—a condition not absolutely inimical to life. But, in fainting, the breathing is actually slackened; the inspirations are few and faint; the expirations are in proportion; the free chemical action, therefore, that should take place in the lungs does not occur, and the heart, unable to drive the blood round from its right to its left side, fails inevitably. It is probably in a similar way that over doses of chloroform, ether, hydrocyanic acid, and many other substances, destroy life, when received into the lungs in vapour. Electricity, too, kills perhaps in like manner, as well as several other instruments of death which produce what is called asphyxia; for, when an animal dies in a few seconds from any sudden derangement in the heart or lungs, the distinctions between syncope and asphyxia taper down to very fine points indeed.

The effects of blows on the epigastrium, producing sudden death from syncope, have been pointed out to me as proofs that the heart is subject to a direct influence derived from the cerebro-spinal axis: for what, it is asked, can cause death in these cases, except that the blow given comes direct upon the solar plexus of nerves, the shock to which is immediately communicated to the cerebro-spinal axis, and thence to the heart? It is almost impossible to refute, in language strong enough, this shallow explanation of the effects of blows on the stomach; which, in truth, most physiologists admit to be an hypothesis rather made to fill up a gap temporarily, than as one bearing an air of probability. The influence of a blow in the epigastrium, in producing syncope, is to my mind explainable on the simplest principles. As a sharp stroke across the elevator muscles of the arm paralyses them, and takes from the motion of the limb, so a blow on the epigastrium, coming directly, as it must, into contact with the diaphragm, paralyses that muscle, and puts an immediate stop to inspiration. Why the heart should fail under such circumstances, is sufficiently plain after what has been already written. The common expression used in reference to such cases, "that the wind has been knocked out of the body", may thus be considered as conveying not only a correct idea of what seems to occur, but a correct description of what actually does occur.

In the foregoing remarks, then, I have tried to prove that there is no direct connexion between the functions of the brain and the action of the heart. To some minds, so much evidence in the way of disproof will be considered unnecessary—such minds, I mean, as would consider the question on broad principles of the *à priori* character, and would argue that no one who understands the wisdom of nature would imagine that the heart should be placed in any direct connexion with the mind, or the mind's organ, to be swayed about by every passing thought, to be squeezed on itself like the hand, or shut up and opened at discretion, like the mouth. The same reasoners might also urge that the heart, as Harvey long ago pointed out, and as has been proved over and over again since, is without sensation; that we feel not the motion of its blood passing through it, or of its valves opening and shutting; and that, in fact, if we did not hear it now and then, when it is much put about, or feel it tilting against sensitive structures, we might live to the age of Methuselah, and not know from any evidence unconnected with anatomical learning that the space filled up by an organ so constantly moving was filled up by anything at all. I would, however, remind reasoners of this class, first, that numerous physiological problems are thickly overlaid with fantastically devised mysteries, which some defend and admire because they render such problems too profoundly complicated either to be understood by the ordinary and common-sense processes of human thought, or to be recognised by the queen of nature herself as containing even the germs of original conceptions emanating from her; secondly, that however certain a physiologist may feel that he sees a simpler explanation of any fact than that which is commonly given, he ought, out of respect both to courtesy and valour, to be prepared to discuss the whole question, and to shrink from no point that may be thrown in opposition, be it ever so strong or ever so absurd.

It is from these motives that the preceding pages have been composed. I see, or believe I see, a different and simpler explanation of the good effects of the horizontal posture in syncope, than that which has been offered by many eminent writers, and which is still zealously taught in our schools; and, anxious "to put off the old before, putting on the new", I have entered carefully into a refutation of all those arguments in favour of a direct relationship between the nervous system and the heart, on which the old theory is based. I can now without hesitation describe my own views.

[To be continued.]

Mortlake, June 1854.

FURTHER OBSERVATIONS ON THE ATMOSPHERIC CHANGES RELATING TO CHOLERA.*

By J. A. HINGESTON, Esq.

THAT an overcast sky and damp weather alone are not the only conditions requisite for the development of the Asiatic cholera, the meteorology of the month of June, just ended, is sufficient to testify; for, with the exception of about ten days, the whole of that month has been cloudy, misty, or rainy, and yet cholera has not prevailed. At the same time, it must be admitted that several indications of the disease being close at hand have not been wanting. Thus, two deaths from cholera were registered, the one at Mile End New Town on the 26th, and the other in Limehouse on the 27th of May; showing that a state of atmosphere of a choleraic character had preceded their appearance by two or three days. On referring to my diary of the weather, I find the following entries. (Table I.)

About the 31st of May, diarrhoea presented itself in this town, as was pointed out to me by Dr. Bayes, one of the Physicians of the Brighton Dispensary. In the preceding table of the weather, it must be remarked that, although there was both rain and a calm, yet the other conditions that usually accompany the outbreak of cholera were altogether absent. For instance, the mortality was *above*, and not *below*, the average; the barometer stood at *change*, instead of at *fair*; and it was *rainy* and *wet*, instead of being *moist* and *dry*, as is the case during the cholera periods. All these indications tend to prove that the particular element, be it what it may, which constitutes the active principle of the disease, and presses up the mercury in the barometer to *fair* in the midst of a cloudy moist atmosphere, was not present on the occasion just quoted, or at least was not present in any degree of intensity.

In addition to the foregoing remarks, I wish to draw the attention of those who study this interesting question to the fact that, besides these remote signals of the proximity of cholera in the atmosphere, there were other symptoms of its being likely to occur observable in the pathology of the prevailing character of disease. Jaundice has been frequent during this spring, and an indigestion in the form of subacute gastritis. The urea, which was obvious in the urine previous to the month of March, has greatly diminished, or it has entirely disappeared. The specific gravity has been low, and once I observed the phosphatic character, which seemed to arise from some unassignable cause, as no disease was present that could reasonably account for it.

But, during the month of June, there were three days marked by all the essentials of the choleraic atmosphere, which, had it continued, would quickly have produced the disease in its worst form. The following is the extract from my diary. (Table II.)

No cases of cholera were registered in London subsequently to these three remarkable days; but eighteen cases were reported at Glasgow about this time, and a number of deaths. The local authorities imputed the outbreak of the disease to the "removal of a number of wells which had

* Vide ASSOCIATION JOURNAL, 31st April, 1854, p. 593.

been set up by the police and the water company in the poorer parts of the city". Dr. Bayes also informs me that some cases of diarrhoea presented themselves on the 10th of June, under his care at the Dispensary in this town. One element, however, was still wanting to complete the choleraic constitution of the air, namely, the ordinary mortality, although much less than it had been, was registered at 83 above the average; for it must not be forgotten that, during the ravages of epidemic cholera, the mortality from ordinary causes sinks as low as one-fifth below the average. In the Registrar-General's return (June 12th), we find it stated that "the mortality of London was still high for the season", and "much above what the rate in previous years would lead us to expect at the beginning of June".

A further proof of the fact, that misty weather alone, together with a calm, does not afford the pabulum or excitant of the disease, may be adduced from the circumstance of the 16th and 17th of June being particularly foggy and wet, without their giving rise to any of the premonitory signs even of the disorder. (Table III.)

In this table, we have mist and a calm, along with a barometer properly indicating change and rain, and a variable wind, chiefly south-west, whereas in the time of cholera the wind usually prevails from the north-west. According to many well established observations, the existence of Asiatic cholera is incompatible with this state of atmosphere.

The temperature during the whole of the month of June was below the average, with the exception of four days (23rd-26th inclusive), when it was several degrees above it. "The American steamer, on its last passage from Liverpool to Boston, encountered immense fields of ice. On Saturday, the 20th May, she sighted a mountain of ice, about five miles distant, and for the next twenty-four hours there was a deadly chill. It is said, that the oldest voyager has never before seen the same quantity of ice so far south." (*Times*.) Considering the prevalence of south-westerly winds from the 20th May, with a few exceptions, up to the present time, we may by this means account for the chilliness of the month of June; for the Gulf-stream, which usually brings

with it both hot air and water to our shores, would under these circumstances be chilled by the melting of the icebergs, and produce an immediate condensation of vapour on approaching the land. The well known gulf weed, the harbinger of summer, has been floating along this coast for some time past.

From the foreign news (*Times*, June 30), we learn, that "accounts received this morning from Genoa (dated Turin, June 25), give but too much reason to fear that cholera has made its appearance both there and in some of the French Mediterranean ports, though neither government has thought it necessary to take official notice of the circumstance as yet, as the number of cases certified up to the present moment have been comparatively trifling." It is also said that cholera has reappeared in some parts of Scotland. In Perth several cases have terminated fatally; in Barrhead there have been four fatal cases; at Dalry, out of four cases, three were fatal ones. It has reappeared in the West Indies in its worst form. In various parts of Jamaica it is making serious ravages. The last accounts from Bombay speak of its fearful ravages there also.

Our information is so scanty in respect to meteorological observations relating to the spread of the disease in various parts of the globe, that it only makes us long for accurate intelligence on this head, so much the more earnestly. From the casual conversations I have had with those who have lived in the East when cholera has prevailed, I am enabled to gather some corroborative evidence of the same state of the atmosphere, as that which I have had occasion to remark in this country being observable at the time. They all agree in regard to the mist and the calm; but of more than this, they are unluckily ignorant. I make this statement in the hope that some intelligent medical man, in the more distant quarters of the world, may be induced to make a series of observations, and collect as much local information as he can on this point, so as to enable us to compare notes, and to ascertain with accuracy the main conditions requisite to the spread of so formidable a disease.

TABLE I.

May	Wind.	Clouds.	Rain.	Clear or dry.	Storm, gale, or calm.	Temperature.		Thermometer.	Barometer.
22	S.W.N.	Strati dark.	Two hours rain.	Sloppy.	Calm.	Close, but chilly.	Mortality 135 plus.	60-54.	Change.
23	S.W.N.	Overcast forenoon.	Rainy night.	Thick and damp.	Breeze S.W.	Ditto.		62-50 below the average.	Ditto.

TABLE II.

June	Wind.	Clouds.	Rain.	Clear or dry.	Storm, gale, or calm.	Temperature.		Thermometer.	Barometer.
6.	N.	Overcast.		Dull and thick	Calm morning strong wind; evening N. Wind N.	Mild day; cold nights.	Number of small black flies.	60-43.	Fair.
7	N.N.W.	Ditto.		Heavy mist in low places.	Ditto.	Ditto.	Ditto.	65-45.	Ditto.
8	N.W.S.	Ditto.		Ditto.	Calm.	Ditto.	Ditto.	58-48, below the average.	Ditto.

TABLE III.

June	Wind.	Clouds.	Wet or dry.	Clear or dry.	Storm, gale, or calm.	Temperature.	Thermometer.	Barometer.
16	S.W.S.E.N. Variable.	Heavy mist.	Heavy rain E.	Wet and thick.	Calm.	Warm and close.	65-50.	Change; falling.
17 Moon's last qu. 2 P.M.	S.W.	Ditto.	Rain.	Ditto.	Ditto.	Ditto.	68-52, below the average.	Ditto.

Brighton, July 1st, 1854.