

CHAPTER, II.

Of the manner in which poisons subsist in the state, on the structure of the animal economy.

Continued from the Madras Courier, dated 9th April.

SECTION I.—By endeavouring to explain and to reconcile the preceding phenomena, it will be necessary to consider the component parts of the blood, as it is from this source, that our information is to be derived. The more accurate and extensive our knowledge be, of its simple elements, which produce such serious consequences, in many diseases, may, perhaps, impart the best means, to counteract the effect.

II.—Life consists of progressive motion of fluids, that, the motion of the heart and arteries, depend upon the continual supply of Chyle, and the vibrations will be, as the influx of it, to the heart, and arteries. DEATH then is a cessation, of these motions.

III.—Animal fluids at rest divide and become decomposed, and thereby generate poisonous particles. It is therefore, necessary that they should be in continual motion, to prevent their component parts, to answer the purpose for which they were intended, it is the order of nature, that every thing in it, should be in continual motion changing, and parting with some particles, and receiving others, Corpora non agunt, nisi soluta, is an admitted axiom.

IV.—Every thing that exists in nature, which receives an increase in weight or magnitude, is caused by fluids, this is peculiarly evident in animals and vegetables, the former by blood, the latter by sap, both of which, water is the basis, as the nourishment, growth, and increase of every substance, is by a fluid, to then, their several alterations, diminution, decay, and dissolution, must proceed from the same cause.

V.—Chyle a milky fluid compounded of the nutritious particles daily eaten and drunk, it is conveyed from the stomach and intestines, into the circulation for the purpose of supplying material, to form new blood, to repair the continual expenditure of it, and renovate the system.

VI.—As the Chyle thus circulates through the lungs, the new blood from it, is then and there formed, and acquires its colouring particles, by an absorption of vital air.

VII.—Blood the primary principle, and common origin of animal fluids and solids. It is decomposed, the nutritive principle is thereby off, and the solids become dissolved.

VIII.—From this Red compound fluid thus formed, all others are separated, so long as it retains its healthy state.

IX.—When the blood is at rest out of the circulation, exposed to the atmospheric air, it separates into red globules, coagulable lymph and serum, but some, namely, into two parts, creamentum and serum, the former the red crassor or coagulable, the latter, the watery and coagulable part, each of these parts, may be divided into two others, for the creamentum, being repeatedly washed in warm water parts with its red globules and what remains afterwards, is coagulable lymph, which is a gelatinous substance, capable of being hardened by fire, until it becomes of a horny nature, and the serum when exposed to a certain degree of heat, the lymph which remains mixed in it, will be found to coagulate like the white of an egg. If the lymph be obstructed, in the glandular tubuli, the irritable muscular and nervous fibres, which depend upon its secretion, lose their action, this pellicular fluid is the immediate cause of animal life and motion.

X.—Blood may be affected, I, By food, II, By respiration; III, By matter made or generated in the system; IV, By absorption; V, By the insertion of poisonous particles, with an instrument which wounds, any part of the system.

XI.—But, when the Blood is penetrated with a putrefactive or poisonous principle, it is confirmed by microscopical experiments, and admits of ocular demonstration, that, it never then separates into its component parts as it does in health. The effluvia from an infected, changes from a bright crimson, to a dark livid colour, & when diluted with water, or exposed to the atmospheric air, the red globules, Lymph and serum, do not separate, because, they are in such state, dissolved and combined together by disease. Thus the blood, lose their transparency and healthy qualities, and obtain their colouring and diseased particles.

XII.—When the Lymph is impregnated with diseased bile, it acquires a dark green colour, the effect of putrefaction, and tinges the whole system with it, as is frequently to be seen in dead bodies, in the jaundice, and in contagious yellow fevers. When the lymph be penetrated with dissolved blood, it obtains a red appearance, which thereby, demonstrates that the lymph is the universal medium, which conveys the poisonous particles, extending throughout the whole system.

XIII.—From the preceding and subsequent observations, it may appear, that the blood when infected always become, more or less fluid and dissolved, according to existing circumstances, and that, the red globules then becoming combined with other important fluids necessary to life, which, cannot be separated as in health, and thus, the diseased blood escapes out of the sanguiferous, into the lymphatic system, and

occupies those internal and external spaces and cavities, which in health are supplied with very different fluids, as bile, urine, coagulable lymph, perfibrilous fluid, &c.

XIV.—Thus for example when a person has been bitten by a venomous Snake, the wound may be considered, in the first instance, as a local disease, and if the communication, could be immediately stopped, between the part bitten and circulation, no serious consequence might succeed, but, in proportion as the general disease advanced in its progress, could either from a venomous animal, or other poisonous substance in the circulation, to do arise, at different periods of time, the subsequent symptoms.

XV.—I, Difficult respiration; II, Spasms; III, Convulsions; IV, Tremors; V, Continual fainting; VI, Petechial tumors; VII, Bubbles occasioned by the diseased blood, obstructed in the lymphatic glands, which, causes them to swell, inflame, and suppurate; VIII, An effusion of fluid and diseased blood in particular parts of the cellular membrane, conveying the idea of inflammation; IX, The diseased fluid (sometimes passes into, or out of, other surfaces and cavities, extending over the whole system; X, Hence the irritable, muscular, and nervous fibres, lose their irritability and motion; XI, Gangrene and mortification suppurates; XII, The conclusion is a decomposition of animal fluids.

XVI.—Such derangement may be occasioned by poisonous particles infecting the circulation and may explain, the preceding various opinions which have arisen, concerning the operation of such substances, the symptoms of which, having been considered, as the primary cause of such effects.

XVII.—It may appear then, that those diseases, which have been hitherto considered as originating in affections of the irritable and nervous fibres, and from other causes, are very equivalent, to those affections in the circulation may produce all those symptoms.

XVIII.—From the preceding considerations, it may, possibly be with reason inferred, that when a putrefactive principle, has infected the circulation, it causes the most fatal consequences, where originate contagious fevers, Dysentery, Diarrhoea, and plague. And that, when the red globules are in a state of dissolution, combined with other formerly pellucid fluids, may excite into, and in many instances colour the white parts of the whole system.

XIX.—When the fluid is infected, and in such state, it may pass upon the brain or into its ventricles, and cause a phrenzy, delirium or coma, & languent stupor, * The aqueous humor in the eye, may be tinged, with the colouring particles of the blood, and explain the reason, why some persons appear to see all objects red, in contagious fevers, and they will appear to be yellow, caused by the bile, imparting that colour, to the aqueous humor. The diseased blood, then, may, as it frequently does, pass from the eyes, ears, nose, and mouth, which are general symptoms, of a succeeding Diarrhoea.

XX.—In the Thorax the diseased fluid may run into the pericardium mediastinum, pleura, and interior substance of the heart and lungs, and cause several of the preceding mentioned symptoms of infection.

XXI.—In the abdomen the fluids thus diseased, may escape through, or into the different organs contained in it, as the liver, intestines, Kidneys, and other organized parts, and give rise to various appearances, according to the nature of the organ, which may be particularly affected, hence, all these circumstances, may be caused by such general and interior derangement.

XXII.—And under such circumstances, the cellular membrane, is found to be materially affected. This membrane invests the most minute fibres, we are able to trace, and is considered as the universal connecting medium of every part of the system. Several diseases, which peculiarly affect it, prove indubitably this connection, namely, in the emphysemas, all its vessels and cells become filled with air, in the anasarca with water, and in contagious diseases, with fluid and infected blood. Barthers by making a puncture, in any part of it, infuse all its vessels, and cells, with air.

XXIII.—Quicksilver injected into the arteries of the arm, leg, or other part, if the collateral veins be tied, run through glands, and arteria, into the cellular membrane. When the arteries, have been successfully injected, innumerable branches of lymphatic vessels are then to be seen, and in the pericardium and other membranes filled with the infected liquor, which formerly were reluctant, after they are broken, their orifices are then to be seen, like five many coloured points on the surface, or in the membranes, and mercury having been injected into the circulation of a Dog, has escaped out of it through the same passages, as the lymph passes in health, and red blood when diseased.

XXIV.—The immediate cause of what is termed inflammation, (except such cases, as arise from plethora,) may be the colouring particles of the blood escaping from the circulation, with the lymph into the membranous parts which were formerly reluctant. In bruises or contusions, the red globules are broken, but not infected, and run into the lymphatic parts and form the livid appearance, which, is to be observed in such cases, and which symptoms disappear when the broken globules are re-converted to the circulation by absorption, or expelled by perspiration.

XXV.—The interior substance of the brain, conjunctiva of the eye, pleura, mediastinum, cellular membrane, in a healthy state, are then transparent, no arteries or veins, are to be seen filled with red blood, but, when those parts are considered to be, in what is termed an inflammatory state, the vessels by which they are supplied, then become conspicuous filled with red blood which were previously pellucid. These facts admit of ocular demonstration, and prove a direct communication, from and into the circulation through the lymphatic system, for if there were not such passages, how could such symptoms appear?

XXVI.—Several eminent modern anatomists and physiologists, have denied a natural passage, through the lymphatic glands and vessels, into the cellular membrane and other parts of the system. But, indeed, Hippocrates upwards of 2000 years ago, seems to have known, that, lymph was separated in glands, for in his book of Epidemics, he describes them in these words "Glandularum natura sic habet, carum quidem natura spongiosa vasa quidem pinguis et neque carum habet relinquit corpus simile, sed friabile et multo tenuius resistens." And if an incision be made into the body of the glands, a white liquor issues out of them, * "Quam si secus, sanguis capinus species albus, et veluti pituita effunditur."

XXVII.—The circulating fluids are continually and materially affected by the atmospheric air, in proportion as it loses its vital principle. It is generally supposed to contain in one hundred parts, twenty-seven of vital air, and the other seventy-three parts, are composed of it, and termed azotic gas, which, is not capable of supporting respiration, it extinguishes bodies in combustion, it dissolves animal fluids, and instantaneously kills animals which breathe it in combination.

The subsequent quotation being applied, may convey an appropriate idea of the nature of poisonous fluids to those who may not have considered this subject. "Au our d'hui l'on donne le nom de gaz, à toute espèce de vapeurs invisibles, qui font capables de détruire l'elasticité de l'air, qui exigent la flamme &c. Toutes les vapeurs qui résultent des substances végétales et animales en combustion, celles des corps pourris et des laines, font encore des espèces de gaz. L'air fixe, proprement dit ou gaz méphitique, est un fluide élastique, transparent sans couleur, miscible à l'eau en toute proportion. Il se diffère de l'air commun par aucune de ses propriétés. Mais ce gaz diffère de l'air, en ce que sa pesanteur spécifique, est plus grande de 20° en ce qu'il est incapable d'entretenir la vie & le respiration des animaux. Aussi, qu'on introduit un animal dans un récipient rempli de gaz, il périt dans le même instant en convulsion. Le gaz méphitique ne peut entretenir la combustion d'aucun corps, parce que cette faculté de même que celle d'entretenir la vie des animaux terrestres, est propre & particulière à l'air exclusivement à toute autre substance.

* Anci, non seulement on ne peut aller dans le gaz méphitique aucune corps combustible; mais les corps les plus inflammables, allumés d'abord dans l'air, & plongés dans le gaz méphitique, s'y éteignent aussi subitement que si on les plongeait dans l'eau, avec cette seule différence que l'extinction dans le gaz méphitique ne fait sans aucune bruit ni fermentation, & que comme il ne mouille point les corps, ils peuvent être rallumés aussitôt, dans l'air commun. La quatrième propriété qui le distingue du gaz méphitique de l'air commun, c'est de se mêler avec l'eau en quantité beaucoup plus grande que l'air pur. C'est une observation qu'il est bon de faire, c'est que quoique le gaz méphitique fasse mourir en un instant les animaux qui le respirent, on peut boire de l'eau qui en est toute remplie sans aucun danger; & qu'au contraire elle est salutaire & propre à guérir plusieurs maladies, elle prévient que ce n'est pas par aucune qualité caustique ou corrodive particulière, que ce gaz tue les animaux."

XXVIII.—From this quotation originate several points, which require to be considered with attention, because it displays the analogy

that subsists between the effect of poisonous vapours and venom of animals, for altho' those which breathe the former, are instantly killed by it, yet, water and other fluids impregnated with it may be taken into the stomach, and is considered as a salutary remedy in several diseases—It is shown that those particles are not composed of caustic or corrosive fluids—But, that, the fatal consequences only result, when the air or venal impregnated with it, as we shall hereafter endeavour to show, comes in contact with the circulation.

XXIX.—The atmospheric air being a thin elastic fluid, the part of which gravitates upon the earth, if there be, the gravity of any one part be diminished, the more heavy air, would rush in from all sides, to preserve the equilibrium, which must obtain in all fluids, and hence, may it be presumed, that, as the light vital air becomes displaced from the lungs, the azotic gas would occupy all the spaces and cavities, formerly filled by vital air?

XXX.—In proportion then as the vital air be displaced, thereby, may, succeed into the lungs, an over proportion of azot, which cause all the symptoms of infection, and under such circumstances, in an advanced stage, the lungs of poisoned animals have been found to contain no vital air, because, it is generally expelled in proportion to the effect, and progress of a poisonous principle in the system.

XXXI.—The continual subtraction of several principles of the blood, as the separation of various fluids from it, & the respiration the lungs disengage, and exhale in large quantities Hydrogen, which must necessarily increase the quantities of azot in the circulation, which may intervene and penetrate between the red globules and fluids in which they circulate, so that they combine together, and then the blood loses its vital principle and is no longer capable of supporting life.

XXXII.—At particular seasons of the year, & at different periods of time, the atmosphere may vary considerably from its healthy state, & the blood may be affected in the same degree, it contains more or less of oxygen or azot, in particular instances, the blood may contain very little of the former, not sufficient to support the nature of an acid, and the latter will predominate.

XXXIII.—The purity of the atmospheric air consists in the vital air it contains, in spring all vegetables absorb Hydrogen and disengage oxygen, in the form of vital air, for the renovation of the universe, but, at other periods or seasons of the year, a decomposition of fluid and solid substances arise, therefore as vegetables and animals do proceed to dissolution, for the purpose of forming new combinations, the atmosphere may become so changed, as to produce in particular instances very fatal results.

XXXIV.—Probably by such circumstances arise the common and primary cause of contagious diseases, by which large bodies of men in cities, fleets, & armies, may be continually destroyed, by receiving into the lungs air impregnated with a super-abundance of azot, where, as, if be purified, such fatal consequence might be counteracted, modern Chemistry experiments, have shown, that a vapour, may be combined with several substances, that extract, and diffuse the effect of infection or contagion in the animal system and atmosphere.

* This subject will be continued in a future Paper.

* CORRECTIONS to the 1st chapter on poisons, Line 69 for proceeding Chapter, reading Chapter, Line 65 and 71. Sec II for inflammation, read inflammation, in—Line 66 for, for conjunction of the eye, read conjunctiva of the eye—Line 100 Sec VII, for dissolved, read diffused.

THE COURIER. Wednesday, 16th July 1806.

THE BRIG JANE, (Mr. Holmes Supercargo) arrived on the 7th instant at Tranquebar, from Bencoolen, which she left on the 10th of June. The intelligence received by the above Vessel is, that the small French Privateer, (mentioned in our last paper, as having appeared off Bencoolen,) had captured the Ship HENRY ANDREWS, and the BRIG KEBLE, and had proceeded with her Prizes to the Isle of France.

The Brig was the property of Mr. M. Roworth, who was on board when she was captured, and we believe has been carried with the Brig, to the French Islands.

The Privateer, previous to her making the above captures, had been at Batavia, where she had altered her Rigging, &c. On Saturday arrived the Ship JANE, Capt. McNiukoll, from Ceylon, but last from Trincomalee.—PASSENGERS, Captain and Mrs. McDonnell.

The Ship Princess of Wales, Captain Fraser, from this port, and bound to Calcutta, has been lost on Saugur Island, with the whole of her crew. TEMPEROUS weather has prevailed in the upper part of the Bay, since the 1st of June. Several small Vessels have been lost, and many people have perished in consequence.

APPOINTMENTS, &c.

Right Honorable the Governor in Council is directed that the Paymaster and Garrison Store...

Intelligence has been received of the capture of the Ship Orient, Captain Ramsay...

Orient fell in the straits of the French Frigate on the 5th ult. in Lat. 11. 31 N. Long. 76. 30 E.

The ship Calcutta has arrived at Calcutta. Passengers, Lieutenant Erskine, of the 4th N. Infantry.

The Henry Wellesley, from Penang, has also arrived at Calcutta. Passengers, W. Paton Esq. and Mr. Riddell.

The Admiral's Brig Hector, Capt. Lovett, arrived at Calcutta, pressed Gibraltar on the 24th Feb.

BOMBAY.—23rd. June.

By Letters from Aden, dated the 10th May, we learn that every thing belonging to the Cadabra...

BIRTHS.

On the 9th. Inf. The Lady of ALEXANDER COCKBURN, W. G. of a Daughter.

MARRIAGE.

At Negapatam, Mr. ROBERT WILLIAMS, to Miss BROUCKERS.

DEATHS.

At Bombay, Lieut. GEORGE BROWN, of the Native Infantry. An amiable and interesting Youth...

MILITARY MEN RECENTLY DECEASED.

Lieut. General G. Beckwith, 37th. foot, Governor of St. Vincent.

NAVAL OFFICERS DECEASED.

Vice Admiral Sir Robert Kingmill. Admiral Sir Hyde Park.

THE STAR.—2d. March.

A NAVAL PROMOTION is, we rejoice to hear, about to take place. The list of new Admirals...

We mentioned a short time since that the Stationers Corporation lately held a meeting...

Resolved, That not wishing to embarrass His Majesty's Administration with a matter of such importance...

Our letters from Copenhagen state, that great difficulties had arisen in the Court of Denmark...

MORNING CHRONICLE.—23rd. Feb.

WE are at last enabled to congratulate the Country on the prospect of a vigorous, efficacious and united Administration.

Intelligence received from Boulogne states, that the most vigorous measures are adopting along the French coast...

WAR OFFICE.—January 28.

3d. Regiment of Dragoon Guards, John Lee, gent. to be coronet, without purchase...

CROWN OFFICE, Feb. 25.

MEMBERS RETURNED TO SERVE IN PARLIAMENT.

County of Suffolk.—Thomas Sherlock Cochrane, Esq. of Holbeck...

County of Surrey.—The Right Hon. Wm. Russell, commonly called Lord Wm. Russell.

County of Northumberland.—The Right Hon. Chas. Grey.

The Libon Mail has brought a series of the Madrid Gazettes to the 14th. ult.

THE MORNING STAR.—1st. March.

It gives us the inexpressible pleasure to be able to state, that the present Government are unabatingly employed in correcting the manifold abuses...

Intelligence received from Boulogne states, that the most vigorous measures are adopting along the French coast...

WAR OFFICE.—January 28.

3d. Regiment of Dragoon Guards, John Lee, gent. to be coronet, without purchase...

County of Surrey.—The Right Hon. Wm. Russell, commonly called Lord Wm. Russell.

County of Northumberland.—The Right Hon. Chas. Grey.

The Libon Mail has brought a series of the Madrid Gazettes to the 14th. ult.

Fraser, from the 47th. Foot, to be Lieutenant, without purchase...

93d. Ditto, Major James Campbell to be Lieutenant Colonel, vice Ferris, deceased.

FROM THE ARMY LIST, MARCH, 1806.

A Appointments that have not taken place. Gazette, 28th. January 1806—23. foot, Lieutenant C. Roberts...

Gazette, 13th. Feb. 1806—27th. Foot, A. Brown, gent. to be Ensign...

Gazette, 28th. Jan. 1806—35. foot, Lieutenant N. Farewell, who was superannuated...

Gazette, 28th. Jan. 1806—35th. foot, Lieut. Miller, being absent without leave.

Gazette, 4th. Feb. 1806—24th. foot, Ensign J. Jones, being without leave...

Gazette, 19th. Feb. 1806—21st. foot, Lieut. Mitchell.

THE SUN.—27th. February.

A Report was yesterday circulated, that the differences between Prussia and France had risen to such a height as to render hostilities almost inevitable.

The Paris Papers, which arrived last night to the 20th. and Dutch Journals to the 23d. instant, afford little in addition to what we have before stated...

At a General Meeting of the County of Norfolk, at Norwich, on Tuesday last, it was agreed to erect a Column...

A Dutch Cartel, having on board about 350 men part of the 31st. Regiment of the line, which were lately wrecked on the coast of Holland...

Mr. Recomer's bankruptcy at Paris, after the arrangement of the very extensive affairs of that house, is now reduced to the sum of five millions...

At a General Meeting of the County of Norfolk, at Norwich, on Tuesday last, it was agreed to erect a Column, by public subscription...

