presents two distinct stages. The first is a short one, lasting no more than three days, generally called "the stage of reaction;" the second is that of defervescence and decomposition of the blood, known as "the stage of calm," and lasting from a few hours to two weeks, according to the form and character of the epidemic. When the case terminates happily during the first stage, the second is marked only by the beginning of its evolution in convalescence. The more rapidly the two stages succeed one another the more dangerous the case, and *vice versâ*.

In places where yellow fever is endemic, the character of each summer's appearance depends on the telluric, climatological, and hygienic conditions of those places, especially the velocity and direction of the prevailing winds at that time. It is worthy of attention in this regard, the explanation given by Hippocrates of "medical constellations," or atmospheric conflicts, as the pathogeny of epidemic diseases,—a *quid occultum* developed in the atmosphere of certain foci of infection as the sum total of a series of coefficients.

The epidemic forms of uncomplicated yellow fever may with advantage be divided into *ephemeral*, *adynamic*, and *ataxic*. In the *ephemeral* form the patients suffer the general prodromata of the disease—fever, headache, pain in the back and lower limbs, nausea, epigastric discomfort and tenderness on pressure, etc.—but the fever does not exceed  $103^{\circ}$ , and lasts only two or three days; vomiting is rare, and if it occurs, it is of a bilious character; the mind is perfectly clear, with no other disturbance of the nervous system than the anxious expression of the face. In this form we have the nearest approach to bilious remittent fever, and in places where yellow fever is endemic it constitutes the so-called “acclimatization fever.” The patients usually get well in about seven days. In the *adynamic* form predominate all the symptoms of decomposition of the blood. It always breaks in suddenly with a chill from the hours of six o'clock in the evening to six in the morning, followed by high fever (over  $103^{\circ}$ ), a sense of weight in the head, besides the cephalalgia; the pain in the lumbar region extends around the waist as if having a tied belt, gurgling in the right iliac fossa distinctly perceptible; there is a mahogany coloration of the face and chest; tongue slightly coated, red at the tip and edges; bowels constipated; lessened quantity of urine, highly colored and albuminous; the sclerotic has an icteric tint under the inferior eyelid after the first day of the attack; without much retching altered blood or “black vomit” is ejected, although this symptom has not, in this form of the disease, the great pathognomonic importance generally attributed to it. The febrile signs increase toward evening and lessen toward morning, but do not distinctly remit until the third

day. This form is always grave, and when death occurs in the second stage it generally takes place from the seventh to the fourteenth day. In the ataxic form predominates the nervous depression. It is always very grave and rapid in its course, the second stage almost immediately following the first, giving rise to those fulminant cases lasting only forty-eight hours, so common in Vera Cruz, and known to the French physicians as "*coup de barré*," or stroke of the bar, on account of the suddenness and intensity of the pain across the loins. In this form the "black vomit" is always present, and sometimes also hemorrhage from other situations; there are disquietude, delirium, hiccough, photophobia, and once in a while amaurosis, ischuria, and finally collapse or convulsions. Death generally takes place on the fourth or fifth day. It is of good omen if the patient outlive the seventh day.

Yellow fever, however, does not at every appearance and in all localities present exactly the same group of symptoms; for not only the constitution and the peculiar variations in the state of the individual exert a modifying influence, but also the meteorological conditions and the diseases prevailing at the time. The recognition of this dreadful disease, nevertheless, speaking in general terms, is easy. Whenever, during the summer, we are called to see a patient suddenly taken sick with one paroxysm of cold, which occurred when the sun had disappeared from the horizon, followed by rapidly rising fever ( $102^{\circ}$ ,  $103^{\circ}$ ,  $104^{\circ}$ ), and accompanied by headache, pain in the back and lower limbs; the face flushed with an anxious expression, and the eyes brilliantly injected and watery; hurried breathing; the stomach very irritable, with great epigastric discomfort and tenderness on pressure, nausea, an

anorexia; the tongue moist, slightly coated, sometimes red at the tip and edges, yet otherwise natural; bowels constipated, gurgling in the right iliac fossa; lessened quantity of urine, darker in color and albuminous; general muscular debility; pulse rapid, strong, tense, sometimes dicrotic, with from 90 to 120 pulsations to the minute; skin hot, dry and harsh, and all this without a previous history of yellow fever; then we may unhesitatingly pronounce the disease yellow fever in its incipiency.

*Peculiarities of the General Symptoms.*

APPEARANCE OF THE FACE AND EYES.—Besides the hyperæmia of the face and conjunctiva, and the anxious expression of the countenance, there is always a mahogany coloration of the skin on the forehead, temples, *alæ nasi*, cheeks, and sometimes also at the sides of the neck and front part of the chest—this is called by some authors “the mask” of yellow fever. In an elaborate monograph of Dr. Juan Santos Fernandez, of Havana, Cuba, on the loss of sight in yellow fever, translated by me from the Spanish original,<sup>1</sup> this distinguished oculist calls attention to the hyperæmia of the eyes and the dilatation of the pupil, which in some cases is so marked that it gives to the face a vague and indefinite expression, very similar to that assumed by a drunken man. In the second stage the redness and brilliancy of the eyes diminish, and the rosy color of their tegumentary covering gives place to an icteric tint several hours before the discoloration of the skin is noticeable. Some practitioners pretend to find a direct relation between the intensity of the coloration of the conjunctiva and the severity of

<sup>1</sup> Knapp's Archives of Ophthalmology, vol. x. No. 4, Dec. 1881.

the attack, and others, more correctly in my opinion, base the differential diagnosis between yellow fever and malarial fevers on the absence of hyperæmia of this mucous membrane in the latter.

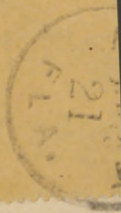
**PULSE AND TEMPERATURE.**—The action of the heart and the state of the blood and arteries, as revealed by the pulse in the first stage of yellow fever, are symptomatic of pulmonary engorgement, and this sudden afflux of blood is due, in my opinion, to the damping out of the portal circulation by the deranged liver. During the first two days the pulse is accelerated, with 90 to 110 pulsations to the minute, full and resisting, but at the commencement of the fourth day it changes completely—if the patient really enters in convalescence, the pulse is soft, rhythmical, and natural; but if this deceptive remission of the febrile symptoms is only the transition of the first to the second stage, the pulse shows a marked tendency to disappear, beating threadlike, so slowly as forty-five times, or even less, a minute in unfavorable cases.

Respecting the temperature in yellow fever, we possess the valuable observations of Dr. Joseph Jones, of New Orleans,<sup>1</sup> stating as the result of many investigations, that the maximum elevation of temperature is attained upon the first, second, and third days of the disease, ranging from 102° to 110°; from the third to the fifth it steadily falls, and sinks to the normal standard or below it, to rise again in some fatal cases in the stage of collapse, though it never attains the high temperature characteristic of the first stage.

**HEADACHE.**—The cephalalgia of yellow fever is aggravating and astringent, but, as a general rule,

<sup>1</sup> American Practitioner, Sept. 1873, and cited in Nouveau Dictionnaire de Médecine et de Chirurgie.

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never pulsatile. Its prime characteristic is its seat, which is over the eyes, and seems to affect all the muscles of the ocular apparatus supplied by the third pair of nerves, principally the internal rectus muscle. Any movement of the eyeball, or a little pressure on the closed eyelids causes great discomfort.

**PAIN IN THE BACK AND LEGS.**—The seat of the pain in the back is the lumbar region, and it seems as though it irradiates from the renal plexus. The pain in the legs is located in the upper part of the calf near the popliteal space, and in severe cases it follows the course of the great sciatic nerve, the patient feeling the pain in the pubes twenty four hours before death takes place.

**THE BLACK VOMIT.**—The hemorrhages of yellow fever appear in the second stage, except in the *coup de barré* cases of the ataxic form, in which the two stages are almost blended into one. The blood is viscous, more fluid than natural, and little or not coagulable at all, owing to the loss of fibrin; it exudes from the mucous membrane of the mouth, the nose, the anus, the vagina, and sometimes it comes out also through the ears and eyes.

There are some cases in epidemics of the ephemeral and adynamic forms in which the black vomit is absent, and this so-called "unmistakable pathognomonic symptom" is therefore misleading. Vomiting certainly occurs either spontaneously or provoked by anything taken into the stomach, but the matter ejected has a bitter taste to the patient and all the aspect of bilious and mucous matter combined, but by no means the characteristic coffee-ground appearance of true black vomit.

In the ataxic form the black vomit is always present, not very frequent or very abundant either,

generally one or two a day only. It sometimes happens that just at the moment of dying the patient has one paroxysmal vomit of altered black blood and then dies.

THE URINE.—The great peculiarity of this secretion is its constantly acid reaction. Another diagnostic characteristic, as we all know, is the presence of albumen, which, according to Dr. Vidaillet,<sup>1</sup> can be detected twenty-four hours after the onset of the attack by holding a few grammes of the urine in a test-tube, and letting five or six drops of nitric acid run along the interior of the tube, when almost immediately appears a whitish zone dividing the column of urine in two parts, the upper one retaining the same appearance it had before, while the lower assumes a reddish tint. This opaline zone is called by Dr. Vidaillet "the premonitory ring," which he claims is infallibly present in all cases of yellow fever during the second and third days, disappearing entirely during the second stage, when the column of urine divides into two distinct portions on the addition of nitric acid, no matter how carefully poured in. The premonitory ring is soluble in an excess of acid.

In severe cases, when the quantity of albumen has been constantly increasing, epithelial cells and bile are found in the urine, but during the first and second days of the disease, neither tube-casts nor pavementary epithelium can be detected.

*With compliments of the author  
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