ORIGINAL COMMUNICATIONS.

THE IATRO-METEOROLOGY OF HIPPOCRATES.

By ALFRED HAVILAND, Esq.

It will be interesting to those engaged in making observations in that branch of medical science, which may with propriety be termed *iatro-meteorology*, to know that the great Hippocrates anticipated them in their appreciation of its value, as one of the helpmates of medicine. They will find in his writings, especially in his "Epidemics", "Aphorisms", and "Airs, Waters, and Places", very many minute meteorological observations in connexion with disease; and when we consider how deficient he was in those appliances, which modern science has given to us to facilitate our pursuits, we cannot but acknowledge the consummate wisdom and foresight of one, who saw the relation between atmospheric changes and disease more than two thousand years ago, and who was nearly, if not quite, as advanced in this department of medical knowledge as the learned of the present day.

Hippocrates says, in the opening paragraph of his treatise *Περὶ αἰρών, ὑδάτων, τόπων*, "Whoever desires properly to investigate the art of medicine, must do thus: First take into

consideration the seasons of the year, and how each is capable of operating (on the system); for they not only do not resemble each other, but differ widely from one the other in the changes (they bring about). Then the cold and hot winds (must be noted), especially those that are common to all nations, and then those that are peculiar to any particular district."*

His mode of observation, which will be found in the first and third books "*Περὶ ἐπιδημιῶν*", was very simple: in these instances he gave a description of the season of *three* different years, particularised the peculiarities of each season, and then concluded with an account of the most remarkable diseases that prevailed during each. The assemblage of the meteoric phenomena observed during the year, he comprised under the term *κατάστασις*, which is equivalent to "the state" or "constitution" of the seasons, for instance "*τῶν δρῶν*."

We will proceed at once to a short detail of these observations, and for the sake of easy reference will place them in a tabular form.

* "*Ἱητρικὴν ὅστις βούλεται ὀρθῶς ζητεῖν, τάδε χρὴ ποιεῖν· πρῶτον μὲν ἐνθυμέσθαι τὰς ὕρας τοῦ ἔτους, ὅ τι δύναται ἀπεργάζεσθαι ἐκάστη· οὐ γὰρ εἰσκασιὶν οὐθεν, ἀλλὰ πολλὰ διαφέρουσιν αὐταί τε ἐωυτέων καὶ ἐν τῇ μεταβολῇσιν· ἔπειτα δὲ τὰ πνεύματα τὰ θερμὰ καὶ τὰ ψυχρά· μάλιστα μὲν τὰ κοινὰ πᾶσιν ἀνθρώποιςιν, ἔπειτα δὲ καὶ τὰ ἐν ἐκάστῃ χώρῃ ἐπιχωρία ἔδοντα."*

FIRST CONSTITUTION. (*Κατάστασις πρώτη*).—Observations made at Thasos. (*Ἐν Θάσῳ*.)

Season.	Rain.	Wind.	Temperature.	Cloud.	Snow, etc.	Name of Diseases.	Remarks, etc.
<i>Autumn.</i> (Φθινοπώρου περὶ ἱσημερίην καὶ ὑποπληγάδα.) About the autumnal equinox and under the Pleiades.	A great deal of rain, which was constant and soft. ὕδατα πολλὰ ξυνεκὰ μαλθακῶς.	Southerly. ἐν νοτίοις.				Cynanche parotidea. Inflammation and pain of the testicles. Dry coughs. Hoarseness. Cynanche, etc.	ἐπάρματα δὲ παρὰ τὰ ἄτα. φλεγμοναὶ μετ' ὀδύνης ἔς ὄρχιν. πολλοὶσι δὲ βήχες ξηραὶ βήσσουσι καὶ οὐδὲν ἀνέγουσι. φωναὶ βραγχώδεις.
<i>Winter.</i> Χειμῶν. τὸ ἔξονον ἔς γε χειμῶνα ὁκοῖον ἢ γίγνεται. The winter was on the whole very like spring.	Droughts. αὐχνοί.	Southerly. Slight north winds. χειμῶν νότιος, σμικρὰ πνεύματα βόρεια.					
<i>Spring.</i> Ἡρ.	Slight rain. σμικρὰ ὕματα.	Spring southerly. ἢ νότιον.	Cool. ψυχρὸν.			Fevers.	καῦσοι. Moderate, however, and unattended by any hæmorrhage. Never fatal.
<i>Summer.</i> Θέρος.	No rain. ἀνυδρία.	Etesian winds, rare, small, and irregular. Ἐτησιαί, ὀλίγα, σμικρὰ δισπαρμένως ἐπνεύσαν.		Very cloudy. πολλὰ ἐπινεφέλω.		Phthisis (acute). Phthisis (chronic). Fevers.	Those who had a predisposit. to phthisis took to their bed. φθ. νόδιες κατακλίθησαν. (Remittent type of Munro?) πνευροὶ πολλοὶ ξυνεχῆς.
<i>Autumn.</i>						Phthisis and fevers.	Phthisis fatal. The fevers were not so.

GENERAL REMARKS. He seems to hint that the fevers were dependent upon the droughts, etc., in the spring, which he intimates arose from a former opposite and northerly state of the weather, *ἐκ τῆς πρόθεν καταστάσεως ὑπεραντίης καὶ βορείου*. Hippocrates also remarks that the cases of phthisis were the only fatal ones.

SECOND CONSTITUTION. (Κατάστασις δευτέρα.)—Observations made at Thasos. (Ἐν Θάσῳ.)

Season.	Rain.	Wind.	Temperature.	Cloud.	Snow, etc.	Name of Disease.	Remarks, etc.
Autumn. Commencement. Πρὸς τοῦ φθινοπώρου. During the Pleiades and until their setting.	Stormy and rainy. ὄμβροι καὶ προεμνηνόμενοι.	Strong northerly and southerly. ἐν βορείοις καὶ νοτίοις πολ- λοῖσιν.					
Winter. Χειμῶν.	Much rain and great torrents. ὕδατα πολλὰ, λαύρα, μεγάλα.	Northerly. χειμῶν θε βορείος.	Not unseasonably cold. οὐ λίην θε ἀπαίρει τὰ τῶν ψυχρῶν.	Occasionally fair. μικαῖθρια τὰ πλείστα.	Snow. χιόνες.		
After the <i>Winter Solstice</i> . Μεθ' ἡλίου τροπᾶς χειμερινᾶς.	Much rain. ὕδατα ξυνεχῶς πολλὰ.	Winterly storms and north, instead of Zephyrus (west). ὁπισθο- χειμῶνες μεγά- λαι βόρεια πολλὰ.		Tempestuous and cloudy. οὐρανὸς λαί- λαπῶδες καὶ ἐπιωφέ- λος.	Snow. χιὼν.		"The whole season having been generally wet, cold, and subject to a north wind, people were for the most part healthy during the winter, but early in the spring many required medical assistance." N.B. All the later meteoric phenomena continued until the equinox.
Spring. Ἑρ.	Rainy. ὕδατῶδες.	Northerly. βόρειον.	Cold. ἥρδὲ ψυχρὸν.	Cloudy. ἐπιωφέλον.		Ophthalmia (purulent?)	ὀφθαλμία ῥοδῶδες. This ophthalmia was painful, and the discharge unconcreted. It lasted in some instances until the autumn.
Summer. Θέρ.ς.		The Etesian winds blew constantly. Ἐτησιαὶ συνέ- χες ἐπνευσαν.	Not unusually sultry. οὐ λίην καὶ ματῶδες.			Dysenteric affections. Tenesmus. Lientery. Diarrhoea (bilious), with thin, copious, and undigested dejections.	Many of these affections followed the fever that prevailed, on which dropsy sometimes supervened, and then a fatal result was generally the sequel.
Autumn. Περὶ ἀρκτοῦρον.	Much rain. πολλὰ πάλιν ὕδατα.	Wind in the north. Ἐν βορείοις.				Watery stools. Strangury. Bilious vomiting. Fevers of various sorts. Convulsions. Small rashes. Swellings about the ears. Strangury. Abscesses. Sweatings.	<i>Semitertian.</i> There were many deaths from fevers. Those swellings did not suppurate, but were often determined to the joints. These supervening were considered critical.

(a) Thasos, now Tasso, N. lat. 40° 30', E. long. 24° 28', is a small island in the north of the Grecian Archipelago (the Ægean Sea), on the coast of Thracia, now Roumelia, in the south of Turkey. It was remarkable for its fertility, inasmuch that it became proverbial. Geologically considered, the island is composed of pure white marble, and has mines of gold and silver; and, with regard to its meteorological position, according to A. Petermann, it is situated about the isothermal line of 58° Fahr. average mean annual temperature. This author also encloses it within the region of south-west winds, and places it in a central position in relation to the northern and southern limits of the cultivation of the vine. Galen says of Thasos (vol. xvii, A., p. 36, ed. Kühn), "that this island, being situated just opposite the coast of Thrace, is exposed to cold northerly winds."

The first part of the third section of the *Aphorisms* of

Hippocrates is devoted to meteorology in its relation to disease; and the observations display the wonted sound judgment and acumen of this celebrated author. He says, in his *General Observations*,—

"That the changes of the seasons are especially concerned in the production of disease, and that the great alternations from heat to cold, and so forth, have also their due effect." (Aph. i.) "In well established (regular) seasons, if they bring forth their various products in proper time, the diseases are regular, and easily brought to a crisis; but, in changeable seasons, the diseases are variable, and determine with difficulty." (Aph. viii.) "In those seasons wherein there may occur on the same day both heat and cold, autumnal diseases may be expected." (Aph. iv.) "Every disease may occur at all times of the year, but some take place, and are more acute, at certain seasons." (Aph. xix.)

THIRD CONSTITUTION. (Κατάστασις τρίτη.)—Observations made at Thasos. (Ἐν Θάσῳ.)

Season.	Rain.	Wind.	Temperature.	Cloud.	Snow, etc.	Name of Disease.	Remarks, etc.
Autumn. Ἡρὸ ἀρκτούρου ἀλλήγας, καὶ ἐν' ἀρ- κτούρου. About the equi- nox. περί δὲ ἱσημε- ρίων καὶ μέχρι κατὰ- λάτος.	Much rain. ὕδατα πολλὰ. Southerly rains. νότια ὕδατα ἀλλήγας.	Northerly. ἐν βορείῳ. Southerly? Νότια?					
Winter. Χειμῶν.	Droughts. ἀύχμοι.	Winter northy. High winds. χ. βόρειος. (πνεύματα με- γάλα.)	Cold. ψύχρα.		Snow. χιόνες.	Paraplegia. (Apoplexy.) Hæmorrhage. Disorders of bowels. Ardent fevers. Difficult parturi- tion. Abortions. Eruption of menses during fevers.	παρελυσία. It was fatal in some instances (καὶ τινες αἰ- τίων θνήσκον), espe- cially in elderly per- sons. Accompanied in fa- vourable cases by epi- staxis and other kinds of hæmorrhages. Fever subsequent to parturition (puerpe- ral?) Considered critical. The rigors of the fe- ver were least at this time of the year, and most in winter.
Spring. About the equi- nox. περί δὲ ἱση- μερίην.	Slight rains. Droughts. ὕδατα ἀλίγα. ἀύχμοι.	Northerly. Violent storms. ἐν βορείῳ. χει- μῶνες μέγισται.	Cold. ψύχρα.			Dysentery. Ardent fevers and phrenitis. Hæmorrhage.	Εpidemical during the summer. From which there were many deaths. These continued un- til the approach of winter.
Summer. (α) Solstice. περί δὲ ἡλίου τροπῆς θερινῆς. (β) From Dog Days to Autumn. Μέτα δὲ κῆνα μέχρις ἀρκτούρου.	Slight rain. ὕδατα ἀλίγα. No rain, great and continued droughts. ὕδωρ οὐκ ἐγέ- νετο, καύματα, κ.τ.λ.	Etesian winds blew. ἐτεσιαὶ ἐπνευσαν.	Great cold until dog days. με- γάλα ψύχρα. Summer. Hot. θερὸς θερινῶν.				
Autumn. Περὶ ἀρκτούρου μέχρις ἱσημερίης.	Southerly rains. ὕδατα νότια.					Swellings about the ears.	About the season of Arcturus many had a crisis on the eleventh day. Children be- came comatose.

Dry Seasons. "With regard to the constitutions of the year, on the whole, the dry are healthier than the wet, and less fatal." (Aph. xv.) The diseases, he remarks, of a dry season are "consumption, ophthalmias, pains in the joints, strangury, and dysentery." (Aph. xvi.) He further on observes, "that fevers are acute in droughts; and, if they prevail throughout the year, such will be its constitution, and such will be the diseases that we ought to expect." (Aph. vii.)

Wet Seasons. "The diseases that for the most part prevail in rainy seasons are lingering fevers, belly-flux, gangrene, epileptic and apoplectic attacks, and quinsies." (Aph. xvi.)

Winds. North. "As to the daily state of the weather, a northerly one braces up the body, makes it full of tone, active, and of a healthy hue, constricts the bowels, nips the eyes, and rather reproduces thoracic pains, if any have previously existed." (Aph. xvii.) "If the north wind prevail, coughs, affections of the throat, constipation, dysuria with rigors, pains in the sides and chest; and, when this wind prevails, we must expect such symptoms in the diseases that then occur." (Aph. v.)

South Wind. "A southerly (state of the atmosphere) relaxes and renders the body humid (perspire), produces dulness of hearing, heaviness in the head, sluggishness of the movements of the eyes and the body generally, and relaxes the bowels" (Aph. xvii); also "dimness of sight, dulness (mental), languor; and, when such winds prevail,

similar symptoms obtain in the diseases (that then occur)." (Aph. v.)

Temperament and Age. "With respect to the systems (of persons), some are either well or ill constituted for summer, whilst others are the same with regard to winter." (Aph. ii.) "Certain diseases and certain ages are either well or ill disposed for such and such seasons, places, or diet." (Aph. iii.) "As regards the seasons, children, and those who rank next them as to age, best enjoy, and are particularly healthy in, the spring and beginning of summer; old people (enjoy, etc.), the summer and a certain part of the autumn; and middle-aged persons, the remainder of the autumn and the winter."

Seasons. Spring. "The spring is most healthy, and least mortal." (Aph. ix.) In its relation to the age of persons, see above, under *Temperament and Age*. "The diseases of spring are the maniacal, melancholic, and epileptic, blood-fluxes, quinsies, coryza, hoarseness, coughs, leprosy, lichen, alphas, many kinds of ulcerating exanthemata, pustules, and arthritic diseases." (Aph. xx.) "If the winter have been southerly, rainy, and calm, and the spring dry and northerly, women, whose accouchements are expected in the spring, miscarry from slight causes; and if they be delivered at the full time, they bring forth weakly and diseased children, so that they either die at once, or live in an attenuated and diseased state. Among other mortals, there are dysenteries, dry diseases of the eyes, and, in elderly persons, catarrhs, that quickly carry them off." (Aph. xii.)

Summer. "Whenever the *summer* is like the *spring*, we ought to expect profuse perspirations in fevers." (Aph. vi.) "If the *winter* have been dry and northerly, and the *spring* rainy and southerly, of necessity there will be acute fevers, diseases of the eyes and dysentery in the *summer*, especially in the persons of women and men who are of a humid nature (sebaceous complexioned)." (Aph. xii.) "In *summer*, some of these diseases (referring to those mentioned under *Spring*), as well as continued fevers, ardent and tertian, much vomiting, diarrhoea, ophthalmus, gangrene (*συνελθές*) of the genitals, and sudamina (*ἰδρωα* or *ἰδρωάρα*)." (Aph. xiii.)

Autumn. "Autumn is obnoxious to consumptive persons." (Aph. x.) "In autumn, diseases are most acute, and altogether most fatal." (Aph. ix.) "If it (the autumn) be northerly and dry, it is favourable to persons whose systems are of a moist character, as well as to women; but, in other instances, there will be diseases of the eyes, unattended with discharge, acute fevers, chronic coryza, and, in some instances, hypochondriacism." (Aph. xiv.) "As to the diseases of autumn (among them there are many summer ones), there are also quartan and irregular fevers, affections of the spleen, dropsies, phthisis, strangury, lenter, dysentery, sciatic pains, quinsey, asthma, ileus, epilepsy, maniacal and hypochondriacal affections." (Aph. xx.)

Winter. "If the summer be dry and northerly, and the autumn wet and southerly, during the winter there will be headaches, coughs, hoarseness, coryza, and, in some instances, consumption." (Aph. xiv.) "The diseases of winter, according to our author, are "pleurisy, peripneumonia, lethargy, coryza, hoarseness, pains in the chest, sides, and loins, headaches, vertigo, and apoplexy." (Aph. xxi.)

I have thus attempted to give an outline of the views of Hippocrates on iatro-meteorology, by quoting verbatim the most remarkable passages in his works alluding to this most interesting subject; and shortly I hope to be able to compare these opinions with those prevalent before and after the period in which this great physician flourished. Many and valuable are the observations scattered through the ancient medical classics; and their perusal cannot fail to arouse in the minds of truly scientific men, not only a deep veneration for the ancestors of the medical profession, but a wholesome desire to emulate them in their patient and ever watchful study of the phenomena of disease.

Bridgewater, Oct. 29th, 1853.

ON THE USE OF NITRO-SULPHURIC ACID IN CHOLERA AND DIARRHŒA.

By W. J. ANDERSON, F.R.C.S., Accoucheur to the St. George's and St. James's Dispensary.

THAT oxygen is given off most rapidly from the blood in cholera, may be observed, even during life, by the speedy oxydation of the tissues, giving rise to that horrible emaciation so characteristic of the complaint; again, the cold and blue-coloured surface at a later period shows too plainly the large amount of oxygen which has been expended, and the fearful quantity of carbon which is now circulating in the slowly flowing blood. The patient has now a fluid passing through his blood-vessels, somewhat similar to that which exists in cyanosis, insufficiently stimulating to the nervous system, and consequently blunting the mental faculties (though not by any means obliterating them); and thence arises that strange and terrible apathy about their condition, which choleraic patients commonly exhibit.

Can a remedy then be found, which will readily yield up its oxygen and supply that element to the impure blood, and at the same time, by its astringent properties, tend to check the enormous exudation which takes place from the mucous surface of the intestinal canal? In our present state of knowledge, some of the mineral acids appear to be the best adapted to this purpose; and for certain reasons

about to be explained, a combination of nitric with sulphuric acid seems to me to be preferable to any other. The acid should be administered in tolerably full doses, and repeated at intervals, varying according to the nature and urgency of the case: for an adult we may give, *acidi sulphurici diluti f. 3 ij*, *acidi nitrici diluti f. 3 j*, in a six-ounce mixture, an ounce being the dose; but of course, in younger patients, this quantity must vary according to their age. We know that the blood contains an oxydised compound of iron, and that oxygen is readily taken up by compounds of the protoxide of iron from other oxydised compounds, while on the other hand compounds of the peroxide give up oxygen with the greatest facility. Hydrated peroxide of iron, in contact with organic matters destitute of sulphur, is converted into carbonate of the protoxide. The sulphur contained in the sulphuric acid will most probably restrain this action to a certain extent, and prevent such an excessive formation of carbonate of the protoxide of iron. Carbonate of the protoxide of iron, in contact with water and oxygen, gives off carbonic acid, absorbs oxygen, and is converted into the hydrated peroxide, which may again be changed into a compound of the protoxide.

	Atoms.	Equiv.	Per cent.
Iron - - - -	1	28	77.8
Oxygen - - - -	1	8	22.2
Protoxide of iron - -	1	36	100.0
Iron - - - -	1	28	70
Oxygen - - - -	1½	12	30
Peroxide of iron - -	1	40	100
Protoxide of iron - -	1	36	62
Carbonic acid - - -	1	22	38
Protocarbonate or carbonate of the protoxide of iron - - - -	1	59	100
Carbon - - - -	1	6	27.27
Oxygen - - - -	2	16	72.73
Carbonic acid - - -	1	22	100.00

The large amount of oxygen contained in the nitro-sulphuric acid will then be called into play. It will enter into combination with the carbonate of the protoxide of iron, which will become decomposed, carbonic acid will be given off, oxygen will be absorbed, and the hydrated peroxide of iron will be the result.

	Atoms.	Equiv.	Per cent.
Nitrogen - - - -	1	14	26
Oxygen - - - -	5	40	74
Nitric acid - - - -	1	54	100
Sulphur - - - -	1	16	40
Oxygen - - - -	3	24	60
Sulphuric acid - - -	1	40	100

We have then one atom of nitrogen and one atom of sulphur, combining with eight atoms of oxygen, to form nitro-sulphuric acid.

This plan of treatment, apparently so different from the saline system, is not in reality so much opposed to it as we might at first sight imagine. The same theory will here also hold good, as in both plans oxygen is the important agent which must be called into play to produce a beneficial effect. I do not believe that chlorine has any effect in this complaint; and I am therefore of opinion, that hydrochloric acid in the acid system (excepting as a mere astringent), and chloride of sodium in the saline, are both useless, as neither of them contain oxygen. In the saline treatment, oxygen is derived from other sources; and this, as in the other case, is the important element.