Essay on cholera infantum / by M.L. Knapp.

ESSAY

ON

CHOLERA INFANTUM:

BY

M. L. KNAPP, M. D.

LATE PROFESSOR OF MATERIA MEDICA, AND PRESIDENT OF THE COLLEGE OF PHYSICIANS AND SURGEONS OF THE UNIVERSITY OF IOWA; LATE PROFESSOR OF MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN IN RUSH MEDICAL COLLEGE; AUTHOR OF "LECTURES ON THE SCIENCE OF LIFE INSURANCE," ETC.

"A voice in Rama was heard, lamentation and great mourning, Rachel bewailing her children, and would not be comforted because they are not."—(St Matthew.)

CINCINNATI:
PUBLISHED BY H. W. DERBY.

1855.

PRINTED AT THE COLUMBIAN OFFICE

ESSAY

ON

CHOLERA INFANTUM.

Dissenting from the views of writers in general, who consider Cholera Infantum a form of disease *sui generis*, and especially from those American authors, who treat of it as a disease peculiar to this country; I hold, that Cholera Infantum differs in nothing that is essential in its nature, or pathognomonic in its character, from the Asiatic or Epidemic Cholera of adults; or in other words, that the hitherto supposed two forms of disease are one and the same, produced by the same cause or causes, the phenomena differing somewhat on account of age; and I furthermore hold, that the disease is essentially a scorbutic affection. Entertaining these views or opinions, I proceed to offer the reasons for holding them, and to set forth the principal data on which my conclusions are based.

EVIDENCES DERIVED FROM ITS HISTORY.

The tender organization of the infantile system, under the usual efforts of nature to remove irritation, obstruction, and all forms of disease, manifests phenomena differing more or less from the symptoms or efforts of nature observed in adults laboring under the same diseases. There is no truth in practical medicine better understood and established than this, and none that deservedly holds a more controlling influence over the practitioner in diagnosing the diseases of children, or in the adaptation of therapeutics to infants. Making application, then, of this truth or first principle to

the proposition above advanced, that Epidemic Cholera and Cholera Infantum are essentially the same disease, the differences in the course and symptoms of infant and adult Cholera are rationally explained on sound and well-established principles of medical philosophy. The great similarity in the phenomena of the supposed two diseases has not escaped the observation of the profession, and has been more or less spoken of by authors in treating of Cholera Infantum, but as this malady has been prevalent in the cities of the United States every summer, probably, since the days of Rush, and long before, even since the earliest records of our cities, and the Asiatic Cholera of adults never supposed to exist as an epidemic here till it made its appearance in the summer of 1832, it is not surprising that sporadic or endemic cholera-morbus should be held to be the prototype of Cholera Infantum, and the stranger or new comer, the Asiatic Cholera, a new disease, or at least, a new variety of Cholera.

In Europe, Cholera Infantum is comparatively but little known, at least by this appellation, and, probably, no similar form of disease rages among infants there, of the same severity, regularly becoming epidemic every summer; and for the reason that the winters are warmer and the summers cooler than in the United States, meteoric influences, or extreme thermometrical impressions, from the swing of the seasons, being the great exciting causes, after a faulty alimentation or assimilation has remotely inlaid and accumulated the scorbutic diathesis or depravity in the system.

This disease, however, is by no means unknown in Europe, and, probably, in no part of the world. It is treated of as *Choleric Fever of Infants* by Copland; as *Follicular Enteritis* by Billard; and as *Enteritis of Children*, including inflammation, softening, diarrhœa, etc., by some other French writers. Cruveilheir has described it under the name of *Maladie gastro-intestinale des Enfans avec desorganization gelatineforme*—the mucous membrane reduced to a spongy pulp, quite characteristic of scorbutus. This

accords with the German and Prussian view of the nature of the disease, in which countries it is denominated *Gastromalacia*. The *Dublin Treatise*, by Evanson and Maunsel, denominates it *a species of Cholera*, and says it is often met with in Ireland in the autumnal months. According to Dunglisson's experience, "it is not an uncommon disease in London, and strikingly resembles the affection vulgarly called '*Watery Gripes*,' in England."

If my view of its nature be correct, its greater prevalence in some countries than in others is rationally accounted for on climatic principles; those countries suffering least, ceteris paribus, that enjoy the most equable climate, which is conformable to the known laws of scurvy. This view also explains the nature of the anatomical lesions, and also the discrepant views of authors as to the inflammatory or non-inflammatory character of the disease—the softened, congested, ecchymosed and ulcerated states of the mucous structures. The swollen condition of the gums, so much spoken of, and for which lancing is so generally inculcated, is often but the hyperæmia and commencing tumefaction that precedes sponginess, so characteristic of scurvy. The same tendency to softening, sponginess, hyperæmia and congestion, extending through the primæ viæ, explains all the phenomena — the varied symptoms and anatomical characters. The disease being a lesion of nutrition, the structures immediately concerned in digestion and assimilation first give way. According to Horner, "the morbid derangements of the vascular and follicular structure of the mucous membrane, endowed with vital actions the most important to life, constitute the essential character of Cholera Infantum;" and these tissues first give way and puff up in scurvy, or, at all events, are the seat of the disease when *diarrhœa* characterizes it.*

Dr. Copland's definition of *Choleric Fever*—Cholera In-

---

*"When the inert vapid serum is accumulated in the tunica cellulosa," says Nitzsch, (see Lind on scurvy, 2d ed. p. 421,) "an anasarca is induced; when within the substance of the lungs, an asthma, upon which a true hydrops pectoris ensues; when in the lower belly, an ascites per infiltrationem; and when in the glands of the guts, a diarrhœa."

fantum of Rush—is, "vomiting and purging, with fever generally of the remittent type, [which is commonly the scorbutic type,] irregular spasmodic convulsions, and rapid emaciation, attacking infants and children," which definition, save in the age of the subjects, will answer with technical accuracy for Cholera Adultorum, to make use of the legitimate correlative term, for convenient contradistinction. The same author says, that "the subjects of Choleric Fever are infants of two or three weeks to several years of age, and that *after this period, the causes that produce it occasion Epidemic Cholera.*" This latter assertion which I have put in italics, though doubtless true, differs from all American writers consulted, who fail to light up the dark, unfathomed abyss of the essential nature, pathology and true cause of the disease, by assuming it to be the infantile mode of manifestation of Cholera-morbus, an irritation believed to arise from a surfeit, or offending ingesta, especially the indulgence in ascessant vegetables and fruits; and this apparently accidental stumbling upon the truth by Dr. Copland, is inconsistent with his own view, that Epidemic Cholera is propagated by contagion—no writer whatever, so far as I have consulted authorities, has supposed Cholera Infantum to originate from or to be propagated by contagion. The limit, "several years of age," set, at which Cholera Infantum retires, and Cholera Adultorum takes the field, is so palpably an arbitrary, forced, indefinite and unnatural limitation, and so useless and senseless if the cause producing both the infantile form in subjects over several years of age, and the adult form be the same, that it is a forcible commentary on the evil influence of nosology: still there is a great truth herein shadowed forth and maintained, viz., *the unity of causation of Cholera and Cholera Infantum*, which makes the supposed two diseases one in fact, *essentially the same*, differing in nothing, save as the symptoms are modified by the ages of the subjects—just what I hold.

Most of the American writers who treat of this scourge, not only maintain that it is peculiar to infants and children

under five years of age, but some hold that it is peculiar to this country, and not known in Europe; and all hold to the stereotyped dogma, that it seldom occurs before the third month of infantile life, or after the fifth year. Dewees, if I remember correctly, cites an extraordinary instance, however, a case that occurred in a lad of eighteen years of age; and I can truly say that I have attended cases of well marked Cholera Infantum not only in children over five years of age, but over ten, twelve, or even eighteen; aye, I have treated repeatedly *mother and infant* laboring under it, and this too during seasons when Cholera Adultorum was not epidemic: the same remittent, scorbutic type of fever; the same character of discharges, both by vomiting and purging, especially the unmistakably characteristic, greenish, fœtid, watery stools; the same dry, wilted, withered, palid skin; the same attenuated, softened condition of the system, under a chronic holding on, or struggle of time, that is so characteristic of the affection often; in fine, the same disease as certainly as ague and fever occurring in mother and infant is the same, though the infant never shake under the rigor, and the mother nearly shake her teeth out.

All authors agree, however, that infants between six months and two years old, are, by far, most liable to be attacked; that is, during the period of primary dentition; and another fact in its history appears also to be well established, viz., that more deaths occur from it in infants under one year old than during the second year of age. From six to twelve months old, then, is the special age at which infants are carried off by this "*summer complaint*," which comprises those infants that have been subjected to the influences of one winter; enough, conjoined with the powerfully exciting influence of succeeding solstitial heat, to answer to the scorbutic law—an inlaying of disease during winter and spring from the absence of sufficient succulent vegetable food, to outbreak from any exciting causes whatever, but especially hot weather.

Besides, it is to be borne in mind that the weakly, the

scrofulous, the offspring of poorly-fed, sickly parents, the early-orphaned, and bottle-fed infants, are the picked subjects — those deprived of the proper elements of nutrition, and those whose organs of digestion and assimilation could hardly manage or appropriate them if present. Now, as darkness results from the withdrawal of light, or cold from the abduction of heat, so scorbutus follows as a natural result of the withholding of proper elements of nutrition, or an inability in the system to appropriate them.* Its latent accumulation in the kind of subjects, and under the circumstances spoken of, is as morally certain as that the sum of two and two is four, or that twilight and darkness follow sun-set; and it is only necessary to study the laws and history of scorbutus, to learn its terrific and collapsing tendencies, where, indeed, no evil was suspected; its Protean shapes of horror and woe, and its thousand and one shades and degrees of manifestation.

Fearing I am not yet fully understood, or that I have not sufficiently explained how this law operates in regard to infants, how scorbutus happens to be so especially inlaid in infants of from six to twelve months old, by the influence of *one* winter, I will explain the matter more fully now, lest I pass it obscurely over.

It is a law in physiology, that the quality of a nurse's milk is good or bad according to her state of good or bad health, and the sufficiency and quality of her daily ingesta. The secretions answer to the ingesta in fifteen minutes, so physiologists say; and the nursing of an infant by a mother just after indulging an intense fit of anger, has, in fifteen minutes thrown the infant into convulsions, if I remember my rudiments correctly. Now it is the natural law that infants shall be nourished exclusively from the breasts of their mothers for the first six months, and few have cut their

* Lind states, that in several orders of different religions, those who are obliged by way of penance to abstain a considerable time from food, perceive their breath become fœtid, their teeth loose, their gums spongy and soft. The same symptoms are also observed in those who are starved to death; and these are the recognized and acknowledged commencing symptoms of scorbutus the world over.

molar teeth, Nature's sure testimony of the infant's ability to dispense with the breast, before twelve or fifteen months of age. It follows, then, that the great majority of those dying of Cholera Infantum, if scorbutic, are rendered so from the bad quality of their mothers' breast-milk. Say, to average the matter, that nine months old is the fatal epoch with infants making their exit from life by Cholera Infantum, and that this occurs in July, the hottest month of summer: all of which is historically true, as shown by the tables. The whole class, then, thus averaged, must have been born in October, and were six months old in April, just the season when there is least succulent vegetable food to be had, and what remains is decayed, frosted, deteriorated in quality, and the more carefully preserved stores exorbitantly high in price, so that all poor families in the cities are obliged to do without succulent vegetables for many weeks, and to live on pork, peas, beans and coarse bread. Ten to one, through February, March, April and May, those families from which infants are snatched in July, are nearly destitute of succulent vegetable food; and milk, butter, poultry and *fresh meats* are then, also, very dear. To say nothing, then, of the co-operating influences of cold, insufficient clothing, damp, basement habitations, filth, foul air, &c., the nursing mothers' ingesta do not contain the necessary elements of nutrition, for maintaining their own health and supplying the proper elements of a wholesome nutrition through their milk to their infants. The soluble salts of iron for the blood, potash for the muscles, lime for the bones, &c. &c., the infants so especially require at this period of rapid growth, and which are elaborated *only* in vegetables and fruits, being left out of the mothers' dietary, they become scorbutic of course; their milk begins to fail in quantity when it should increase; and to become impoverished in quality when its elements should be richer; and thus emerging from the influences of one winter, the infants of such mothers are forced to subsist thence till the Ides of July, on stinted allowances of scorbutic milk, interlarded with innutritious

arrow-root and other feculas, and crude aliments craved, such as fat pork and baked beans, the dietary of the family board. The natural consequence is, they begin to sicken and fall as hot, debilitating weather comes on. All the early summer fruits, acids and vegetables are scrupulously interdicted, until their natural pantomime longings and cravings are such, that they are often to be seen gloating over a bad specimen of a June apple that accident or good luck may have cast in their way upon the floor; and they would fain try their young inscisors on an unripe damson plum, or even a persimmon.

The views I have adopted, then, of the nature of Cholera Infantum, are not irrational, and keeping them in mind, the history of this scourge of tender years, may, in many cases, be traced to the fœtal state; and I doubt not thousands and tens of thousands of infants are born with the taint of the disease in their blood; aye, that the very germs of future infantile forms in ovario, are imbued with it, and also, the sperm which alone can wake a vivifying influence upon them. This is tracing its history farther back to be sure, than any writer hitherto may have done, but doubtless not beyond its legitimate remote origin, often, for I will show it to be hereditary. This ante-natal chapter in the history of Cholera Infantum, whether chronicled or not in medical books, is plainly inscribed on the tablets of infantile mortality, still-born and otherwise, that annually swell the death-waves in the entreports of the United States, into which cities thousands upon thousands scorbutic emigrants are annually thrust, and who there beget numerous pestilence-stricken offspring, to perish of Cholera Infantum, under slight exciting causes; and where, also, multitudes of destitute, mongrel, squalid, native families are doing the same; crowded together in damp cellars and filthy tenements, living from hand to mouth on a crust and bacon-rind, alike deprived of the aliments from which healthy blood is produced, and a wholesome atmosphere by which alone it can be renovated.

Admitting my views to be correct, viz: that Cholera Infantum is the most common form in which scurvy manifests itself in infants, an explanation is thus afforded as to the silence of the older authors on Cholera Infantum, and of the modern authors on infantile scurvy. No modern author that I am aware of treats of scurvy as among the common diseases to which infants are subject, while Albertus declares that it is *most usual in children*, and is either a hereditary scurvy, or that which is got from the nurse. To be sure, Dr. Good asserts, that infants whose mothers are affected with scurvy participate in the disease, from the milk not being sufficiently nutritious, but no author delineates the course and symptoms of the disease in infants, whom I have consulted, and to deduce the phenomena from the meagre descriptions of scurvy to be found in standard systems of practice, is a task not likely to be fulfilled by readers. Whilst the older authors then, as well as modern, are quite inexplicit as regards the symptoms of infantile scurvy, and yet leave no room to doubt, aye expressly assert its very common occurrence, most usual in children, says Albertus, and innutritious milk causing it in infants, according to Dr. Good, my views derive great support from the ancient-modern and more recent authorities. They harmonize wholly, for no disease of infants is more common than Cholera Infantum, and the picked subjects, as before asserted, are those poorly supported on innutritious milk. My views of its *ante-natal origin* too, are sustained by the old authors on scurvy. Pontopidan says of married persons who live together many years, the healthy is not infected though the other party has scurvy; but if they have children *they* sometimes take the infection, though not always. Sennertus asserts that the scurvy occasions a stoppage of the courses in women; in place of which they have a white, acrid, saltish running, apt to infect man; and that men from this disease are rendered unfit for generation, by having a watery, vitiated semen; and Reusnerus declares that scorbutical women are subject to the fluor albus and menses discolores. The

Faculty of Physic at Copenhagen, say the scurvy is hereditary and infectious, and that a hereditary scurvy is seldom cured. Timæus says, he generally succeeded in the cure unless the scurvy was hereditary or very deeply rooted; and Hildanus publishes a letter from Ludov. Schmidt, giving an account of the Prince of Baden's youngest son, a child of fourteen months, afflicted with the scurvy, who was cured with anti-scorbutics. All these facts bear very forcibly on the question of the identity of Cholera Infantum and infantile scurvy, and the reader, of course, will keep them in mind as he follows me in these researches. From the multitude of facts I will adduce, I doubt not every candid reader will come to the conclusions I have on this subject, novel and strange as my views may seem at first thought.

The mortality in the city of New York, from Cholera Infantum during the last fifty years, according to the Semi-centennial Report of the City Inspector, numbers 14,968 souls: an average of almost 300 a year. The highest mortality in any given year was 926, which occurred in 1849, the year of the greatest mortality from Cholera Adultorum; and the lowest mortality in any year occurred in 1816, when only *one* death from this cause appears on the face of the Report. That summer, according to my remembrance was a very cool one: the previous winter, I infer, must have been a mild one, and the previous summer a highly fruitful and productive one. The latter inferences, however, I have no means of verifying, for want of agricultural statistics, and meteorological tables.

It is said that in the sea-ports of the United States, further to the south, the mortality from this scourge is even greater in proportion to the population than in New York.

The mortality from the disease in Philadelphia, during a period of fifteen years, from 1825 to 1839, inclusive, was 3,576, according to Dr. Condie; an average of 238 per annum.

In Baltimore, during the year 1853, Cholera Adultorum not epidemic, the mortality from Cholera Infantum was 256;

while in 1854, adult Cholera being sub-epidemic in most of the cities of the United States, it was 495.

In Boston the disease is said to be comparatively much milder and less mortal, doubtless because there is much less poverty and destitution there.

In New Orleans, St. Louis, Cincinnati, Chicago and Buffalo, the ravages of the disease are great; and the mortality appears to be the greatest, uniformly, in the cities most largely peopled with emigrants.

All writers agree that this destructive pestilence is mostly confined to the hot season of the year, creeping into activity as the spring and summer heat comes on, and declining as it goes off in autumn.* In its epidemic manifestations, therefore, it conforms to the general laws that govern Cholera Adultorum, and also scorbutus.† Another remarkable feature in its history is, that it prevails in the *cities* and not in the *country*, conforming again to the law of its great prototype, and also to the law of scorbutus. Much speculation has been offered as to its etiology from the uniformity of these laws. That high summer heat and unwholesome habitation in the confined, foul air of the cities, are, in some way, concerned in its production is evident, and admitted by all writers, but in what way or manner none have clearly explained. The same degree of heat does not affect country children in the same way, and I venture to affirm would not under an equal deterioration of the air; and for the reason that country people have usually an abundance of succulent vegetable food, fruits, and good fresh cows' milk, and an epidemic scorbutic diathesis is impossible under such a

* It appears by the monthly reports of the Board of Health, of the city of New York, for the year 1853, that the deaths from Cholera Infantum during each month of the year were as follows—viz., January 2; February 2; March 2; April 2; May 10; June 117; July 308; August 316; September 115; October 37; November 5; December 6.

† Dr. Cook, who has taken particular note of the epidemic manifestations of scorbutus as it appeared in successive years in Russia and Tartary, says that it generally breaks out in the latter end of February; that it is often complicated with agues, dropsies, phthisis, etc.; that the violence of the epidemic seldom continues after the middle of July, *except in complicated cases;* that from August to October agues raged with more violence than ever; that *fluxes* then succeeded, and universal sore throats *among children* followed.

dietary. Now and then a sporadic case occurs, to be sure, in the country, particularly in the so-called malarious districts, where the assimilating functions are impaired, and it is thought, by some writers in the United States, to be a malarious fever, the force of which is turned inwards upon the bowels; so strangely is the human mind prone to hypothesis. One circumstance of importance in its history should be noticed here. The prevalence of the disease is not always in the ratio of the intensity of the summer heat; the great exciting cause, proving my view—proving that it is caused rather by defective diet. The Philadelphia statistics of Dr. Emerson, arranged in tabular form by Dr. J. Forsyth Meigs, (*Diseases of Children*, *p.* 290,) settle the matter conclusively, that the disease is not developed in the ratio of the intensity of summer heat. This table shows that in 1815, the mean temperature of the three summer months being 76 degrees F., only 92 deaths occurred from Cholera Infantum, while in 1814, the mean temperature being but 70 degrees F., there were 125 deaths. And again it is matter of fact, that in 1825, the hottest summer known in the United States, the mortality from Cholera Infantum in the city of New York was less by over one-third than it was the following summer, 1826; and this season, though a trifle less hot only, still revealed a less mortality again from Cholera Infantum than the summer of 1827, which was much cooler than either; one of medium temperature only. The laws of causation of the disease, then, cannot be explained by heat alone, nor by heat and foul air united, though the combined influence of these depressing agents, as modified in cities, is held by all writers to produce it; poor diet, and especially improper indulgence in fruits, co-operating; all of which, though containing much truth in the abstract, still, as hitherto explained, reveals nothing as to the nature and pathology of the disease, or the indications to be fulfilled in the treatment. The view I maintain, that a faulty alimentation either in the parents or child, impoverishes the blood as the *remote cause*, inlaying a greater or less degree of the scorbutic diathesis, to be

developed by heat, foul air, errors in diet, and other exciting causes, makes this hitherto obscure matter clear, and indicates the proper remedial course to pursue—the rational treatment by acids, fruits, and a highly nutritious dietary.

It appears, then, from what seems to me to be a rational interpretation of Nature's laws, that this "*summer complaint*" of infants, as it is popularly called, is greatly the result of *wintry* influences, or those causes that destroy, blight or abridge the vital stimulus of succulent vegetable food, rather than the offspring of an abstract, hypothetical malaria, or summer-concocted compound of heat, trespass in fruit eating, and the foul air breathed in crowded lanes and alleys of cities; as I proceed to show more clearly by the constitution of the seasons of certain remarkable years, and the statistics of the mortality from Cholera Infantum during those years.

The winter of 1831-32 (to begin with the calendar of years most remarkable in the category) was one of extreme rigor. The previous winter also, had been one of the same constitution, characterized by deep snows and long and severe cold weather, though not so universally inclement all over the United States as the winter of 1831-32. The Mississippi River was frozen over, however, 130 miles below the mouth of the Ohio, a circumstance before unknown since the settlement of the Western States; but the winter of 1831-32 surpassed it greatly, the mercury in the thermometer sinking to 20 degrees below zero on several occasions in the Mississippi valley, north of 40 degrees of north latitude, and in the Northern States of the Union and Canada to near the degree of congelation. In the New England States, according to Dr. Holyoke's Journal, the mean temperature of that winter was colder by three degrees than the coldest winter that had occurred from 1786 to 1828, a period of 42 years. The intermediate summer of 1831, was characterized by excessive heat and floods. The quantity of rain that fell was nearly double the amount that fell in the summer of 1832, and more than double the quantity that fell in either of the three summers

of 1828, 1829 or 1830. "In consequence of this abundance of rain, various kinds of produce suffered greatly. Wheat vegetated in the field, in some instances before it was cut, and in many cases afterwards." In the spring of 1832, excessive floods again occurred, from the melting of the snows, which had fallen in the middle states to four feet in depth. The rivers were swollen to a greater height by some five or six feet than in any flood since the most remarkable one chronicled in the history of the United States, viz., that of 1784.—(*American Almanac*, 1834, *p.* 83.)

Thus, to the frosting of the family vegetable stores by the intense frosts of two winters in succession, were added clustering causes of blight during those remarkable years, viz: a summer of scorching heat, floods and inundations with immense agricultural losses, and the ruination of crops—precursors of epidemics the world over, and particularly epidemics of the scorbutic or petechial type; and in illustration, the records show that the deaths from Cholera Infantum in New York in the cool, pleasant, dry, very fruitful and constitutionally *per se* salubrious summer of 1832, following that chapter of "moving accidents by flood and field," amounted to 334; while in the very hot, damp, preceding summer, there were only 172, and in the summer following, after that fruitful year and abundant vegetation, only 129!

Never before, it appears, had the mortality in New York from this disease, in any one year, amounted to over 172, the record for 1831, since the years 1804 and 1805 (the constitution of the seasons of which I have no source of reference at hand for ascertaining), except in the years 1826 and 1827, when the mortality reached 222 in the former, and 238 in the latter. Now it is matter of history that the summer of 1825 was the hottest of which there is record in the United States; and the succeeding summer of 1826, was within a fraction of the same mean temperature, both being above 83 degrees Fahr. Philadelphia observation—two successive seasons of short crops from prolonged heat and drought, unquestionably, for seasons of this scorching charac-

ter always abridge the latter harvests; and to follow up the causes of the pestilence, so prevalent in all the cities during the thermometric succussion of those remarkable years, the winter of 1826-27, was one of nearly the coldest character, the mean temperature of January being down to 26.60 Fahr. at Philadelphia; only some three degrees less rigorous than the coldest month, December, in the winter of 1831–32, which was of the mean temperature of 23.35. It is well, for comparison, to post up the mortality immediately before and after those fatal years: thus in the hottest summer on record in the United States, 1825, the deaths from Cholera Infantum in New York were only 151, and in 1828 only 167, to contrast with 222 in 1826, and 238 in 1827, as before stated. Some other baneful influence, therefore, besides summer heat, the foul air of cities, and concurrent indiscretions in the use of fruits, must be conceded to have been operative in the causation of the epidemics of Cholera Infantum in 1826 and 1827.

Again, the winter of 1833–34 was characterized by exceedingly rigorous weather; the mean temperature, 29° F., of the month of January, 1834, was one degree below the mean temperature of January, 1832, but the balance of the winter, except the early part of February, was rather mild. It does not appear to be a law, according to the statistics, that prolonged, rather low winter temperature, giving a low mean for the whole winter, is so mischievous or detrimental to the public health, as extremely sharp, cold spells of mercury-freezing weather and untimely frosts in the spring, the former of which reach the cellars, store-houses, and depositories of laid-up succulent food, while the latter nip in the bud, or blast before maturity, the growing crops; which will serve to explain, on rational principles, the extraordinary force of epidemic Cholera Infantum, presently to be noted by statistics, in 1834, and also in other years, the precise constitution of the seasons of which may be forgotten. Added to the extremely sharp, cold weather in January and

February, 1834, sufficiently intense to close the Mississippi with ice *twice*, to the mouth of the Ohio, there occurred *a general blight in vegetation* in the month of May of that year, destroying to an unheard-of extent the fruits and garden vegetables of the season; and the summer of 1834 was characterized by a temperature considerably above the average mean—it was a hot summer—it closed hot and dry after early and midsummer deluging rains. The mortality from Cholera Infantum in New York in 1834 was 475 to contrast with 129 (more than treble) that of the previous year, and 231 (more than double) that of the year following!

The winter of 1837–38 was the climax of a series of cold winters; and the summer of 1838 was characterized by excessive heat and drought. A vast amount of general sickness in all parts of the United States marked those years, especially the malarious, typhus and exanthematous fevers, and whooping cough. The scurvy broke out in its old-fashioned or recognized form in some parts and prisons — the *nursing sore mouth*, so called, (land scurvy not recognized,) prevailed sporadically, and even sub-epidemically in pregnant and nursing women, in various localities of the United States, particularly in the new settlements, where horticulture and fruit-growing had made but little progress—many of the infants of mothers so affected inherited or imbibed it, and died of *Cholera Infantum*, (land scurvy in infants,) in the rural districts of the newly-settled States, where the writer has seen it prevail epidemically, notwithstanding it is thought generally to be confined to the cities. And in proof of the country prevalence of Cholera Infantum in new settlements, I quote from *Gallup on Epidemics*, *p.* 75, whose historical sketch of the prevailing diseases in the newly-settled State of Vermont, from the peace of 1783 to 1815, is before me. Reviewing the great mortality of the year 1813, which, he says, "ushered in the most severe epidemic disease that ever afflicted the inhabitants of Vermont, the epidemic peripneumony:" Dr. Gallup closes the summary of that year with the following remarks: "In the latter part of the sum-

mer and first winter months, a considerable number of cases of typhus fever occurred; also several cases of *Cholera Infantum*. This last disease has prevailed more or less almost every summer, although it has not been particularly noticed before now."

The winters of the years 1836, 1837 and 1838 were *locally* severe, so to express it, in different years, throughout the Union, but not so universally severe, sharp, or blighting in any one year in all parts of the United States as the winters of certain other years have been, nor were the years marked by the universally excessive snows, rains and floods, that characterized 1831 and 1832. The mean temperature of this series of cold winters was about as low, and in some instances even lower, than the winter of 1831-32; but I have not been able to reach any statistics of the weather that give a lower temperature during the whole series than 12 degees below zero, which occurred on the 17th of February, 1838; and the observations were made at Dartmouth College, New Hampshire, in one of the most northern States; in which latitude the mercury sank to near 40 degrees below zero in 1831–32.

A similar constitution of the seasons prevailed in Great Britain in 1837 and 1838, it appears, for Dr. Budd, (*Tweedie's Practice, Article Scorbutus,*) in illustrating his views that a scorbutic *taint* occurs *generally* in the poorer classes in cities after cold winters, speaks of "the extraordinary prevalence of typhus in the *severe winter* of 1837–38, and of the petechial character of that epidemic."

Upon the whole, then, in a review of the constitution of the seasons of this series of years, it does not appear that the pestilential influences resulting from the abridgement of vegetable food, by the severe frosts of winter destroying the laid-up stores, or untimely spring frosts blighting the crops and fruits, were sufficient for the production of a general epidemic of the choleric type among adults, as in 1832 and 1834; though, as before mentioned, there was a vast amount of other forms and types of disease, some cases of Cholera

Adultorum, and Cholera Infantum was strongly epidemic. In glancing at the statistics of the mortality from Cholera Infantum in New York, during those years, a large increase is noticed for 1836, 1837, and 1838, and the maximum mortality occurred in the last year of the series, after the climactoric cold winter of 1837–38. To post up, again, for comparison, the leger stands thus: in 1835, the deaths were 231; in 1836, 280; in 1837, 253; and in 1838, 437!

Not to dwell on minor illustrations, the years 1844, 1845 and 1846, presented another series, remarkable for their meteoric character, and ending in a mortal climax, again, in the year following, 1847.

The ball had begun to roll in the spring of 1843, which was exceedingly unfavorable for planting, being retarded by cold for nearly a month behind season. The winter of 1843-44 was characterized by a low mean temperature, 31 degrees, and by sudden and frequent vicissitudes. The winter of 1844–45 was not remarkably cold, but that of 1845–46 was very cold, the mean temperature being 30 degrees; the winter of 1846–47 was the mildest of the series, fortunately, or the climax of consequences would have been even more remarkable. But the springs and summers of those years were characterized either by excessive rains, floods, deluges and disasters to crops, or droughts and blights, to the great abridgment of production. The general constitution of the seasons of those remarkable years is well remembered, and the extraordinary amount of general sickness, again, that prevailed in the United States, is too prominent a fact not to be remembered by those, even, who took less note of the meteoric phenomena. It is worthy of remark again, that a similar constitution of the seasons prevailed in Great Britain and Ireland, as the potato blight, Irish famine, and scurvy and Cholera of those years attest. Much was said in the publie prints, of the potato blight in the United States; still those disastrous years, on this side of the Atlantic, were not so universally overwhelming in the pernicious impression of the abridgment of succulent food as to produce a general

epidemic of the choleric type in adults, whose capability of endurace is much greater than that of infants. Had the last winter of the series, that of 1846–47, been remarkably sharp and cold, following the excessively hot and dry summer and autumn of 1846, doubtless Cholera Adultorum would have been epidemic in most of the cities of the United States, for the scorbutic diathesis was very prevalent in the bed-side observations of the writer; the Asiatic Cholera was sporadic, and Cholera Infantum was strongly epidemic. The mortality from this scourge in New York, in 1847, was 692, to contrast with 527 of the previous year, and 505 of the year following; or, more fully, in 1844 the deaths were 375; in 1845, 563; in 1846, 527; in 1847, 692; in 1848, 505.

Pursuing the calendars of evil years, that of 1849 was the next in order. The winter of 1848–49 was a very long, cold and snowy winter. In the latitude of 42° in the Mississippi valley, it set in with a snow-storm on the first week of November, and continued till the latter part of March. The mean temperature of the months of January and February was lower than that of the corresponding months of the memorable winter of 1832: the mean temperature of February was 26.52, within three degrees of the mean temperature of the coldest month, December, of the winter of 1831–32 —New York observation, which is the case in all instances, unless otherwise expressed. It appears, compared with other years, to have been more severe in the northern and western portions of the Union, and to have increased in its remarkable inclemency onward to the Pacific Ocean; for Colonel Fremont, of the United States Army, encountered snow forty feet deep in his perilous and fatal explorations of the South-Pass route over the Rocky Mountains to California, the men and mules of his party mostly freezing to death! and the St. Louis Republican of the 30th of March of that year says, "it learns from Captain Vanvleit, of the United States Army, direct from Fort Childs, on the Platte River, that the winter has been one of extraordinary severity, the snow deeper, and the cold more intense, than was ever known by

the oldest (Indian) residents." — Cincinnati Gazette, April, 1849. South of the snowy latitudes, say about 40°, vast quantities of rain fell, and the rivers kept high and full of running ice. Throughout the fall, winter and spring, the Ohio River and its tributaries were never, probably, so long continuously swollen by rains. In the Southern States the earlier half of the winter was wet, hot and sultry, but in the latter half extremely sharp and cold. This gives the correct general character of the winter. The spring opened late in March with tremendous floods throughout the Mississippi valley; destruction of property, bridges, mills, canals, shipping, etc., especially in the north-western regions; and tornados, innundations, crevasses in the Mississippi, and ruination of plantations and crops in the more southern regions. But the *black frost* of the spring capt the climax of the fatal causes of the awful summer Cholera epidemic of that year; which blight occurred late in the month of April, and killed all the fruit, save a few stunted apples, to the south of about 41° of north latitude, and all the salads, greens and early garden vegetables; yet no note has ever been taken of this by any writer except myself, in any researches or reports made upon the cause or nature of Cholera or Cholera Infantum! If the interdiction of fruits and vegetables in Cholera seasons, as held and enjoined by the profession, be right, their wholesale destruction by a general blight should prove a blessing; but in this review of years and of seasons, the relation of blight and Cholera seems to stand like that of cause and effect. It is well to support views of so innovating a character by authorities.

"On Friday evening last, the weather began to grow unusually cold. Saturday was quite cold, and on Sunday evening the thermometor had sunk to freezing point; and by Monday morning it was 7° below freezing point. It is believed that every species of fruit is killed."—(Hamilton, O., Intelligencer, April 19, 1849.) A considerable fall of snow occurred, and in speaking of the snow-storm, the same newspaper notices a remarkable coincidence, that "exactly

one year ago, April 18, 1848, a violent snow-storm visited the whole western country in our latitude."

"*The Weather—Fruit Destroyed.*—The sudden change from warm, spring weather to cold, winter weather, which took place on Sunday last, has destroyed nearly all the fruit in this vicinity, and in the adjacent parts of Ohio, Indiana and Kentucky. Every species of tree-fruit is taken, except late blooming apples. In addition to this, even grapes are so much damaged in this vicinity, as to leave but little hope of anything beyond the most meager vintage. Shoots from one to three inches long, with the fruit-bud well formed, which four or five days ago looked as luxuriant as we have ever seen them at this season of the year, now hang black and dry, and crumble to the touch.

"At Louisville, Ky., on Saturday night, the thermometer fell to 24°. In this city on Monday it stood at 26°, and on the hills west of the city was down to about 24°.

"The sky has been overcast most of the time since the change, a dry wind has prevailed, and we have had but little hoar frost."—(Cincinnati Gazette, April 19th, 1849.)

"*Telegraphed.*—Philadelphia, April 23, 1849—Advices from the south state that nearly the whole cotton and grain crops are destroyed by the frost."—(Daily Paper above cited, April 24, 1849.)

"*Cold Weather South.*—The Charlestown (Virginia) Free Press says, 'The late severe weather has destroyed all prospects of fruit for the present year, especially peaches.'

"The Wilmington (North Carolina) Chronicle says, 'We fear this storm has occasioned general destruction, in all this region, to the farm fruit and early vegetables.'

"In Charleston and Columbia, South Carolinia, and Augusta and Savannah, (Georgia,) snow fell to the depth of several inches.—Editors regaled themselves with *snow and strawberries.*"—(Paper above cited, April 25, 1849.)

"*Cold Weather South.*—The Anapolis (Maryland) Republican of Saturday last says that the peaches, apricots, cherries, figs, plums, etc., in that vacinity have all been destroyed

by the frost. The Centreville (Maryland) Sentinel says, that the ground was frozen so hard in that neighborhood on Monday, that the farmers were unable to plow."—(Paper above cited, April 27, 1849.)

"*April Frosts.*"—Uuder this head the Cincinnati Gazette of the last cited date, is advised by a correspondent, J. L., that the snow-storm of April the previous year, was not so much of one as represented: that it was rather a "*snow-squall*" from the north-west, with rain, the snow melting as it fell: that the thermometer at Cincinnati was not down to below 35 degrees.

"*Better News about Fruit.*—The Hamilton (Ohio) Intelligencer of the 3d instant says, two weeks ago it was thought that every species of fruit was killed by the frost. It is now ascertained that apples are yet abundant, and that some cherries and a few peaches are yet alive."—(Cincinnati Gazette, May 5, 1849.)

And now, to post up the statistics of the mortality from Cholera Infantum in New York, for this fatal year, the record gives 926 deaths, to contrast with 505 of the previous year, and 713 of the following year; and Adult Cholera was strongly epidemic.

It is a matter of no ordinary interest to note the extraordinary leaps in the rate of mortality on the years of the cold winters and blights in vegetation, as above pointed out, and which may be seen at a glance by consultng the synoptic map of the mortality of New York, accompanying the semi-centennial report, before referred to, appended to the report of the Board of Health for 1853: the mortuary track runs as follows, viz:

From 1804 to 1831 inclusive, a period of 27 years, the mortality, with slight exceptions, gradually increased from 2,000 deaths per annum, to 6,000, in round numbers, nearly in the ratio of the increase of the population, which, by the accompanying census returns, it appears, increased from 75,000 to 200,000 souls, in round numbers. In 1832 it went up with a bound from 6,000 to 10,000 deaths, after the coldest

winter that had occurred for nearly half a century—since 1779-80, when history says the harbor of New York was frozen over, and munitions of war were transported on the ice from the city to Staten Island. Now, this is a remarkable increase of mortality, over 33⅓ per cent. in one year, and this coinciding with a most remarkable constitution of the seasons of two consecutive years; but the most remarkable feature in it is, that the increase of mortality in 1832, over that of the previous year, exceeds by 125 deaths only, the exact number of deaths in that year from Epidemic Cholera; that is, Cholera Adultorum and Cholera Infantum united!

The next year, 1833, the mortality sank to below 6,000 deaths, all told. But it convulsively rose again, obedient to the scorbutic law, after the cold winter and spring blight of 1834, to 9,000 deaths, in the summer of which year, Cholera Adultorum and Cholera Infantum were again strongly epidemic. It then oscilated between 7,000 and 11,000 deaths per annum for twelve years, till 1847, the year succeeding to several unfavorable cropping years, cold winters, and remarkably disastrous summers; — the year of the Irish famine—when the mortality suddenly rose from 11,000 to 15,000 deaths!—the census in 1845 showing over 300,000 inhabitants.

Another element presented, however, in 1847, viz: the enormons increase of immigration during that year: 129,000 emigrants arrived in the port of New York, driven by starvation from Europe, fit subjects for ship fever, which was the ruling form of disease under the peculiar constitution of those remarkable years. The mortality, it appears, held to this amount the succeeding year, emigration increasing to 189,000, and epidemic small-pox being added to the causes of death.

In 1849, after another long, cold winter, and *general blight* in vegetation in the spring, the mortality sprang up fitfully from 15,000 to 23,000 deaths—Cholera Adultorum and Cholera Infantum again taking the field. The immigration in that year was 220,000. The increase of mortality in

1849, over that of the previous year, was 7,857, almost 33⅓ per cent.; and it is very remarkable, again, that this number should exceed the sum of the deaths of that year from adult cholera and Cholera Infantum only by 1,757, in a population swollen to 500,000, and an immigration of 220,000 !

In 1850, the mortality sank to below 17,000, after, which to the closing of the Report, the end of the year 1853, it ranged above 20,000 annually, but did not in any year reach the excessive mortality that followed the intensly cold winter and spring blight of 1849.

These statistics of cold winters and blights in vegetation, joined with the statistics of adult Cholera and Cholera Infantum leave, it appears to me, no room to doubt the unity or identity of these hitherto supposed two diseases, or to doubt the implantation of the latent morbid diathesis in the system during the colder winters especially, and years of blight in vegetation, agreeably to the scorbutic law, to be developed in epidemic form by succeeding solstitial and dog-day influences, in the ratio of the force and continuance of the operation of the remote cause, viz: defective alimentation, and the intensity of the exciting causes, viz: summer heat, vicissitudes of temperature, foul air, errors in diet, fear, teething, weaning, and other directly debilitating, disturbing, and prostrating influences. This appears to be the law governing the choleric, *alias* the scorbutic disease: if any doubt it let them consult Lind, and others, on scurvy at large.

"The coincidence of blight and pestilence has been recorded from ancient times, and the wide-spread potato disease, which has now extended to almost every region of the globe, concurrently with the presence of influenza and cholera poisons in the atmosphere, may, possibly, be a modern instance of it. At all events, it is certain that seasons which are unusually sickly to large classes of human beings, are often alike unfavorable to the health and fruitfulness of many classes of plants." (See Report on Quarantine, London, 1849, p. 14.)

It is remarked, in speaking of the swarms of flies noticed

in cholera years, and that they may have something to do with Dr. Snow's theory, that cholera is propagated by germs contained in the cholera evacuations, which germs, it is supposed, are distributed through the air, and in the water used for household purposes, &c., that, "they seem at least to mark one phase of that *blight in vegetation*, and murrain among cattle, which has *preceded* the cholera scourge, and which still attends upon it." (Ranking's Abstract, Vol. 9, No. 2, Jan. 1854, p. 219.)

"London has been often laid waste by fires, and ten several times has it suffered the horrible ravages of epidemics. The latest and most terrible of these is known by the name of the great plague. It occurred in 1666, and destroyed above 68,000 persons. That of 1348 destroyed, it is said, 100,000 persons. That of 1461 was more terrible still. About the year 1487, the *sweating sickness* appeared first in London, and carried off an immense number. In 1500, the plague destroyed above 20,000 of the inhabitants. In 1518, the sweating sickness re-appeared and renewed its ravages. It returned a third time in 1528, and was so virulent that the immense number of its victims died in five or six hours after being seized. In 1603, a species of the plague destroyed more than 30,000 persons. The plague of 1625 killed more than 35,000." (*Malte Brun's Geography*, Vol. 6, p. 753.)

"M. Broussais believes that cholera has reigned in Europe at former periods (a d'ante epoques), and that it is the same epidemic which, in the fifteenth century, was called the *black plague*." (Med. Chirurg. Review, Vol. 17, N. S., p. 200.)

I throw in the above quotation from Malte Brun without any further comment than the quotation of the belief of M. Broussais affords, not being in possession of medical historical data, at present, sufficient to enable me to express an opinion as to the identity of cholera and the sweating sickness, or black plague of former epochs: it looks reasonable. The constitution of the seasons immediately preceding those

great epidemics, and all others, may throw light on the subject, and is an interesting matter for research.

The coincidence of blight and pestilence is established by the quotations from the able London Report on Quarantine and Ranking's Abstract, but hitherto the natural law thereof has not been explained, it would seem. The blight always precedes the pestilence, or the sickness results from a blight and dearth of vegetable food and fruits, and not from a poison in the air that destroys people and potatoes, as may be inferred from the quotations.

Vegetables elaborate the soluble salts of soils, which mineral substances, so elaborated in succulent vegetable food and fruits, are *absolutely necessary* to human health. Some contain iron, some soda, some potash, some lime, some phosphorous, some sulphur, and so on; and to give them a relish, a kind Providence has involved them in succulent and pulpy textures, of such attractive forms as oranges, lemons, peaches, potatos, turnips, &c., and flavored them with acids most grateful and inspiring to the gustatory sense. Now, if by a late spring frost all the fruits are cut off, and by a summer drought all the vegetable crops fail, and a cold winter follows, during which there is a great demand for the best quality of blood, in order to maintain animal heat and healthful nutrition, where is a nation, and more especially the confined population of cities, to get the requisite iron for the blood, phosphorus for the brain, lime for the bones, potash for the muscles, soda for the chylopoietic viscera, sulphur for the skin, hair, and nails, and the whole inventory of the chemico-vital laboratory's necessary supplies? Pork and beans and bread and coffee do not afford them fully, by any means. They contain the nitrogenous elements largely, as well as the food of respiration, and are good as far as they go; but without a daily supply of the acids and soluble salts, containing oxygen and the necessary mineral bases in large proportions they soon obstruct and oppress the healthful processes of the animal machine. The mucous membranes of the primæ viæ give way first, and to repair these the

blood is sent thither, (*ubi irritatio ibi fluxus*) hyperæmia, congestion, disintegration follow: the more tender, feeble, and wretched in community begin to drop of winter and spring diseases, while the stronger and better protected drag through the spring with a lethargic dullness and inertia; and when the summer heat strikes the community an epidemic collapse ensues, conformably to the scorbutic law. The white-wash brush is then plied; the streets, alleys, gutters, sewers and cess-pools cleansed; the air accused; Deity invoked; commerce quarantined; a day of fasting and prayer celebrated; Physic strikes in the dark; but all in vain—the natural law is not discerned. On the coming in of plentiful crops of vegetables and fruits, which occurs in autumn, the public health is again restored. And generally after cold winters, abundant crops are produced the following seasons, because the hard frosts more effectually disintegrate the rocks and oxides, to be dissolved by the spring rains, and imbibed by vegetation and elaborated in delicious fruits and vegetables.

"As soon as a generous public diffused the comforts of life among the seventy thousand destitute emigrant population of New Orleans, last summer, the pestilence, [yellow fever epidemic of 1853,] which was sweeping into eternity three hundred a day, immediately began to disappear, before frost or any change in the weather." (Cartwright—see Report on Sickness and Mortality in Emigrant Ships, Washington, 1854, p. 134.)

There may be found cavillers who will object that this theory is all false, because, they may urge, it is not capable of a world-wide application, since cold winters and hard frosts never occur in intra-tropical regions, and Cholera is a native disease of a very hot climate, viz., India. I meet this objection by observing that the argument I have advanced is irrefutable in its application to extra-tropical regions; and that in earlier days, and not an hundred years ago, it was contended by Lind,* Trotter, and other distinguished writers,

*Lind on Scurvy, p. 262.

that scurvy could not be a disease of tropical countries; could never find subjects there, on account of the perpetual warmth and verdure, and the almost spontaneous production of a never-ending abundance of anti-scorbutic fruits and vegetables. But later observations have settled the matter that they were mistaken; that blights from drought, rains, and floods, occur as well there; and that scurvy does often rage fiercely as an epidemic in tropical countries, as well as Cholera. Indeed, the most powerful of all the exciting causes of scurvy, is heat; and, as I shall presently show by a quotation from the paper of an English surgeon of the army; *in India the scurvy and cholera raged simultaneously among the troops in the hottest of summer weather:* and to illustrate the fact that there is an annual variation in the meteoric influences within the tropics, arising from the swing of the seasons, capable of producing these two forms of *one and the same disease*, or rather waking it into activity from its *latent* condition in the system, as well as other forms of disease, precisely according to my views, I quote as follows:

"Nearly two hundred years ago, a Portuguese named Mandelo, in describing the diseases at Goa, makes the following statement: 'The change of the seasons from one extremity to another, is the cause of many diseases among the Portuguese, but the most common are those which they call *mordexin*, or *mordechin*, the Hindoo name for cholera, which kills immediately,'" &c. (Macintosh's Practice, p. 284.) Goa is in latitude about 15° N., on the west coast of Hindostan.

"In the year 1817, (the date of the great out-break of the disease in India,) cholera was epidemic in England, and was described in 1818 by Dr. Ayre." (Medico-Chirurgical Review, Oct. 1833, N. S., Vol. 19, p. 457.)

It is said of the great out-break of cholera in India: "Of the origin of the epidemic we know no more than this: that previous to its appearance the seasons were extremely irregular and unnatural, the people sickly to a great degree, and

the country inundated." (Bengal Report on Cholera of 1817.—Med. Chirurg. Rev. vol. 17, p. 94.)

It is shown in the Bengal Report, that the most remarkable constitution of seasons prevailed in India in 1816 and 1817: that the summer of 1816 was one of intense and unusual heat, and the winter of 1816–17 one of extraordinary cold and humidity: that the whole country was inundated with the greatest floods ever known, and sickly beyond all previous experience. It is also stated that the rice crop of 1817 failed from this inundated condition, and that the breaking out of Cholera was ascribed to the general blight of vegetation, and damaged quality of the rice crop; but it is objected to this that the Cholera appeared in the early part of the season, in certain places, before the crop was matured or even planted; but this does not prove but that a succession of blighting influences prevailed that abridged production *generally* during several previous years, and rendered the whole country sickly: this is stated to be the fact. The climax came in 1817, after an unusually cold, wet winter, during which the general sickness that had everywhere prevailed, abated; but it was a delusive calm.—When the heat of the following spring and summer struck the inhabitants, the poor in the cities died by thousands of Cholera.

What a similitude! Who would have believed that the constitution of the seasons of 1816 and 1817 in India, and of 1831 and 1832 in the United States, could have been so similar? And what constitution of seasons marked the advent of Cholera in France?

"The year 1832 was particularly remarkable for the sharp and smart cold winter, and the dryness of the summer. The year 1831 had been more damp than dry, more warm than cold."—(Report on the Cholera of 1832 in Paris, translated and published in New York, 1849, p. 90–93.) How exactly like the same years in the United States!

The same general law, then, always governed Cholera in India, in England, France, the United States, and every where else, that governs it now—"the change of the seasons

from one extremity to another:" and yet without a predisposition, or the remote cause being inlaid by abridgment of food—*defective alimentation*—"the change of seasons from one extremity to another," is inadequate to produce it, or everybody would have it annually. The predisposition is easiest laid in the tender and fragile; hence delicate infants and broken down adults are its readiest victims. It is all called Cholera in Europe and Asia, whether occurring in infants or adults.

The statistics of the mortality from Cholera in Paris in 1832, show that the deaths in subjects under five years of age were 24 in 1,000; in subjects from five to fifteen years of age, 5 in 1,000; in subjects from fifteen to thirty years of age, 10 in 1,000; in subjects from thirty to sixty years of age, 27 in 1,000; in subjects from sixty to one hundred years of age, 63 in 1,000.

Of men the mortality was 21 in 1,000; and of women 22 in 1,000. In the suburbs of Paris, the mortality of women was *one-fifth* greater than of men. Senility, then, mature age, infancy, and the female sex, are the most liable. This illustrates the mortality from Cholera Infantum in the United States: all dying of Cholera under five years of age are reported *Cholera Infantum.*

I will remark here, that the laws governing the inlaying of the scorbutic diathesis, may not be fully explained by these views—the subject is but obscurely understood in the present state of medical science. That extreme meteoric impressions, as cold and moisture, or heat and moisture, powerfully co-operate with defective alimentation to weaken and congest the internal capillary system, there can be no doubt: thus digestion and assimilation will be obstructed by outer agencies acting in the same direction with a daily improper or defective dietary. Under these circumstances, the blood will be more rapidly starved of its proper elements, and thoroughly impoverished; and thus the scorbutic diathesis may be inlaid and fully developed, no doubt, in summer or winter, under intra-tropical or extra-tropical influences.

In illustration, I will quote from a very able paper on Cholera by Mr. Thom, surgeon to Her Majesty's 86th regiment, at Kurrachee, India.

After stating it as his opinion that the existence of a *hot atmosphere* loaded with moisture, and at the same time in a stagnant state, is a cause of Cholera, independent of any chemical change in it, he discusses the morbid agencies which he thinks induce the *changes in the blood*, viz., a loss of the solid constituents—as in scurvy—that must exist to constitute what he calls the latent condition of Cholera. The improper quality of the soldiers' rations he places first among the morbid agencies. He says they are the same in kind and quality in India as in Canada — as much meat through an Indian summer as a Canadian winter—which tends powerfully to congest the system in that hot climate where there is a great deficiency of oxygen in the air. He dwells also on cutaneous exhalation as a morbid agent, which, he says, is wonderfully super-abundant, calling for some ten or twelve pints of drink per day for each soldier, never omitting the *ardent;* which inordinate action of the cutaneous capillaries, he thinks, tends further to internal congestions; and I will add to wash away the soluble salts of the blood — the hydraulic cement of the whole fabric. Quere, would the soldiers have sickened on ten pints each per day, of lemonade, or effervescing soda powders, and a dietary of vegetables and fruits, chiefly? but to the quotation.

"Latent Condition of Cholera.—The state of the system referred to as resultant on chemical change of the constituents of the air, in which carbon is accumulated in the blood, and fibrin and albumen diminished, will vary in degree according to idiosyncrasies, habits, and constitution, so that certain numbers of a community will be affected to an extent bordering on, or breaking out into open disease. Noxious agencies whether of atmospheric origin acting on the skin and lungs, or as poison introduced through the assimilating functions, when applied in a minute degree, but steadily

kept up for a length of time, have a tendency to produce effects that are called accumulative. Their action is latent, but not the less certain, till all of a sudden it is developed as if the whole had been suddenly concentrated into one overwhelming dose.

"Connection with Scurvy.—The scorbutic diathesis furnishes a forcible example of this; and sudden death is not only induced by slight causes of excitement, in men laboring under it, but even those who have exhibited no alarming signs have been equally affected. This is exceedingly applicable to Cholera, between which and scurvy there is a great analogy in the state of the blood; and on Cholera subsiding the scurvy appeared in our regiment, and also in other corps.

"Sudden Climax of Accumulative Morbid Changes.—If then, by a sudden climax of all the causes of this latent diathesis, a state of weather inducing universal congestion, almost approaching to obstruction of the vascular system, occurs, can we be astonished that life will, in many, be abruptly cut short, as if some lethiferous draught had been swallowed? Such, I am firmly persuaded, is the only rational way of accounting for those numerous cases of Cholera which terminated fatally in a few hours, without those symptoms which nature usually exhibits in a salutary effort to remove local or general congestion."—(Medical Times, March 11, 1848, p. 388.)

Thus it is proved past all doubt, that the causes which produce scurvy exist as well in tropical countries as in the higher latitudes; that changes of the seasons, floods, inundations, blights in vegetation, or the abridgment of the productions of the soil causing deficient or defective alimentation, are the causes of it, the same as in colder countries; proving conclusively that the theory of the scorbutic nature of Cholera is susceptible of world-wide application.

I cannot but marvel that the identity of Cholera and scurvy should have escaped Mr. Thom's powers of observation, when he saw them so nearly and closely associated. Still the same

observations occurred to me years before the truth was clearly established in my mind. I not only saw the scurvy left in patients who recovered from Cholera, but I saw it in many before the attack came on; and as I shall illustrate by cases before I close this essay, successfully treated *Cholera Infantum* as *scurvy in infants*, whose mothers labored under that form of it called *Nursing Sore Mouth* or *Puerpural Anæmia*, twenty years ago, by the administration of anti-scorbutic remedies.

Since the year 1832, when Cholera Adultorum first became epidemic in the United States, the records of mortality for the city of New York, show that down to the close of the year 1853, 12,044 adults have perished of it in that city, and 10,044 infants of Cholera Infantum. From 1804 to 1831 inclusive, 3,308 infants died of Cholera Infantum in New York, which swells the mortality from *Cholera Infantum* in that city, during the last half century, to 13,352; and from *Infant and Adult Cholera united* to 25,396 souls!

I will now endeavor to illustrate the unity of these hitherto supposed two diseases, and the essentially scorbutic nature of the *choleric disease*, by the statistics of emigration: this constitutes an important chapter in its history.

The blight in vegetation and dearth of provisions in Great Britain and Ireland, as well as on the continent, in 1847, caused thousands upon thousands of foreigners to emigrate to the United States. Over 100,000 emigrants left the British Isles for this country during the first half of that year. The *scurvy* prevailed in England, Ireland, and Scotland to an awful extent, imputed to the blight of the potato, as may be seen by reference to the British medical journals of that year; and typhus fever and cholera were associated with it. An hundred thousand persons and more died that year in Ireland alone; and nearly every Irish emigrant who came to this country had the inlaid and accumulated scorbutic depravity lying latent in his system. "There is nothing unatural in the desire of the unfortunate Irish to abandon

their cheerless and damp cottages, and to crawl, inch by inch, while they have yet a little strength, from the graves which apparently yawn for their bodies. What will not poor humanity do to avert the blow which death seems to aim ?"

Inlaid or latent scorbutus in embarking emigrants, modified by the constitution of the seasons, and by the exciting causes, as sea-sickness, inaction or sloth, poor diet and foul air on ship-board, and, *may be*, by a *specific typhus infection*, was mostly developed in the form of ship fever, as it reached our shores, till the next year, 1848, when the choleric form predominated; and after the intensely cold winter of 1848–49, and succeeding spring blight, enough subjects were prepared, or charged with scorbutus in the latent manner, for an epidemic out-break of it in the choleric or hemorrhagic form in this country, under the powerfully exciting causes of summer heat and vicissitudes of the weather.

Of the causes of sickness in emigrant ships, Dr. Cartwright, of New Orleans, speaks as follows: "Provisions are not only soon deteriorated in quality by heat and moisture, but also if exposed to human emanations in a concentrated form, as they always are when deposited in the steerage of a crowded emigrant ship. The food partaken of in such places is so deteriorated in quality that it is digested with great difficulty, and is apt to cause vomiting and diarhœa. That scurvy, cholera, dysentery, ship fever, and other pestilences are mostly caused by eating food deteriorated in quality, drinking bad water, and breathing an atmosphere loaded with the moisture of human exhalations, there can be no doubt." (Hon. Hamilton Fish's Report to the Senate of the United States, on the Sickness and Mortality in Emigrant Ships, before quoted, p. 126.)

Now infants of this class of progenitors—scorbutic, sickly emigrants—if not still-born, die of *Cholera Infantum*, in great numbers, in all the entroports of the United States, every summer; and many mothers, also, die of—*a sudden*, soon after delivery: only explained by the scorbutic law.

Dr. Isaac Wood says, (Report above cited, 105.) "About twenty-seven years ago, typhus, ship or prison fever, for they are the same, prevailed to an awful degree in our largest prison and pauper establishments. The disease got into the lying-in department and committed dreadful ravages. Women would be confined, have easy and natural labors, be comfortable twenty-four or forty-eight hours, and the next twenty-four or forty-eight hours be corpses."

The average number per annum of *still-born infants* in New York, for the seven years immediately preceding the year 1847, was 790; and the average number per annum for seven years thenceforward, including the year 1847, that is, from 1847 to 1853 inclusive, was 1,377: a disproportionate excess of 281 per annum over the average number called for from the increase of the population—an over proportion of 20.4 per cent. per annum.

The average number per annum of *infants dying of Cholera Infantum* in New York, for the seven years immediately preceding 1847, was 453; and the average number from 1847 to 1853 inclusive, was 770: a disproportionate excess of 142 deaths per annum, over the average number called for by the increase of the population—an over proportion of twenty per cent. per annum, exactly. What striking facts and coincidences!

The census returns of 1845 and 1850 are taken as the two means of the above septennial periods, or averages of the population. That of 1850 is the true mean period of time for the last seven years, and that of 1845 one year too late for the first seven years, which throws the results of the above calculations rather *under* than over the true excessive, or disproportionate mortality, both still-born and from Cholera Infantum, without affecting the relation to be seen between these two causes of death in the agreement of per centage.

These statistics show that some element, causing death in infants, exists in New York, associated with immigrants, and that it is operative before birth. That this element or

cause of death is scorbutis, is to be inferred from sundry reasons. The fœtus is not obnoxious to meteoric influences, nor to other causes of disease and death external to the mother. Emotional causes, it will not be contended exist in the unborn infant; and it is, at least, questionable if they can reach it in utero through the mother. Constitutional disorders and diatheses do, some of them, pass from mothers to infants in utero, and scorbutus is in this category.* The nutritive function appears to be the only channel through which contamination can pass, and defective nutrition is the foundation of scurvy. Sudden death from shock is a scorbutic law, and most of the still-born infants die from the shock occasioned by the uterine efforts upon them. Where mothers labor under scorbutus, it has been found that a large proportion of their infants at birth or a few weeks old do also. The scorbutic diathesis is a prolific cause of abortion and premature birth. These reasons leave no room in my mind to doubt the hidden element of death in question being scorbutus. This conceded, the affirmative of my proposition that Cholera Infantum is a scorbutic affection is equally sustained by the argument, for the statistics show that infant mortality from *it* is associated with emigrants in the same ratio.

Not to make use of some of the abundance of materials that offer in proof of the scorbutic condition of immigrants, and introduce it in this connection, would be doing injustice to the paramount importance of the great question, the true cause and essential nature of Cholera Infantum. I shall therefore draw a few extracts from the Senatorial Report before quoted on the Sickness and Mortality in Emigrant Ships, begging the reader to bear in mind what I have incidentally let fall as to the nature and pathology of scurvy, viz: that it is a slow poisoning from the want of proper

*Brucœus, who wrote in 1589, says: "The scurvy is endemic in particular countries from their situation, air, water and food. In these countries, scorbutic mothers bear scorbutic children, often miscarry, at other times bring forth dead fœtuses." (Lind on Scurvy, p. 315.)

nutrition, rather than from the introduction of anything deleterious—a negative poisoning that infallibly ensues when the natural laws in regard to diet are daily infringed by the absence of succulent vegetable food and fruits, it being nature's law that omniverous man should have a variety of animal and vegetable food, but more especially the latter.

At page 79, in Mr. Bierwirth's reply to the circular of the Senatorial Committee, occurs the following paragraph, written in January, 1854:

"The present state of things is, in a modified form, a repetition of what was witnessed in 1847–48, when, (as mentioned in a Report of the Commissioners of emigration of the State of New York) the number of persons who perished by ship fever at sea, and in the various emigrant hospitals in American ports, was estimated to exceed 20,000. There is also a remarkable analogy between that period and the present [1854] in the high price of bread-stuffs and all other articles of human food; and this confirms me in the opinion expressed years ago, and adhered to ever since, that the mortality at sea is mainly, if not entirely, owing to the want or insufficiency of wholesome nourishment during the passage. The subject at that time attracted the attention of the New York Chamber of Commerce, and a committee of that body to whom the matter was referred, arrived at the conclusion that the main causes of the many deaths at sea, were, 'want of food and want of pure air in the between decks."

At page 80, in the Report to the New York Chamber of Commerce, accompanying Mr. Bierwirth's communication, occurs the following: "Next to the miserable state of health in which so many emigrants embark, the great causes of the deplorable condition in which they arrive in our ports are—

"Want of sufficient and wholesome nourishment during the passage, and want of pure air in the between decks or steerage, where emigrant passengers are generally located.

"The Chamber of Commerce is doubtless aware that em-

igrants from Great Britain and Ireland can claim from the ship that carries them nothing in the shape of food, except one pound of bread and three quarts of water each per day; and it is a well known fact that even this they cannot always obtain—that the law is shamefully violated—that vessels leave Liverpool without providing the required quantity of bread. But all nourishment beyond bread and water, must be furnished by the emigrants themselves, and it is their business to get it cooked as best they may. The consequences of this arrangement to the poor, careless, improvident people are self-evident; many of them embark without any provisions of their own, and very few, if any, with a sufficient supply; many have not the means to buy food, and those who have deceived themselves as to the duration of the voyage; and hence it is doubtless true that not one of all the emigrant ships from British and Irish ports has a sufficient supply of proper food for all on board."

Surely no medical mind can contemplate the above facts and deny that scurvy is inlaid in every emigrant: it were just as safe to deny that two and two make four. But thousands—the majority—are saturated with it, "died in the wool" before embarkation, it appears, for the want of food aboard, is placed as second, "to the miserable state of health in which so many emigrants embark," and we have seen that, that miserable state of health was *scurvy*, so plainly unmasked in 1847 that no medical tyro could mistake it; and the communication of Messrs. Oelrichs & Co., p. 88, confirms the fact of the wretched state of health in which emigrants embark, viz:

"The recent mortality on board of emigrant vessels was, we believe, mainly the natural development of disease contracted before embarkation, and not owing to want of attention on the part of the master or his subordinates."

At page 89 occurs the following paragraph in Mr. Rucker's communication, written in 1854:

"The recent alarming mortality on board emigrant vessels from Europe calls for the attention of the legislature. It has

been stated that during the month of November last, 28 of the whole number of emigrant ships which arrived at New York had cholera on board, and that of 13,762 passengers, no less than 1,141 died by this disease, and between four and five thousand were afflicted with it during the passage."

It appears by this, that, fully one-third of all—"between four and five thousand of 13,762," were so imbued with scorbutus, according to my view and explanation, that they fell under its law of collapse during the voyage. Woe to such as were with child and that gave suck in those days; and worse woe to the sucklings who drew their nutriment from such polluted fountains. Cholera Infantum is ever the sure inheritance of infants so bred and born, and if they survive *it*, their whole lives are embittered by constitutional feebleness.

Again, same page and communication:

"Passengers providing themselves get cheated in every way—quantity, quality and price. The consequence is, that the poorer lay in not only an extremely small stock, but also a defective stock, and trust to the good nature of those better off, or to chances to appropriate to themselves what does not belong to them, and lastly, rely on the master of the vessel to save them from starvation, but after all, suffering from want of proper nourishment."

Again, same communication, page 96:

"In stormy weather, owing to an arrangement of the cook's galley, passengers may, for days together, be unable to cook at all. Sea-sickness weakens, makes lazy and indifferent, so that even the most energetic captains complain that they are unable to enforce cleanliness unless aided by law; and threats to treat as mutineers such as will not obey, are often necessary. Many passengers have to be brought on deck by main force."

Now here are described as being present in these emigrant ships, all the causes of disease that in earlier days developed sea-scurvy, but that now-a-days develop either Cholera or ship-fever; and the only reason that can be assigned for the

change in the mode of manifestation, if indeed there be any, is an improvement in the human constitution, brought about by an improved agriculture, horticulture and fruit-culture, giving it greater powers of resistance, or greater protection against scurvy. That human life is lengthened by the multiplied comforts of modern civilization, commerce and the arts of peace and rural industry, is proved by the vital statistics of the Life Insurance Offices. What then were the collapsing symptoms of scurvy in the early sea-voyages? What was the mode of death, when "deaths occurred from scurvy to the amount of eight or ten a day in a moderate ship's company; bodies sewn up in hammocks and washing about the decks, for want of strength and spirit on the part of the miserable survivors to cast them overboard," as in Lord Anson's voyage? Why, according to the best accounts, it took on the form of "*putrid fevers*, pleurisies, jaundice, and violent rheumatic pains," so says Lord Anson; and Ellis, the explorer of a "north-west passage" in 1746, says of his scurvied crew, that, "death carried them off, either by a *flux* or a dropsy." It appears also by Lord Anson's account that the epidemic increased with hot weather, and that the mortality in one of his ships was forty-three in April, twice that number in May, and as many more by the middle of June, when the squadron arrived at the island of Juan Fernandez, and the sick were put ashore, numbers dying in the boats in being got ashore, and the epidemic still continuing very fatal for twenty days after landing. "The Conturion, from her leaving England, when at this island, had buried 292 men, and had but 214 remaining of her complement. The Gloucester, out of a smaller complement, buried the same number, and had only 82 alive!" It would seem then, that the causes of disease were the same in the earlier voyages as in emigrant ships in these days, viz: want of proper and sufficient food; want of ventilation; and want of exercise. And it further appears that the *putrid fevers*, *watery fluxes*, etc., that carried off three-fourths of a ship's crew in former days were considered forms of scurvy. These are instructive

reminiscences. Like causes produce like effects through all time.

I will introduce but one other quotation on this subject, which, coming from the source it does, is entitled to much weight, and should not be omitted. It is taken from the Report on Quarantine of the General Board of Health, London, 1849, before quoted, and is the experience of a gentleman who took passage in the steerage of a vessel to prove the comfortableness or otherwise of the emigrants' voyage to America.—See said Report, page 101.

"Before the emigrant has been a week at sea," says Mr. Stephen De Vere, "he is an altered man. How can he be otherwise? hundreds of poor people, men, women, and children, of all ages, from the drivelling idiot of ninety to the babe just born, huddled together without light, without air, wallowing in filth, and breathing a fœtid atmosphere, sick in body, dispirited in heart, the fevered patients lying between the sound in sleeping places so narrow as almost to deny them the power of indulging, by a change of position, the natural restlessness of the disease; by their agonized ravings disturbing those around, and predisposing them, through the effects of the imagination, to imbibe the contagion; living without food or medicine, except as administered by the hand of casual charity, dying without the voice of spiritual consolation, and buried in the deep without the rites of the church. The food is generally ill selected, and seldom sufficiently cooked, in consequence of the insufficiency and bad construction of the cooking places. The supply of water, hardly enough for cooking and drinking, does not allow washing. In many ships the filthy beds, teeming with all abominations, are never required to be brought on deck and aired; the narrow space between the sleeping-berths and the piles of boxes is never washed or scraped, but breathes up a damp and fœtid stench, until the day before arrival at quarantine, when all hands are required to 'scrub up,' and put on a fair face for the doctor and government inspector.

"No moral restraint is attempted; the voice of prayer is

never heard. Drunkenness, with its consequent train of ruffianly debasement, is not discouraggd, because it is profitable to the captain, who traffics in the grog.

"In the ship which brought me out from London last April, the passengers were found in provisions by the owners, according to a contract and a furnished scale of dietary.

"The meat was of the worst quality. The supply of water shipped on board was abundant, but the quantity served out to the passengers was so scanty, that they were frequently obliged to throw overboard their salt provisions and rice (a most important article of their food) because they had not water enough both for the necessary cooking and the satisfying of their raging thirst afterwards.

"They could only afford water for washing by withdrawing it from the cooking of their food. I have known persons to remain for days together in their dark, close berths, because they thus suffered less from hunger, though compelled at the same time, by want of water, to heave overboard their salt provisions and rice. No cleanlinesss was enforced; the beds never aired; the master, during the whole voyage, never entered the steerage, and would listen to no complaints; the dietary contracted for was, with some exceptions, nominally supplied, though at irregular periods; but false measures were used (in which the water and several articles of dry food were served,) the gallon measure containing but three quarts, which fact I proved in Quebec and had the captain fined for. Once or twice a week ardent spirits were sold indiscriminately to the passengers, producing scenes of unchecked blackguardism beyond description; and lights were prohibited, because the ship—with her open fire-grates upon deck—with lucifer matches and lighted pipes used secretly in the sleeping-berths—was freighted with government powder for the garrison at Quebec.

"The case of this ship was not one of peculiar misconduct; on the contrary, I have the strongest reason to know from information which I have received from very many emigrants well known to me, who came over this year in different vessels

that this ship was better regulated, and more comfortable than many that reached Canada."

At page 118 of said Report, this subject is alluded to as follows, viz. "The late Chairman of the Emigration Commission, T. F. Elliott, Esq., in his examination by a committee of the House of Lords, says:—'One of the most important pieces of evidences upon emigration which I have ever seen in my life was contained in a letter which I received from Mr. Stephen De Vere. He is a private gentleman who has gone from Ireland to Canada, wishing to judge for himself whether it was a good place to which to encourage his poorer neighbors to proceed. He voluntarily exposed himself to the inconvenience and hazard of taking his own passage in the steerage, and after his arrival he wrote to me, at my request, a very full letter, giving an account of all that he observed. This letter has, I think, weighed much with the Government in forming the conclusion that it was desirable to endeavor to amend the law in the course of the present session."

So much for the evidences drawn from emigration; and if this mass of statistics and reliable testimony does not fully sustain the conclusions to which I have come, that emigrants are scorbutic, and that Cholera in them and Cholera Infantum in their offspring are but modes of manifestation or modified forms of the same old disease, scorbutus, I ask, whither shall the researching medical mind turn for evidences in support of a rational view or theory of Cholera and Cholera Infantum? Where but in the scorbutic theory is there any light? It is hardly necessary to sum up the testimony which this branch of the subject offers in support of the affirmative of my propositions, so strikingly do the facts and statistics sustain them. Can any medical mind revert to an hypothesis again, go back and grope in the dark, after a rational philosophy of noon-day truth has thus unfolded the unquestionable nature of Cholera Infantum, and illustrated by statistics (not gotten up for the purpose) the laws of its development? I think not. Can any one doubt as to the

cause and essential nature of the Choleric disease after considering its connection with emigrants; their contamination with scurvy; the collapsing law of *its* manifestation; and the parallelism between the over-percentage of mortality reported still-born, and the deaths from Cholera Infantum in New York since 1847, when the enormous increase of emigration to this country set in? I think not: the matter must be as good as settled in the mind of every candid reader, it appears to me.

There is another particular in the history of Cholera Infantum that must not be passed unnoticed; it is this, that while it is generally confined to infants of the poor, wretched, and ill-fed classes described, it occasionally manifests itself in infants of the better classes, families supposed to be sumptuously fed; apparently belying the theory of its scorbutic character. Those practitioners who attend the higher classes in cities, even when the disease is raging among infants in the lowest walks of life, see but little of it. But this exception only proves the rule—luxury and effeminacy are closely associated. Many a mother in high life becomes dyspeptic, scorbutic, and hopelessly dilapidated by luxury, inaction, and rapid breeding, and entails the most faulty stamina upon her offspring, and affords from the breast the most unhealthy nutrition. Neither mother nor infant under such circumstances can appropriate the materials of a healthy nutrition, for the want of organic vigor; and besides, the most mistaken prohibitions are often enjoined by medical direction—the acids, fruits and vegetables being interdicted, (of all articles of diet, with good beef and porter or wine bitters added, the most needed) while crackers and tea, toast, soda biscuits, and cocoa are daily inflicted, to the perpetuation of the constitutional difficulty in both mother and child. It thus becomes an heir-loom in families, or an hereditary taint. Dr. J. Forsythe Meigs, (Diseases of Children, page 202) says: "My own observation leads me to believe that the disease is apt to occur in certain families. I am acquainted with one family in this city [Philadelphia] in

which eight out of ten children suffered from the disease. Of these children, four have grown up, married, and have children. Two of these families have each lost a child by the disease; in a third the two children of the family have been exceedingly ill with it; while in the fourth, some of the children have been sick, though not to the same degree. Again, I have attended this summer, (1847), two children in a family, one not quite two years, and the other three months and a half old, who have both been very sick with the disease. The elder child was ill the summer before in the same way. The mother of these children was herself very ill with the disease on several occasions during her infancy, as was also her brother."

This sustains my views of the ante-natal history and scorbutic character of Cholera Infantum, and accords so harmoniously with the physiological dogma that parental organization and physical stamina are transmissible to offspring, and with them liability and aptitude to the same forms of disease their progenitors manifested, that in this sense it must be conceded Cholera Infantum is hereditary, as Dr. Meigs inculcates, but without explainimg why and wherefore. Nor is the dilapidated mother always chargeable, or chargeable alone, with the offense of entail: the sin often lies as well at the door of a besotted father. Where the fathers have eaten sour grapes, after this fashion, the children's teeth are wont to be set on edge. Repeated, daily intoxication, for weeks and months together, necessarily lays the scorbutic diathesis in the system, from defective alimentation and abridged nutrition, as I have sufficienty satisfied myself by the physical sign in mania a potu, and abundantly verified by the success of anti-scorbutic treatment: and this view also explains why so many drunkards die of Epidemic Cholera. I have also further observed many cases of mild insanity to occur during scorbutic seasons, in both sexes, marked by the physical or objective signs of incipient or latent scurvy, and have found them medicable by anti-scorbutic treatment; which facts are, by no means, irrelevant in tracing the his-

tory of Cholera Infantum, for I have repeatedly treated infants and the older children for it of parents so affected; showing that the whole family were suffering from defective alimentation, and that scorbutus affects the brains as well as the bowels: throwing much light on the nature and character of the head symptoms in Cholera infantum.

The inordinate use of tobacco,* also, I have observed, enfeebles many a father, interfering so much with the digestion and assimilation of food, from the constant ejection of the saliva, that the physical signs of latent scurvy appear in the mouth, and a scorbutic feebleness is visited upon the offspring, evidenced by a proclivity to Cholera Infantum. But, probably, the greatest source or cause of scorbutus in the cities of the United States is the everlasting round of a monodietary of pork, bread and coffee—pork three times a day! and but a stinted allowance of stale, city milk from slop-fed cows, not unaptly derided "chalk and water," for the most infantile members of the family. Contrast such a dietary with the abundance of nutritious, fresh cows' milk from clover-pastured animals, fresh vegetables and fruits, eggs and poultry to be found at the country farm-houses in the old settled region of Lancaster county, Pa., and no one need seek further for the reason why Dr. Eberle, "during a practice of twelve years in the country, met with but two or three cases of this disease in infants;" that county being the field of his observations in country practice.

EVIDENCES DERIVED FROM THE PHENOMENA.

No method I can pursue under this head, so far at least as the symptoms and anatomical characters are concerned, can be fairer or less exceptional than to collate the descriptions given by writers of the supposed several diseases, which I hold to be one, or but modified manifestations of the same diathesis, viz: Cholera, Cholera Infantum and Scurvy, and allow the reader to judge whether or not my views are

* Harvey, who wrote on scurvy in 1675, attributes its occasional causes to the use of distilled spirits, and tobacco.—(*Lind on Scurvy, p.* 372.)

correct. The real philosophy of medicine, in investigating the phenomena of disease, seems to consist in ascertaining the actual state of the system, of which symptoms and signs are the exponents, and anatomical characters the post-mortem evidences.

Bearing in mind, then, the views I hold of the scorbutic unity of Cholera and Cholera Infantum; the different degrees and shades in which the scorbutic depravity may be unconsciously and unsuspectedly inlaid in the systems of thousands, young and old; the disparity in the age of the subjects, by which symptoms are always modified; the Protean character scurvy has always borne, and its collapsing tendency from extreme thermometric impressions, sudden vicissitudes of weather, fright, or other exciting causes; if I shall be able to show a general likeness in the supposed three forms of disease—a *oneness* of pathological condition in the system—no matter though some particular features may differ, as unwittingly drawn and misunderstood by artists, still the family likeness will pronounce the group a *triune malady*: but especially if added to this, I shall unfold in therapeutics that, the supposed differing forms of disease yield alike to the same treatment—the administration of anti-scorbutic remedies—what then will be the inference? plainly that the supposed three maladies are one and the same: no common sense view or conclusion other than this can possibly be maintained. It will never answer to say that these results arise from, or are owing to, a complication of scurvy with Cholera or Cholera Infantum, as in scarlatina, measles, small-pox, etc., where innoculation pronounces that there is *specific* cause for the distemper independent of scurvy: but the idea of a specific infection, or contagion being the cause of Cholera Infantum has never been mooted, and is fast fleeing the minds of those who entertain such a notion with regard to Cholera Adultorum.

When, therefore, a condition of the system is met with betokening low and ebbing vitality; when we see the whole

fabric as it were dissolving, disintegrating, bleeding, either red, white, or mixed blood; the most delicate structures softening, congesting, infiltrating; petechiæ appearing; and somnolency indicating that the same mischief is going on in the brain as in the bowels and in the skin; away with nosology—fall back on general principles—prescribe not for a symptom, but for *the condition*. It matters not what name an epidemic manifestation of this condition in adults bears, or in infants, or in sheep dying in the spring of the "rot" for want of turnips, or cattle of bloody murrain. It matters not though one set bleed from the nose; another from the stomach, and vomit it out; another from the intestines, and purge it off; or whether the blood or infiltration be sanguinous, fibrinous, sero-sanguinous, or only serous: the state, or pathological condition is one and the same, and it appears to me the only rational, philosophic, and truthful view to be taken of it is to consider it a scorbutic condition, and treat it accordingly. This will be rendered more plain by comparing the phenomena.

NATURE.

CHOLERA.

"Were we to attempt to illustrate in a few words the nature of cholera by examples drawn from analogous diseases, we should say that its choleric stage presented in a more intense degree the initiatory collapsed symptoms of certain bad fevers, before reaction had taken place, combined with excessive gastro-intestinal irritation; whilst the febrile stage bore a very close resemblance to such fevers after the establishment of reaction.

"The affection of the alimentary canal is essential and primary if any part of the disease is so; and it were vain to attempt to trace it to a morbid condition of any other organ or system or organs."—(*Dr Brown—Cy. of Prac. Med.*—Vol. I., p. 412.

"The probability is, that a poison is taken into the system, capable of making a profound impression on all its parts; and that among its effects, is either such a relaxation of the exhaling orifices as to admit the ready passage of the more fluid parts of the blood, and sometimes of the red corpuscles themselves, or such a modification of the circulating fluid, as to cause it to pass through structures which ordinarily retain it, or else a combination of these two conditions."—(*Dr. Wood—Practice of Med*—Vol. I., p. 691.

CHOLERA INFANTUM.

"For my part, I am disposed to believe that cholera infantum is a disease of the mucous membrane of the alimentary canal, which, beginning with morbid development of the mucous follicles, independent of evident inflammation, occasions first super-secretions from those organs, and after a time runs into inflammation and its results, ulceration, softening and thickening.

"That it is not an inflammation in the beginning, is, it seems to me, clear, from the nature of the anatomical lesions, and from the facts that the early stage is often unaccompanied by any febrile movement whatever, and is not unfrequently attended with disposition to collapse, like that which occurs in the cholera of adults; but that it becomes an inflammation after the development of the follicular apparatus has lasted a short time, is also, I think, apparent, from the nature of the anatomical lesions, and from the circumstance that there is always more or less violent febrile reaction after the first few days."—(*Dr. J. Forsyth Meigs—Diseases of Children*, p. 297.

SCURVY.

"Every phenomenon connected with scurvy, pronounces it to be a gastric disease. It commences in the stomach, and thence propagates its morbid action throughout the entire system of assimilating organs; to which we might add the organs of nutrition. Hence the change which ensues in the state of the fluids. The whole apparatus which prepares them being disordered in its action, it cannot be expected that they will remain sound.—(*Dr. Caldwell—Note in Caldwell's Cullen.*)

"M. Broussais contends that in scorbutus, whatever may be its cause, there is first an irritation of the internal membrane of the digestive canal; secondly, an imperperfect assimilation of the elements, especially of fibrin and gelatin, either in the tissues formed out of them, or in the blood which directs them to different parts of the body; thirdly, that in consequence of defect of nutrition, a diminished cohesion of fibre ensues; which accounts for the imperfect contractility and fragility of the muscles, for the rupture of vessels and escape of their fluids, and finally, for the easy disorganization of the tissues."—(*Treatise on Phys., quoted in Cyclopædia of Prac. Med.*—Vol. IV., p. 115.)

REMARKS.

What a parallelism! and "the *probability* is that" the slow poison which produces this parallelism in the *nature* of these supposed three forms of disease, as above described, is just what I have pointed out, viz: *defective alimentation.* The "profound impression" it is capable of producing, is pretty well understood in *Scurvy*—the relaxed solids and the oozing fluids are familiar illustrations; sometimes red blood, at other times only serum, and again mostly fibrin escapes from the vessels. No other essential morbid condition whatever has been pointed out, in either Cholera or Cholera Infantum. "The affection of the alimentary canal is essential and primary" in all, but it is not exactly inflammation: it is rather a stacis of the impoverished blood in the softened, weakened tissues at first, the evil lying latent, often without the subjects' being conscious of it, till the change of the seasons from one extremity to another, applies the torch to this magazine of morbid derangement, when something must happen—a climax must result—the critical moment has come—bleeding of some sort ensues—collapse follows—death or feeble reaction is the result. Thus, the essential *nature* of the morbid condition of the system appears to me to be identically the same in these hitherto supposed three forms of disease, modified by age and other circumstances, of course. Outside of this view, there is no light on the etiology and nature of Cholera and Cholera Infantum, and by these views all is made plain and easy of comprehension; for, as M. Broussais contends, whatever may be the cause of Scorbutus, irritation in the digestive canal, imperfect assimilation from defective nutrition, disorganization of the tissues and an escape of fluids, characterize it—and are not these also the characteristics unfolded in the study of the nature and pathology of Cholera and Cholera Infantum? Vomiting and purging, collapse and death, or feeble reaction, are resultant phenomena.

CHOLERA.

Mr. Thom, surgeon in the British army in India in 1848, observed the "latent condition of cholera," as he calls it, and described how it is inlaid little by little, by "noxious agencies," as improper alimentation and extreme meteoric impressions, "till all of a sudden it is developed as if the whole had been suddenly concentrated into one overwhelming dose."

He compares it in its latent state and collapsing tendency to scorbutus, which he noticed in the regiments after the cholera had subsided. After illustrating the latent accumulation and sudden collapse of cholera by the scorbutic law, he concludes as follows:

"Such, I am firmly persuaded, is the only rational way of accounting for those numerous cases of cholera which terminated fatally in a few hours, without those symptoms which nature usually exhibits in a salutary effort to remove local or general congestion."—(*Times, March* 11, '48.)

"Cases have been frequently observed, in which fatal collapse supervened without vomiting; and others are on record in which there was neither vomiting nor diarrhœa. In some instances considerable muscular strength remains, and the patient suddenly rises up from bed with an expiring effort, and falls lifeless."—(*Dr. Wood, op. cit.*)

CHOLERA INFANTUM.

"Let any one take a walk in a summer morning, through the thickly built lanes and alleys of Philadelphia, he will be struck with the appearance of the children, reclining their heads as if exhausted, upon the breasts of their mothers, with a pale and languid countenance, a cool and clammy skin, a shrunk neck, and other signs of debility, wholly destitute of animation, without appetites, and on the very verge of cholera."—(*Dr. Parish on Prophylactic Treatment of Cholera Infantum—Quoted by Eberle, Diseases of Children.*)

"It may be sudden or gradual. Much more frequently the invasion is gradual."—(*Meigs—op. cit.*)

"It frequently comes on in a gradual manner.

"In some instances it commences and proceeds with such violence as to exhaust the vital powers and terminate in death in a single day.

"Death sometimes takes place most unexpectedly."—(*Eberle, Diseases of Children*, p. 283.)

SCURVY.

"Scurvy is generally very gradual in its approach, so that it is scarcely possible to say in any particular case what was its precise time of attack. Attention is commonly first attracted by an unhealthy paleness.

"Sometimes, after remaining latent for a considerable time in the system, it breaks out fiercely and runs a very rapid course to its termination."—(*Dr. Wood—op. cit.*

"The scorbutic diathesis furnishes a forcible example of this [latent condition,] and sudden death is not only induced by slight causes of excitement, in men laboring under it, but even those who have exhibited no alarming signs have been equally affected. This is exceedingly applicable to cholera, between which and scurvy there is a great analogy in the state of the blood, and on cholera subsiding, scurvy appeared in our regiment and also in other corps."—(*Dr. Thom—Med. Times, March* 11, 1848.)

"We have seen several, who, without pain, dropped down dead suddenly.

"We have seen some whose breast was so oppressed, that they died all of a sudden."—(*Lind on Scurvy.*)

REMARKS.

I have myself observed this latent condition of Cholera, Cholera Infantum and Scurvy; that is, the scorbutic diathesis to be very prevalent prior to the breaking out of epidemic Cholera and Cholera Infantum; and I have also observed that *every patient* who survived an attack, presented the objective signs of Scurvy, viz: hyperæmia of some portion of the mucous tissues of the mouth, generally of the gums, arches of the palate, &c., often petechiæ on the skin. "I am firmly persuaded," therefore, that "the only rational way of accounting for" the latent and collapsing phenomena, presented in Cholera and Cholera Infantum, is, to ascribe all to *Scorbutus:* take away the Scorbutic phenomena and there is nothing left. Dr. Good speaks of nausea and vomiting as usual phenomena in Land Scurvy; and the old authors speak of vomiting, purging, and even *Cholera Morbus*, as being symptoms of Scurvy. What were the acute, epidemic, collapsing and dying phenomena in Scurvy, in former days, in the time of Lord Anson's voyages, when eight or ten died a day out of a common ship's company, I have before explained, by quoting the descriptions of the disease then given, and although I have put the question to at least a dozen distinguished medical gentlemen, professors, and others, not one has ever answered it; nor what were the symptoms of Scurvy in infants. It may turn out that the collapsing phenomena in Scurvy were the same then, in both infants and adults, as now-a-days, seen in Cholera and Cholera Infantum. The truth is, there is no other known law than this latent condition of Scorbutus, this accumulative depravity in the system, that is adequate to explain the phenomena seen in Cholera and Cholera Infantum; and this does afford a rational and adequate explanation. Independent of any light from therapeutics, then, common sense calls for its adoption. But it will be shown in the proper place that therapeutics confirms what common sense approves in this interesting question.

CHOLERA.

"After watery diarrhœa, or other generally slight indisposition, vomiting and purging of a white or colorless fluid; violent cramps, great prostration and collapse, the last occurring simultaneously with the vomiting and cramps, or shortly after them. Should the patient survive the last train of symptoms, a state of excitement and fever supervene."—(Dr. Brown, op. cit.)

"In some cases the fever assumes the remittent type, and ultimately becomes intermittent."—(Dr. Wood, op cit.)

"The commencement of the purging has sometimes preceded by several days the accession of the choleric stage; * * forty-eight hours has been its mean duration, calculated from a great number of instances."—(Dr. Brown.)

"Which diarrhœa is the first stage of a serous hemorrhage, and collapse is the natural consequence of the loss of the serous part of the blood."—(Medico Chirurg. Review., Oct., 1833.)

"The more we see of cholera, the more we are convinced that the disease is a serous hemorrhage from the alimentary canal."—(Ibid.)

"The more elaborate secretions,—as

CHOLERA INFANTUM.

"Vomiting and purging, with fever, generally of the remittent type, irregular spasmodic convulsions; and rapid emaciation, attacking infants and children."—(Dr. Copland—Dictionary.)

"Most authors agree that the disease generally begins with diarrhœa, which after a few days, or longer time, even, is associated with vomiting.

"In slight cases there is no fever, at first. In severer cases there is often a febrile reaction from the beginning; while in very violent cases the earliest symptoms are those of collapse, generally soon followed by intense heat of the head and body, very frequent tense pulse, which subside, after some hours, to give place to a more or less remission, or to a return of the state of collapse."—(Dr. Meigs, op. cit.)

"When the discharges are violent and very frequent, the muscles of the abdomen, and even those of the extremities, are apt to become affected with spasmodic contractions."—(Dr. Eberle, op. cit.)

"I have known a child put to bed early in the evening, seemingly well, to wake at ten o'clock and have twelve large, fœtid, fluid evacuations before morning.

SCURVY.

"The precursive symptoms are lassitude, faintness, and pains in the limbs, so that business, or even company, is found fatiguing. After this, there are often shiverings, nausea and vomiting."—(Dr. Good—Study of Med., vol. iii., p. 445.)

"This species [land scurvy,] is sometimes marked by febrile paroxysms, with variable intervals, but usually occurring in the evening."—(Ibid.)

In Lind on Scurvy, the following are enumerated as symptoms of an attack, viz:

"Vomiting, retchings, and even cholera morbus. A vomiting is known to be scorbutic.

"First, by not yielding to the common remedies.

"Secondly, its sudden unaccountable remissions, and equally unexpected return.

"Thirdly, its seizing without any previous pain, disorder of the stomach, or distemper described by the ancients: but the most certain proofs are from the urine and pulse.

"Urine having a white, roundish, heavy sediment, like sand or brick-dust.

"The pulse peculiar to this malady, is

those of the bile, urine and tears, cease, because the serous part of the blood finds an easier outlet through the exhaling surfaces."—(Dr. Wood.)

"The pulse will generally be found to be feeble and frequent; the skin, in point of heat below the healthy standard; the countenance shrunk, and if not livid, palid."—(Dr. Brown.)

"The tongue in this early stage is clean and moist."—(Ibid.)

"The features and whole body are so shrunken that the patient can hardly be recognized by his friends."—(Dr. Wood.)

"Various eruptive affections, resembling those of scarlatina, rubeola, erysipelas, &c., occasionally diversify the stage of reaction."—(Ibid.)

"M. Albert repeatedly noticed an eruption of lenticular papillæ, of a red color. * * * In one case it extended to the mucous membrane of the mouth, pharynx, nose and eyes."—(Med. Chirurg. Review, vol. xviii., p. 466.)

"In the progress of the fever, the tongue becomes black, and sordes accumulate on the teeth; the intellect torpid, though still the patient can be roused, but the moment conversation ceases, the eyes are turned up in the orbit, exposing,

"In sudden and violent cases, the vomiting and purging are attended with the usual signs of exhaustion; quick, small pulse; coolness or coldness, with paleness of the surface, altered countenance, extreme languor, &c."—(Dr. Meigs.)

"The mouth is usually warm, and the tongue moist at first, and coated with a whitish, yellowish, or brownish-yellow fur."—(Ibid.)

"Simultaneously with the emaciation and œdema, aphthæ often appear on the tongue, cheeks, gums, roof of the mouth, and pharynx."—(Ibid.)

"Apthæ finally appear on the tongue and inside of the cheeks."—(Dr. Eberle.)

"Petechiæ sometimes make their appearance on the skin."—(Meigs.)

"Towards the fatal conclusion spots of effused blood under the cuticle sometimes appear on various parts of the body."—(Eberle.)

"Petechiæ occasionally appear on the surface of the body, and a small vesicular eruption on the breast; the skin sometimes assumes a dull, dirty hue, and the

quick and small, but particularly unequal."—(p. 329.)

"Hemorrhage is often profuse, cannot easily be restrained, and is accompanied with anasarcous swellings.

"Rapid erosion or ulceration of the blood-vessels and discharge of blood, often accompanied with diarrhœa or dysentery.'—(Dr. Good.)

"The urine is scanty and high colored. The pulse is generally small, feeble and slow; and the skin below the healthy temperature; but cases occur in which the pulse becomes very frequent, and the surface febrile.

"Throughout the complaint, the tongue is usually clean and moist.

"Great emaciation usually attends the disease."—(Dr. Wood.)

"The purple eruption, for the most part, appears first on the legs, and afterwards, at irregular periods, on the thighs, arms and trunk of the body.

"The spots are frequent on the interior of the mouth, and particularly the tonsils, where they are sometimes raised or papillated. It is here the first hemorrhage usually issues, though, as the disease advances, blood also flows from the nostrils, lungs, stomach, intestines and uterus, all

through the half closed eyelids the red selerotica, and the patient is in a profound stupor."—(Dr. Brown.)

"Pneumonia, bronchitis and pleurisy, also, not unfrequently occur; but the most dangerous affection in this stage of cholera, is perhaps that of the brain, characterized by severe headache, drowsiness, low delirium, stupor, coma, subsultus tendinum, and sometimes by convulsions or paralysis.

"Intelligence is sometimes retained till within a few moments of the close.

"The dejections are of a whitish color, thin and watery, resembling rennet whey, thin gruel, or rice water; and when allowed to stand, separate into a colorless fluid and a white floculent insoluble matter, which subsides. They are sometimes tinged with bile, and a little blood is occasionally discharged.

"In some instances they are brown, or of a deep chocolate color.

"The matter vomited is generally similar to the stools.

"The insoluble matter consists mainly of epithelial cells. The clear liquid is water, holding a very small proportion of saline and organic substances in solution."—(Dr. Wood.)

conjunctiva appears blood-shot."—(Dr. Wood.)

"The little patient at last lies in a comatose and insensible state, with the eyelids half open and the globe of the eye turned up so as to completely hide the cornea."—(Dr. Eberle.

"The fatal event is almost always precede l by symptoms indicating violent disease of the brain. These are drowsiness, passing into stupor and coma * * convulsions, either general or local, which are followed by rigidity or paralysis of some of the limbs."—(Dr. Meigs.)

"At first, the discharges from the bowels usually consist of a turbid, frothy fluid, mixed with small portions of green bile; or of a nearly colorless water, containing small floculi of mucous." [Are not these epithelial cells?]—(Dr. Eberle.)

"The evacuations are for the most part thin and copious, sometimes colorless, but usually tinged green, yellow or brown —and not unfrequently deep green, * * not unfrequently tinged with blood. At an advanced period, they are often copious and dark colored or reddish, like the washings of putrifying flesh."—(Dr. Wood.)

of which organs, together with the heart, are sometimes found studded with spots on their surface, on examination after death."—(Dr. Good.)

"Along with the prostration of the vital powers, there is often displayed a strong tendency to local congestions of a low inflammatory character, attended with the effusion of blood or fibrin.

"These congestions and effusions may take place in the substance of the lungs, simulating pneumonia, in the cavities of the pleura, and pericardium, giving rise to dyspnœa and fatal oppression; within the cranium, producing drowsiness, coma, and apoplexy.

"The patient often retains full possession of his senses and intellect to the close."—(Dr. Wood.)

"Generally, scorbutic persons are inclinable to loose stools, at times, which in all are remarkably fœtid."—(Lind, p. 114.)

"Diarrhœa also, not unfrequently intervenes, with black, or bloody and offensive evacuations.

"Serous effusion, also, frequently takes place in tothe cellular tissue and closed cavities, and is sometimes so copious as to amount to a general dropsy."—(Wood.)

CHOLERA.

"Forty-eight hours is the mean duration of the diarrhea.

"The mean duration of the choleric stage varies from eight to twelve hours.

"After the patient has remained in the the collapsed state for a variable period, perhaps for a couple of days, &c.

"The duration of such a febrile stage as we have described, is from a week to ten days, [fourteen days all told.]

"Convalescence is in many cases tedious; * * * * slight irregularities of diet produce relapse—one example after two months; patient had remained feeble."—(Dr. Brown.)

The mortality in the different ages and sexes was as follows, in Paris, in 1832:

Under 5 years of age,	24	in	1,000.		
5 to 15	"	"	5	"	"
15 to 30	"	"	10	"	"
30 to 60	"	"	27	"	"
60 to 100	"	"	63	"	"
Men of all ages,	21	"	"		
Women "	22	"	"		

In the suburbs of Paris, the mortality of women was *one fifth* greater than of men.—(Paris Report.)

Total mortality in New York, from 1832 to 1853 inclusive, 12,044.—(Semi-Centennial Report.)

CHOLERA INFANTUM.

"The duration of cholera infantum is exceedingly uncertain. * * It often continues for weeks, or even for months. It is not uncommon for a child to be seized with the disease in June, and continue more or less sick until the following October, or November; and in some few instances, it continues to have diarrhœa the greater part of the winter. The The attack is very apt to last two or three weeks, until some change in the weather occurs, or the residence of the child is changed."—(Dr. Meigs.)

Mortality in Paris, 24 in 1,000.

Total mortality in New York, in 1849, 926.

Total mortality in New York in fifty years, 13,352.

SCURVY.

"It has no regular or stated termination. Dr. Willan has found it run on in different cases, from fourteen days to a twelvemonth and upwards.

"It is met with at every period of life, but chiefly affects persons of a weak and delicate habit, often children, principally women.

"If women affected with it be wet-nurses, their infants participate in the disease, from the milk not being sufficiently nutritious."—(Dr. Good.)

"No age is exempt from its attack—which; though severest with old people, yet was more incident to those of middle age."

REMARKS.

A momentary comparison of the symptoms reveals that, according to reputable authorities, and, I may add, the general sense of the profession, the pathognomonic symptom of *developed* Cholera is *hemorrhage:* diarrhœa, vomiting, collapse, sudden death, or low, febrile reaction, being resultant phenomena. The *cause* of the hemorrhage is rationally explained in the fragility of the solids, from a want of the elements in the fluids, which M. Broussais affirms constitutes the essential nature of Scurvy—"defect of nutrition," in other words. Who doubts it? Again, the pathognomonic symptom of *developed* Cholera Infantum is *hemorrhage*: the invasion of the disease by watery diarrhœa, then vomiting, collapse, sudden death or febrile effort, too plainly proves the fact to admit of its refutation; and here, again, the whole matter is explained by the latent scorbutic diathesis having been inlaid from "the milk not being sufficiently nutritious," as Dr. Good says, or a "defect of nutrition" from "imperfect assimilation," as M. Broussais declares.

And once more, *hemorrhage* is, and ever has been, so associated with scurvy, that the species, *purpura hemorrhagica*, or land scurvy, has received its specific name from this, the most prominent symptom under a full development of the disease. What more can be said, then, of Cholera and Cholera Infantum than that they are modified forms of *land scurvy*? nothing, it appears to me.

This conclusion, however, may, probably, be opposed by many at first. There are numerous physicians, and some of more than middling pretensions, who take as circumscribed a view of scurvy as they do of a pleurisy. They believe it to be a uniform disease in its characteristics of lingering debility and tumefied gums, and that there is nothing more of it; having derived their only knowledge of it from the meagre descriptions contained in modern standard works on practice. Although they may have practiced medicine twenty, or even forty years, they have never seen a case of scurvy, so they say, and yet have blindly treated numerous cases of it,

in nursing women especially—that form of it called "*nursing sore mouth*"—and in their infants also, that form of it called *Cholera Infantum*—many of whom "participate in the disease from the milk not being sufficiently nutritious." Yet, these *competent judges* hesitate not to decide at once that my views are erroneous! They even *ridicule* the idea that Cholera and Cholera Infantum are of scorbutic character. Nevertheless, I esteem all *such* opposition as negative proof that my views are tenable and true.

The Protean manifestations of scurvy will have to be studied afresh, the old authors revived, and new researches made in the directions I have indicated, by *Commissions*, of physicians distinguished for their high attainments in practical medicine, and my views reported on before the unbelieving Thomases of the profession will be satisfied. The appointment of such commissions by the Academies of Medicine in all countries, I most respectfully solicit. I desire them formally to consider the new views I have offered, and to report on the same. The interests of humanity demand it without delay, the cause of medical science also. If a learned Commission of physicians in London could gravely consider, test, and issue a report on the alledged efficacy of castor oil, as a remedy in Cholera, surely I may hope for the like respect being paid my papers by the Academies and Institutes of Medicine in all countries without further solicitation. There is no Government but what is deeply interested in this matter, and no Commission, Governmental or otherwise could so far compromise its honor as to report erroneously: any commission must report the truth, or assume the responsibility of casting its decision on the side of error, which would be an unfortunate affair for its members, as truth cannot long lie extinguished.

CHOLERA.

"The venous system is distended, especially the large veins and right side of the heart, which is gorged with a black, viscid, imperfectly coagulated blood.

"Almost all parts of the body, the brain and spinal marrow, the substance of the heart, the abdominal viscera, the limbs, even the spongy substance of the bones, exhibit signs of venous injection; and large echymoses are frequently found in all the parenchymatous glands.

"The mucous membrane throughout nearly its whole extent, is more or less reddened, and the parieties of the bowels are somewhat thickened by this venous injection. Patches of ecchymoses are also frequent in their coats. In many cases an eruption of minute semi-transparent vessicles has been noticed, very closely arranged, and extending from the duodenum to the illio-cæcal valve, and even into the colon, a mere elevation by a serous fluid of the epithelium.

"The whole alimentary canal is distended with the same whitish liquid of which the evacuations consist, often mixed with a dark reddish or chocolate colored liquid, which probably owes ite color to effused blood.

CHOLERA INFANTUM.

"According to Dr. Condie, if death take place early, an unusual paleness of the mucous coat and more or less hepatic congestion are often the only morbid appearances discoverable; but Dr. Hallowel states that there is undue developement of the follicles of the stomach and intestines, or of one of those organs, without inflammation of the mucous membrane.

"At a more advanced stage there is generally some indication of inflamation; the mucous membrane of the stomach and bowels exhibits more or less redness in points and patches, and an increased development of the glandular follicles.

"Dr. W. E. Horner found the mucous follicles in great numbers enlarged, and even ulcerated, both in the small and large intestines.

"The gastric mucous membrane is sometimes very soft, so as readily to be scraped off by the nail.

SCURVY.

"The most characteristic phenomenon revealed by dissection is the presence of extravasated blood, in greater or less amount in various parts of the body. The purple spots on the skin are nothing more than so many ecchymoses in its substance.

"Similar purple or blackish stains are observed in the mucous and peritonæal coats of the bowels, and the mucous coat is often stained with effused blood.

"Clots of extravasated blood or colored fibrin are often found in the cellular tissue, the substance of the muscles between the periostium and bones, and occasionally in the serous cavities.

"Coagula of blood or of fibrin are found in the cavities of the heart, and thin liquid blood in the great veins.

CHOLERA.	CHOLERA INFANTUM.	SCURVY.
"The lungs are sometimes edematous.	"Dark livid or purple spots have been observed upon the exterior surface of the stomach and duodenum.	"Serous effusion, transparent or colored with blood, is also found in the cellular tissue, the serous cavities and parenchyma of organs, especially the lungs.
"In death, after reaction, the rice water contents of the bowels give place to bilious and bloody fluids. Instead of the dark shade of venous congestion, there is now the vivid redness of an unequivocal inflammation in the alimentary mucous membrane, which is also sometimes softened or otherwise changed, and the mucous follicles exhibit marks of incipient ulceration.	"The bowels usually contain green yellowish or colorless mucous.	"When not colored by effused blood, the muscles and mucous membranes are pale.
"Lesions in the various nervous centres and their investing membranes, such as might be expected from the symptoms during life, and not unfrequently decided evidences of inflammation of the lungs are observed."—(Dr. Wood.)	"In cases which have exhibited hydrocephalic symptoms before death, the brain is either generally or partially softened.	"Though generally free from bloody extravasation, the ventricles of the brain frequently contain considerable quantities of serum."—(Dr. Wood.)
"In consequence of the intestinal exhalation the mucous membrane swells, and resembles a very fine porous seive, This membrane is tumified, spongy, &c." —(M. M. Girardin and Gaimard's Report on Cholera in Russia and Prussia; Paris, 1832 ; p. 134.)	"Serous effusions in the ventricles or upon the surface, and thickening and opacity of the arachnoid have been observed."—(Dr. Wood.)	The minute morbid anatomy of the gastro-intestinal mucous membrane has not been studied in scurvy by modern scrutiny, that I am aware of.

Remarks.—It is very apparent, then, from the anatomical characters, that the morbid condition in these supposed three diseases, is essentially the same. The sponginess and fragility of the solids, and the escape from the vessels of the fluids, are the striking characteristics.

CHOLERA.

"The most remarkable and obvious change is the singular increase of the proportion of the solid matters to the watery portion:

"Mean proportions,	Water,	630.0	
	Solid Matters,	370.0	
		1000.0	

"I have not detected any considerable changes in the fibrin, albumen and coloring matter.

"The relative diminution of the alkaline carbonates is always appreciable, sometimes indeed to such a degree, that they can with difficulty be detected; and since these salts, as well as albumen and extractive matter, which has been compared to osmazome, are found in the stools, we may fairly attribute the increased thickness of the blood to the draining of the serous part by the intestines.

"The fibrinous portion was not found defective.—(M. De Canu, Medico Chirurg. Rev., vol. xviii., p. 515.)

CHOLERA INFANTUM.

I am not aware of there having been any analysis of the blood of infant subjects in cholera.

Healthy Blood,	Water,	788.8	
	Solid Matters,	211.2	
—(Busk.)		1000.0	

SCURVY.

"Mean proportions,	Water,	844.0	
	Solid Matters,	156.0	
—(Busk.)		1000.0	

"In relation to the organic constituents of the blood, it appears from a comparison of the analyses most to be relied on, that upon an average, the proportion of albumen is about as in health; that of fibrin slightly increased, and that of the red corpuscles greatly diminished.

"Some interesting experiments have been made by Dr. Garrod, of London, which direct attention to *potassa* as the ingredient of the blood, a deficiency of which may be the characteristic pathological condition of scurvy.

"Dr. Garrod found that the blood of a scorbutic patient, examined by himself, contained a much smaller proportion of potassa than healthy blood.—(Dr. Wood.)

REMARKS.

The relative diminution, from the normal standard, of the serum to the clot, is then, the most striking fact in regard to the blood in Cholera; and its relative superabundance, the same in scurvy. Now it is plain, that if the hemorrhagic law in scorbutus goes into effect, and the serum leaks through the seive-like porous membrane of the bowels, the morbid state of the blood will be reduced to that in which it is found in Cholera.

The longer a case of scurvy has run, and the more prostrate the patient, the thinner the blood; the choleric, as well as other scorbutic hemorrhage, is often set up in persons supposed to be well, who have labored but a short time, perhaps, under the scorbutic diathesis: and thus, analyses of the blood in Cholera and scurvy must vary more or less, as the blood will vary in the different stages of the same disease.

The soluble salts of the blood in Cholera are, of course, lessened, being carried off in the serum discharged by stool. They are generally in excess in scurvy, because held in solution in the superabundant serum present; but, according to Simon, the excess is owing to the *detritus* of the solids in the road of excretion, as is also the excess of fibrin—the more rational view. Hence, acids are useful or remedial, from their chemical reactions on the worn out detritus, or basic principles in the blood, as well as by their styptic action on the solids, antiseptic virtues, and power of facilitating the excretion of effete matters by urine, &c.

Whoever, then, can unbiasedly examine the above collated phenomena of the supposed three distinct diseases and not discover the same great, leading pathological condition in all, a dreadful lesion of nutrition, arising from the same general cause, defective alimentation, or assimilation; involving the same classes of subjects, viz: the poorly fed, the fragile, the very young, the very old, the weaker sex, &c.; must be constituted for a keener perception of differences than of analogies; must have a relish for nosology, and a distaste for philosophy; must be a lover of the marvellous,

the hypothetical, and the obscure, rather than the plain, rational, and truthful; at least, so it appears to me, for who does not see the great leading feature to be *hemorrhage* in all three of the supposed distinct diseases? no matter whether white, red, black, or blue, be the blood that is exhaled or infiltrated. No matter from what tissue it escape, it is, after all, but the sign manual of *scorbutus*. No matter whether vomited, purged, spit, micturated, coughed, sneezed, or otherwise liberated, the principle is the same, the pathology the same. Who does not see the same overwhelming, great, and sudden law of *collapse* claiming Cholera and Cholera Infantum to be, unmistakeably of scorbutic character? Who does not see the solids vanishing into thin air; the softening and disintegration of all the tissues; the ramollissement of the brain; the sponginess and porosity of the mucous membranes, and consequent leakage; the same of the dermoid tissues, and consequent petechial ecchymoses; the same softening of, and infiltration in, parenchymatous structures —in a word, the impoverished blood, and the all but sphacelating solids; with such feeble reaction as the starved powers of life are able to manifest? And who so blind as not to see that, the acids which congulate albumen, harden the tissues, and by their chemical reactions promote excretion, are the rational therapeutic remedies, aided by tonics, astringents, vinous stimulants, and the concentrated elements of a wholesome nutrition?

EVIDENCES DERIVED FROM THERAPEUTICS.

The evidences derived from the administration of remedies are numerous. They might be made to embrace a lengthy analysis of cases, running through a series of twenty years; but as this essay is already extended to a greater length than was designed in the outset, and more especially as I dislike to detail cases, possessing as they do generally, much similarity, I will but succinctly elaborate this head, barely sufficient to show with clearness the testimony derived from

treatment of the correctness of the great truths I have enunciated. Happily I will be greatly aided in this branch of my subject by second testimony, drawn from the cases of British practitioners, which will have more weight than self-attested cases; still, I will present a few cases of my own as types, and give an outline of the treatment that has proved successful in scores of others, if not hundreds, all told, of all degrees and shades of ailment in the same category.

It matters not to me whether a condition of system pathologically calling for medical aid manifests itself by symptoms called Cholera, Cholera Infantum, or Puerperal Anæmia, or Hydrocephalus, or any other name derived from the most striking or prominent symptoms present; so that upon a careful review of all the circumstances attendant upon the history and aspects of the case, I judge defective alimentation to lie at the bottom of it, or want of power of assimulation, and hence impaired nutrition; or if I discover the system is robbed of nutrition from nursing or diarrhœa, or other exhausting discharges, I hesitate not to consider it a case involving a scorbutic condition of the system or a lesion of nutrition, and treat it accordingly: and the sucessful results that have attended this practice through a long series of years, particularly in that form of disease called in this country the Nursing Sore Mouth, or Puerperal Anæmia, which I have elsewhere shown to be Scurvy not recognised, and in the infants participating in this disease from the milk not being sufficiently nutritious, the affection in them taking on the form of Cholera Infantum—the successful results, I say, of twenty years' practice in the treatment of a goodly number of such cases with anti-scorbutics, as lemonade, orangeade, vinegarade, punch, vegetable food and fruits, beefsteak-gravy with currant jelly, nutritious soups, highly nutritious cow's milk, &c., settles the matter in my mind; with me it is knowledge gained by experience, that Cholera Infantum is Infantile Scurvy, however unable I may be to communicate this knowledge to others.

The medical mind of the age, I fear, is too intent on particularizing or studying secondary lesions and trifling differ-

ences in symptoms, splitting hairs, or too little disposed to generalize by ascending to the primary pathological conditions in the diagnosis of disease. The practitioner in a malarious district, so called, is forced into generalization, for he finds himself unable to cure maladies, both local and constitutional, with the ordinary or routine remedies. The Opthalmias, the Diarrhœas, the Cholera Morbuses, the Rheumatisms, the Gastralgias, the Dysenteries, the Ulcers, the Neuralgias, the Puerperal Fevers, even, and many other forms of disease that could be mentioned, only yield to the great and unaccountable influence of quinine. He is mostly self-taught in this school of experience, however. To be sure he has heard of *masked agues*, but he always supposed there were some features uncovered, some trace of the form, shape or outline of an ague to be seen, by which he would know it to be a masked ague. But no, he only learns to suspect the difficulty when the commonly used medicines fail, and only finds it out *positively* by the proofs of treatment, the successful administration of quinine.

Just so it is in scorbutus; and as a writer on scurvy, whose views are given by Lind, observes, it comes in all manner of forms—such as, "a looseness or costiveness of the belly—a bastard dysentery, the blood unmixed with the fœces—fainting fits—difficulty of breathing—a bastard pluerisy—atrophy—erysipelas—pestilential fevers—intermittent fevers—madness—a profound sleeping—a salivation—a languor without any evident cause—copious sweats—a tossing or concussion of the limbs, being a mixture of a paralytic and convulsive disorder;" or as described in Lord Anson's Reports: "this disease is surely the most singular and unaccountable of any that effects the human body. Its symptoms are inconstant and innumerable, and its progress and effects extremely irregular; for scarcely any two persons have the same complaints, and when there hath been found some conformity in the symptoms, the order of their appearance hath been totally different. It frequently puts on the form of many other diseases. * * * It is not easy to complete the long roll of

the various concomitants of this disease; for it often produced *putrid fevers*, pleurisies, the jaundice, and violent rheumatic pains." And the proof of this is, that nothing but anti-scorbutic treatment will cure.

I have somewhere seen it stated by a respectable medical writer that a case of scurvy fell under Dr. Elliottson's care, where a former attendant had extracted several of the patient's teeth, and a still more distinguised practitioner had pronounced it a case of *fungous hematodes* of the gums! and I have verily seen a whole medical society of respectable, if not extraordinary attainments, nonplussed and divided in sentiment as to the cause of death of an esteemed medical brother who had died by inches with an anomalous disease that I should have called scurvy, all having been anxious bed-side observers, and the post-mortem appearances carefully reported—some said typhus fever, some one thing and some another, but no one, however, hinted that it was scurvy.

The view taken by some that Cholera Infantum is a malarious disease, shows a leaning towards generalization to be sure, yet unfortunately it throws the etiology upon the baseless fabric of an hypothesis; but if intermittent fever is one form of scorbutus, as above quoted from an old writer in Lind, (which I neither affirm nor deny) a ready explanation is found of the methodus medendi of quinine and all that class of vegetable alkaloids, and their salts—they act anti-scorbutically; just as potash and soda and their salts act, and other vegetable organic principles, acids, etc., quinine being captain of the host.—They restore lost elements to the blood, and by their chemical reactions and impressions on the nervous system facilitate the excretion of effete matters by the kidnies, skin, etc.

Case 1.—A young mother laboring under the nursing sore mouth, *alias* land scurvy, having an infant some five or six months old laboring under Cholera Infantum, fell under my care in December last, (1854) after a summer of uncommon heat and drought, a general blight in vegetation, and an unusual scarcity of vegetables and fruits, the stinted supply

commanding the most exorbitant prices, quite beyond the reach of the poor. The family was so destitute that when I was called it was supported wholly by charity. The heads of the family were foreigners. The father could get no work, and the starved mother was exhaustd by diarrhœa and bloody flux, which had alternately held her since July, soon after the birth of the starveling infant that had now exhausted the last drops from her withered breasts—lactation was totally suppressed. The mother was cosidered at death's door, and had received the last sacraments of the church preparatory to her dissolution, the day I was requested for God's sake to attend to her and the miserable specimen of humanity in the shape of the infant.

The symptoms of both mother and child, so nearly coincided in all essential particulars, that a description of the phenomena in one will answer nearly equally well for the other. Vomiting more or less every day in the mother's case—this symptom had now subsided in the child—purging in both to the number of eight or ten evacuations a day—exhaustation—palor—cool, corrugated, skin in both, with numerous inflamed patches and papilla in the infant—feeble remittent reaction in the infant, intermittent and of the tertion type in the mother—hyperæmia of the gums, fauces, and arches of the palate especially, with ulcerations of portions or patches of the buccal mucous surfaces—mouths moist, even to profuse salivation in the mother—tongues red and sore at the tips, and the mother's very sore, aphthous, and chopped along its edges—piles and prolapsus ani in mother, excoriated anus in the infant—dreadful bearing down and painful condition referred to the womb, in the mother—great and overwhelming epigastric distress in the mother—fainting even to swooning in the mother, on several occasions—pain and dreadfully distressing noises in the head in the mother—lethargic dullness and sleepiness amounting to sub-coma in both—great emaciation in both, but more remarkable in the mother—a few petechiæ of the ecchymosed kind on the limbs and back of the mother, and large ecchymoses on the sacrum,

none of this kind of petechiæ, or spots of purpura, on the infant, but hundreds of papillated or urticated petechiæ, that is, a kind of nettle-rash or blotchy eruption resembling musquito bites, popularly called "hives," and characterized by intolerable itching. Successive crops of these wheals surrounded by a crimson efflorescence, having their itching period of a day or two, then declining and giving place to another crop somewhere else, are among the most common phenomena of Cholera Infantum, and yet this eruption has not generally been noticed or spoken of by authors; only the lenticular petechiæ or dermoid ecchymoses that precede death. The dejections of both mother and infant varied, being sometimes yeasty, at other times watery and greenish, or pasty and chocolate colored, and *extremely* fœtid, as all authors agree is ever the case in Cholera Infantum; and Lind says, "scorbutic persons are inclinable to loose stools, which in all are *remarkably* fœtid." Appetite remaining in both mother and infant, without the power of digestion; even boiled milk would pass the bowels in a half curdled state in the infant, and yeasty and foaming in the mother's case.

Now the indications in these cases appeared to me to be the same, for I could really trace no difference in the true cause and essential nature of those ailments. Partial star vation was evidently the primary or remote cause, a want of the elements of nutrition, and a collapse of the powers of life was the consequence. The symptoms were but so many voices declaring this, declaring the difficulty to be scorbutus. The scorbutic type of fever, the scorbutic fœtid diarrhoea, the scorbutic tendency to disintegration of the tissues, the scorbutic appetite; and the objective signs but echoed these wailings. The palor of countenance, the great emaciation, hyperæmia of the tissues of the mouth, the urticated crimson efflorescence, petechiæ, and ecchymoses of the skin, all spoke the same language; there was no confusion of tones. The indications therefore, I say were plain, viz.;to quiet the irritability of the stomach and bowels, and supply whole-

some nutrition, with suitable tonics and stimulants to aid digestion and assimilation. Dr. Rush and other authors speak of this condition in Cholera Infantum—appetite with but the feeblest powers of digestion, which should be expected in a starved scorbutic condition of the system. Dr. Rush, and others too, have not only recorded the natural pantomime of this condition in Cholera Infantum, cravings for food, even solid hearty food, and gravies of the richest quality and highest flavor; but they have also left the record that a reasonable indulgence or gratification of these longings was not detrimental, not injurious, but seemed to favor recovery. What proofs could be adduced more emphatically corroborating my views of the scorbutic nature of the disease? I have already spoken of the natural pantomime cravings for fruits evinced by infants, and which all practitioners—without much philosophical reflection I must conclude—assume must not be Indulged in Cholera Infantum, must not be gratified in any stage of the affection. How unnatural! My own convictions are,that if all breeding and nursing women could have plenty and variety of good animal and vegetable food;were enjoined to indulge in the free use of oranges, lemons, apples, and all kinds of fruits, jellies, pickles and salads; and infants at the breast were allowed, in addition to the rich vegetable milk emulsion which such a dietary on the part of the mothers would afford them, to suck oranges and roasted apples, and to have lemonade, vinegarade, &c. as freely as their pantomime inclinations seem to demand, and this course adopted early and persisted in through infancy and early childhood, Cholera Infantum would be nearly banished from the catalogue of human diseases.

Conversing on this subject the other day, with a prominent physician of this city, he observed in confirmation of my views, that he had known an instance of a child being cured of Cholera Infantum by eating freely of ripe currants. Blackberry jelly and cordial are popular remedies. The difficulty lies in the too great abstinence, either from necessity, as after blights, or by medical direction, for a long time, as

through the winter and spring; under which circumstances a free indulgence, on the summer opening, might prove mischievous. Lind says, that "summer vegetables and fruits, generally upon first using, open the bowels, promote urine plentifully, and restore perspiration; but if voraciously eat, induce a dangerous flux of the belly"; and that, "after a long abstinence from greens and fruits, scorbutic persons should be treated like one almost starved to death; that is, not permitted for a few days to eat voraciously, or surfeit themselves with them; otherwise they are apt to fall into a dysentery which often proves mortal." The popular belief, therefore, that summer vegetables and fruits induce Cholera and Cholera Infantum, and also the injunctions of physicians to abstain from their use, is founded partly in truth; but the *main* truth in the argument, that which gives it all its force, the scorbutic predisposition of the system, is left out of the proposition. In infancy and childhood, during the most rapid growth, there is the greatest need of all the salts of the mineral bases that enter into the fabric of the human system, such as lime for the bones, potash for the muscles, &c., &c., &c., of which I have sufficiently spoken, and which are *only* elaborated in the juices of vegetables and fruits, and the *want* of which is probably the cause of the pantomine longings and cravings for fruits in Cholera Infantum. The same pantomine longings and cravings exist in Scorbutus, proving the identity of the supposed two affections: the true pathology, most probably, is the want of fresh supplies of all the organic salts of the blood. The blood-thirsty carniverous animal protects itself from Scurvy by the salts in the blood of its victims, while the herbiverous animals are protected through the salts in vegetation, and omniverous man has both sources before him. The natural pantomine of the blood-thirsty carniverous animal, that often kills only to suck the blood, proves this view. But to return from this digression.

Fortunately this poor, distressed family was under the care of the Benevolent Relief Society, and whatever was ordered

by me was supplied. I prescribed for both mother and infant, as follows:

℞. Tr. Rhei Comp.
Tr. Catechui
Mucilage Acaciae
Syr. Simpl. a a ℥ i.
Morph. Acetat. gr j.
Sodae Bicarb.
Ammon. Carb., a a ℈ j. M.

Of this mixture the mother was ordered a teaspoonful, in a small draught of good brandy toddy, every three hours; and the infant forty drops, in a teaspoonful or two of the same, at the same intervals. I have found this mixture to answer the purpose of quieting the irritability of the stomach and bowels, arresting vomiting and purging, and correcting the green and fœtid passages in so many cases, that I often rest the fulfilment of the first indication on its administration alone, in Cholera Infantum; particularly when the infant is still at the breast, and I can thus be sure of conveying lemon juice and other anti-scorbutics, to the little sufferer, through the medium of its mother's milk, by enjoining upon her an ample anti-scorbutic dietary, and strengthening her digestion with quinine and good punch daily. This mixture is well adapted to the therapeutics of infants and children, in not being repulsive to the taste, but, on the contrary, agreeable; they universally like its flavor, and not unfrequently cry for more, after quaffing each dose.

The dose and intervals of its administration are, of course, to be regulated by the urgency of the symptoms, bearing in mind that there is one fourth of a grain of morphine in every ounce, and that while vomiting is present there is but imperfect absorption. To adults, I have frequently given half an ounce, in an ounce of toddy or sweetened water, and repeated it after each recurrence of vomiting, till the four ounces were taken, and that in the space of an hour; and have had the happiness, generally, of seeing it succeed in perfectly overcoming the irritability of the stomach and bowels. For

infants and children, from twenty or thirty to fifty or sixty drops, and even to a teaspoonful, according to age, sufficiently diluted with sweetened water, repeated in like manner in urgent cases, is the preferable mode of administration. In protracted cases, a suitable dose, according to age, every three or four hours, so as to keep up a constant impression of this quieting, astringent, and stimulating anti-scorbutic mixture, is the best mode of administration, and seldom fails to overcome the irritability of the stomach and control the diarrhœa, in two or three days at farthest. In addition to the above prescription, I made the following:

℞	Pulv. Acid. Citric.	℥j
	Quiniae Disulph.	gr. xvi,
	Morphiae Sulph.,	gr. ij,
	Spit. Vin. Gal. opt.	Oij-M.

Of this mixture the mother was ordered a table-spoonful, in two or three table-spoonfuls of hot water, sweetened generously with loaf sugar, three times a day, at noon, at evening, and at bed-time. The stomach is in general too sensitive to the impression of stimulants in the morning. The infant was ordered a small tea-spoonful prepared in the same manner, sufficiently diluted with hot water sweetened, and to be taken at the same intervals and hours of the day. The indications to be fulfilled by this are obvious.

The mother was ordered the best of fresh beef, and potato soup well seasoned with table salt and Cayenne pepper, and of good wheat bread, toasted and crumbed in, a little; also as an alternating dish, choice Irish potatoes, boiled, mashed in the pot, and well seasoned, to be eaten in boiled milk as spoon victuals. This dietary to be but sparingly partaken of at first, treating the patient in this respect as a starveling should be treated.

The infant was ordered to be provided with a bottle and india-rubber nipple, and the undiluted milk of a fresh young cow, this to be boiled and suitably sweetened with loaf sugar, and five grains of bicarbonate of soda to be added to each pint. Of this the infant was to partake sparingly at

first, and the allowance increased as the stomach should be found able to appropriate it.

In three days' time the irritability of the stomach and bowels was mostly overcome in both, and before the end of the week the alvine discharges were nearly natural, and both mother and infant were able to digest at least half rations. At the end of three weeks both were not merely convalescent, but I may say well, and rapidly improving in flesh.

I should have mentioned that the mother was supposed by the benevolent ladies to be in the last stage of consumption, owing to a distressing cough, difficulty of breathing, pains in the chest, and abundant expectoration, which seemed to them to constitute the most formidable ailments in the case.

With regard to the use of brandy as a remedy in this affection, (made the menstruum in the foregoing prescription,) I deem it not only admissable in all stages of the disease, but very remedial and salutary in its operation. Its power to harden delicate tissues and restrain excretion is familiar to all, as well as its cardiaco-vascular power, and it affords a resource and a reliance, therefore, of vast importance in urgent cases, unfavorable changes and relapses. On the second day of my attendance on the above cases, the mother had a sinking, fainting, or swooning fit, it being the day of apyrexia in her case, and I gave her during the day, with the happiest effects, half-a-pint of the best brandy. A salutary perspiration ensued that night, and an evident mitigation of all the urgent symptoms. Champaigne wine is an excellent adjuvant remedy, and may be allowed infants freely. Soda powders are very remedial, and particularly grateful, or what is of easier administration to infants, small vials of fountain soda water, with a grain of bicarbonate of soda to the ounce added, and kept cold with ice: they will often quaff it from the vial. The happy effect of carbonic acid on morbidly sentient mucous surfaces is well known.

Case 2.—The history of this case discloses the condition of another family that fell under my care in August last,

(1854,) a native family, and in the higher walks of life—a rather wealthy family. The mother was a pale lady, aet. about 38, constitutionally enfeebled by breeding, and care-worn during the hot summer from unceasing devotion to her sick infant and the melancholy fact that the father was becoming insane! Pale and haggard and wholly incapacitated for business, and laboring under a melancholy madness, he was despatched to an insane asylum, early in August. The infant at the breast, some nine or ten months old, had Cholera Infantum in an agravated form, then in the chronic stage, or of six weeks standing, and besides the incessant wearing affection of the bowels, its head and shrunk neck were covered with a sheet of angry indolent biles, neither disposed to suppurate nor to heal. At length convulsions set in, when my medical attendance in the family commenced, though I had been an observer of the family's condition for weeks before.

The infant was lying on its mother's lap, pale as a corpse, nearly pulseless, the extremities becoming cold, the discharges from the bowels copious, watery and fœtid, and vomiting and convulsions had supervened—a sudden relapse. I ordered artificial heat to the surface, and gave the infant, instanter, liberally of brandy toddy; dispatched a messenger with a prescription for the rhubarb mixture, and ordered half-a-teaspoonful to be given after each recurrence of vomiting, and when that should cease, at intervals of three hours. The vomiting soon ceased, the convulsions did not recur, and before evening (this was in the early part of the day) the diarrhœa was greatly controlled, and the aspects of the case were altogether changed for the better.

I then directed my attention to what I considered the root of the difficulty, the condition and dietary of the mother. She was evidently laboring under Puerperal Anæmia, or the Nursing Sore Mouth; her milk had nearly failed, and the infant was in that critical state, through the hot months, that often obtains, holding on to a diseased mother's scanty supply, alternated with the arrowroots and other feculas so much in vogue, but which are wholly destitute of those succulent prin-

ciples and soluable salts the blood needs. The mother was ordered a very nutritious diet, the best meats and vegetables the markets afforded, together with brandy punch and lemonade, as much as she could manage; especially she was enjoined not to stint herself in the use of brandy and lemons. She religiously followed directions, and in twenty-four hours the breasts responded with sensibly increased supplies of milk. In a week she had comparatively a flowing breast, began to regain her strength and color; and the infant immediately responded to this improved quality of its supplies; the diarrhœa soon ceased entirely; the biles began to fade away, and in ten days had disappeared altogether; and the infant rapidly regained its health without the administration of any other medicine than the rhubarb mixture; under precisely the same circumstances of heat, habitation, &c., it had sickened—without country air or going to the sea-shore. I should have observed that the infant was under the administration of blue pill, &c., when I was called in, which of course was discontinued, mercury, in my judgement, being generally contra indicated in this affection, certainly in the protracted stage of it. Concentrated nutrition is then imperiously demanded, and I have found roast beef gravy and currant jelly much more salutary. Kramer says, "The Scurvy is the most loathsome disease in nature, for which no cure is to be found in your medicine chest; beware of bleeding, *shun mercury*, but if you can get green vegetables, if you have oranges, lemons, or their pulp or juice preserved with sugar, so that you can make a lemonade, or rather give to the quantity of three or four ounces of their juice in whey, you will, without other assistance cure this dreadful evil." It has been urged against the scorbutic theory of Cholera that calomel is efficacious in this disease, but pernicious in Scurvy. Now it may be a good cholagogue purge in the first stage, when there is portal congestion, and a very injudicious drug in the latter stage, under prostration and ulceration; though the immediate good effect claimed, of large doses of calomel, seems more satisfactorily explained by the

stypticity of the chloride, and its mechanical obstruction to the oozing capillaries; just as we see its desicant effects in excoriations. It is not a quick purge, and if the good effect, the unloading of the portal system, were the mode of explaining the good operation of calomel, as we empty the uterus to arrest hemorrhage of that organ, castor oil would be the preferable purge. I have found a purge of calomel or blue pill an excellent first remedy in acute attacks of scurvy with great epigastric fullness and distress, and I have treated the same condition with cream of tartar and sulphur, with equally happy effects. Admitting the good effect of calomel in Cholera and Cholera Infantum then, does not militate against my views at all.

But the chapter of accidents is not yet fully told, pertaining to the history of this case. A brother of the infant, some fifteen years old, during the week I was in attendance, was taken suddenly one hot night, on retiring to bed, with an alarming hemorrhage from the lungs! He was thought to be in good health, no consumptive ailment had ever affected either branch of the family ancestry; he had no cough, save that caused by the hemorrhage; had suffered several attacks, however, of epistaxis, during the summer.

I regarded this case as strictly a scorbutic hemorrhage, and treated it accordingly, with rest, cream of tartar with a little powdered jalap, formed into an electuary, with lemon syrup as a purgative; lemonade as a drink; and potatoes and milk, and soups, as a dietary, with a free allowance of fruits. The hemorrhage recurred several times in the course of a week, and a pint of blood, perhaps, was coughed up in all. After the system became well saturated with succulent vegetable nutrition, there was no more hemorrhage, and no indisposition or bronchial difficulty was left, or has since supervened to this time, April, 1855. The only objective signs of Scorbutus, to be seen in this patient, were paleness of countenance and hyperæmia of the arches of the palate.

The above described infant's case illustrates the whole matter of Cholera Infantum, stomach, bowels and brain, and

also the rational treatment. It also illustrates its etiology. A mother worn down with domestic devotions—a model of a mother as ever I saw, in all the self-sacrificing duties to her offspring; a father whose sole object was business at the desk for twenty years; both were attenuated and enfeebled; and here was an offsping, begotten, bred, born and nourished from the breast under these untoward circumstances, during a year of intense heat, drought, blight and scarcity; and the cholera either fully epidemic or sub-epidemic in nearly every city in the Union.

One item more in the premises remains to be chronicled. Late in October, or about the first of November, the father returned to the bosom of his family, with the "*mens sana in corpore sano*," weighing some twenty pounds more than when he left home; evidencing the effect of change in his dietary, change of air, change of scene, change of everything, on a habit enfeebled by confinement to business; and found wife so plump that she might be considered rejuvenated; infant daughter so fat that her skin could hardly hold her, weighing all but double what she did in August; and son sound, active, and rejoicing in his strength.

Case 3.—In July last (1854,) Mrs. G——— was brought to bed under my attendance; and after all was over, and she was changed and comfortably disposed of in a clean bed, she took on a sinking fit, from which she seemed not likely to recover—not exactly fainting or syncope, for it was attended with consciousness and universal distress, moaning, jactitation and cramps. Brandy, laudanum, smelling salts, aspersion, rubbing, a rapid appliance of restoratives finally brought her out of the collapsing fit; the cause of which was revealed by the prominently objective signs of Scorbutus discoverable in the mouth. The like phenomenon after delivery was familiar to me, having seen it result in death in sundry instances. I visited her the next day, and left directions for her to have wine, and good support by way of food. I called again on the fourth day, and arrived just after she had sunk into another collapsing fit of great distress and imminent peril—

caused by a dose of castor oil she had taken of her own accord the evening before, following the pernicious custom she had been advised to pursue by her medical attendant in her previous accouchments. It had operated three times, and the shock had nearly killed her. Restoratives again brought her through. She was a delicate, feeble woman, and her husband a pale in-doors worker, a gunsmith. The children all bore the marks of their feeble parentage. The next older child than the infant just born—a little boy twenty months old—was laboring under a prolonged drag of Cholera Infantum, of more than a year's duration, from which he had only been respited a month or two during the previous winter season.

The diarrhœa was becoming more and more aggravated, and the little fellow was nearly thrown off his feet. He could totter about a while, but had to lie most of the time—five or six, some days eight or ten passages, of the peculiarly fœtid, watery kind—constant thirst—vomiting frequent—cutting the molar and bicuspid teeth—hungry as a bear all the time, and the food passed undigested—irregular fever—luxuriant crops of urticated, itching petechiæ with crimson areolas on the skin—tumid, tympanitic abdomen—prolapsus ani—pallid countenance—hyperæmia of the gums and all the linings of the mouth and fauces—the gums tumefied, in fact, and when pressed with the finger the returning blush was instantaneous—constant drivelling—emaciation not so remarkable as I would have expected from the mother's history of the case.

This child was treated with half-teaspoonful doses of the rhubarb mixture before spoken of, every four or six hours, given in good brandy toddy; lemonade, alternated with a weak solution of bicarbonate of soda, ad libitum, as the thirst demanded; and boiled milk and mashed potatoes, alternated with light bread, as a dietary. Under this course and regimen, the little fellow got on as if by magic, without any mercurials to "regulate the secretions," at all. The diarrhœa at once began to abate; the thirst to be diminished; the food to be digested; the strength restored: and in two

weeks the child was well—the scorbutic redness of the gums and slavering were nearly removed. The child was ordered roasted apples, tomatoes, stewed cherries, currants, &c., &c., freely, every day and every meal, and if diarrhœa ensued, the "red drops" to be given in brandy toddy, the amount of food diminished, and the soda and acid drinks resumed. There was no relapse; the gums became quite healthy-looking and natural, before any more teeth cut through, nor did I lance them in their swollen condition, as was my practice formerly. Now if any medical mind can see aught but Scurvy in the above assemblage of symptoms and physical signs, or if any one can deduce any other pathological condition from the effect of the remedies used, such mind has penetration beyond mine, and can make deductions that are beyond my ken or ingenuity; and if any one living, or the shade of Rush departed, will point out to me my error in diagnosis, if the case was not one of Cholera Infantum, I will acknowledge my stupidity and enter myself a pupil under his clinical instruction.

Case 4.—During the series of disastrous, blighting, sickly years, 1845–'46 and '47, before spoken of, it fell to my lot to attend a good many cases of Cholera Infantum in the city of Chicago, where I was then practicing. I select from my case-book one only as a type, for it would be tiresome to report them all; and I select this because it illustrates the comatose condition of the last stage of the affection, and the power of remedies over that condition, together with collateral evidences of the scorbutic nature of the malady, better and more clearly, perhaps, than any other one on my list. The case occurred in the hot summer of 1846. The child was in its third year, a little over two years old, a sprightly little girl, of native-born parents: but the mother was a victim of the Nursing Sore Mouth, and the father shiftless and slothful. They were poor, but the mother possessed what the father lacked, industry and good management, and so kept her five or six little ones neat and tidy; and really they

looked better kept than they were—they were better clothed than fed, I think, for I lay much to the charge of defective alimentation.

I will run over the evils that fell upon that family that year. The mother had the Nursing Sore Mouth, and the infant at the breast, some seven or eight months old, participated in the affection, and had a chronic fœtid diarrhœa. It was habitual with the mother; the disease had occurred in each of her three last pregnancies. The father grew more and more lazy and slothful, till about November, when he parted from his family, went home to his mother, and took to his bed with Scurvy; had an abcess in the calf of his leg that laid him up more than a year. The child next older than the infant is the case here related. The child next older, a little girl between four and five, was attacked in October with the hip disease, and lingered and died about a twelvemonth thereafter. The two older boys got on without any serious attack. The mother recovered under anti-scorbutic treatment, and the infant at the breast sucked itself well by reason of the punch and lemonade the mother took.

In September, the subject of this was attacked with an exhausting diarrhœa, of two days standing, that had completely prostrated her before I saw the case. Vomiting had supervened, and there was a strong tendency toward collapse and death, with all the concomitant symptoms seen in very urgent cases. Excessive thirst was present, and I ordered instanter a dozen or two ounce vials of fountain soda water, with three grains of bicarbonate of soda dissolved in each, and the vials kept cool with ice. Also, the rhubarb mixture before spoken of; and under the administration of these remedies, the vomiting ceased, but the diarrhœa was only partially controlled—at times there was much tenesmus and straining, and blood was discharged at the close of the evacuations, showing that the lower portion of the intestinal canal was much implicated. The stools were intolerably fœtid. Small powders of calomel and Dover's powder were

prescribed, in addition to the above remedies, and the case ran on for a week without much change in the symptoms, the child taking but little nutriment, and having from half a dozen to a dozen green, fœtid, watery, bloody stools, daily—tenesmus characterizing the close of each evacuation. Great feebleness, emaciation, and tendency to death marked the case. The powders were discontinued, and the rhubarb mixture relied on, with the lemonade and punch drinks the mother was using, and which the child evinced a liking for, when it refused all other drinks. This treatment, together with starch and laudanum injections, restrained the excretions to three or four only a day, but somnolency ensued, which at length amounted to complete coma, from which the child could not be roused. The child continued in this way two or three days, taking nothing by the mouth, and lying with its eyes half closed, the balls rolled up, and the mouth kept moist only by swabbing. Injections now constituted the only treatment. The most nutritious soups—a piece of beef or chicken, and a potato, boiled together and the broth seasoned with a little salt, Cayenne pepper and lemon juice, were used. A half pint of this soup, with nearly a teaspoonful of the rhubarb mixture, constituted each injection. The bowels became less and less irritable under their administration, and on the third day after coma set in, the child awoke to consciousness and eagerly quaffed lemonade and punch from the spoon. Under an ad libitum use of punch, lemonade, soup, boiled milk and bread, and enough of the rhubarb mixture to quiet irritability, the child got well. The proof of the efficacy of anti-scorbutic treatment, together with the natural pantomine of the infant, and also the purplish-red appearance of the tissues of the mouth, gums, and prolapsed anus, satisfied me that Scorbutus was an element in the pathology of this case—Cholera Infantum aggravated, as I then supposed, by the scorbutic diathesis. Collateral proofs are seen in the mother's condition, the infant at the breast, the older girl with coxalgia ending in caries of the

hip joint, and the father with a twelvemonth seige of swelled legs and abcess of the gastrochnemii muscles. I did not attend him, for after leaving his family he called another physician, but I saw him of curiosity on several occasions, and satisfied myself of the nature of his ailment.

These cases will suffice as types of Cholera Infantum, and are selected because they forcibly illustrate its identity with Scorbutus. Were it necessary to the argument, I could adduce many more, and some, perhaps, even more hopeless in aspect, the subjects lying insensible for two or three days, with scores of flies busy on the glazed eyeballs, cured by a similar anti-scorbutic treatment, the remedies and nutrition administered per anum with the syringe. During a period of twenty years, since 1835, I have considered and treated many cases of this character as Scorbutus, in infants. Knowing the Nursing Sore Mouth to be Land Scurvy in mothers, and seeing many infants participate in the disease with fœtid diarrhœa and watery gripes, I have never been deceived since the year above mentioned, 1835, (a most remarkable year, in the Western States, for scarcity and sickness,) *where the mother has been affected;* yet I candidly confess that, where the mother of an infant laboring under Cholera Infantum has deported herself apparently well, or in pretty good health, I have been deceived, and have treated such cases empirically, as best I could, with powders of hydrarg. cum creta, ipecacuanha, &c., on the anti-phlogistic and alterative plan ; but from observation, I have become more consistent in my practice, of late years, and now ascribe all cases of Cholera Infantum to the same cause, defective alimentation or impaired nutrition; and instead of particularizing one set of cases, the infants of mothers affected with Nursing Sore Mouth, as Scurvy in infants, and other cases as Cholera Infantum, I generalize the whole genus as *Infantile Scorbutus*, and frequently institute no treatment whatever to the infants, except the rhubarb mixture, only put the mothers on a judicious course of tonics, egg-knogg, milk-punch, lemonade, and a generous diet of good meats, fresh

vegetables and fruits, and the nurslings are sure to come right.

I will now, by quotations, illustrate the exhaustion, and the head symptoms—the scorbutic coma, arising from inanition, that is so generally seen in the last stage of Cholera Infantum.

"I believe," says Solly, in his able work on the human brain, page 281, "that there are two forms of hydrocephalus, the one anæmic, the other inflammatory, as well as two forms of ramollissement. Dr. Marshall Hall was one of the first to point out the resemblance which exists between a comatose condition arising from exhaustion, and that which is occasioned by inflammation and effusion. The affection which Dr. Hall described, arises *principally in infants*, but is not confined to them. He calls it 'an hydrencephaloid affection of infants, arising from exhaustion.'

"Dr. Hall has observed this affection generally as a consequence of *continued diarrhœa*, produced either by *bad diet*, or long continued use of purgative medicines, or as a consequence of blood-letting. He divides the affection into two stages, 'the first that of *irritability*, the second that of *torpor;* in the former there appears to be a *feeble attempt at reaction*, in the latter the nervous powers appear to be more prostrate.' He thus describes the signs of the complaint: 'The infant becomes irritable, restless and *feverish*, the face flushed, the surface hot, and the *pulse frequent;* there is an undue sensitiveness of the nerves, and the little patient starts on being touched, or from any sudden noise; there are sighing, moaning during sleep, and screaming; the *bowels are flatulent and loose*, and the evacuations are mucous and disordered. If through an erroneous notion as to the nature of this affection, *nourishment and cordials be not given;* or, if the *diarrhœa* continue, either spontaneously or from the administration of medicine, the *exhaustion* which ensues is apt to lead to a very different train of symptoms. The *countenance becomes pale*, and the *cheeks cool or cold;* the *eyelids are half closed*, the *eyes are fixed*, unattracted by any object

placed before them, the pupils unmoved on the approach of light; the breathing, from being quick, becomes irregular, and affected by sighs; the *voice becomes husky;* and there is sometimes a husky, teazing cough: eventually the strength of the little patient has been subdued, and the vascular system exhausted, by abstraction of blood.' "

In the above I have italicised some of the leading phenomena in Dr. Hall's "hydrencephaloid affection of infants," marking its striking conformity to Cholera Infantum, or the scorbutic malady as manifested in infancy, according to my observations.

"Dr. Hall considers that this affection is to be distinguished from true hydrocephalus principally 'by observing the condition of the countenance, and by tracing the history and causes of the affection.'

"Dr. Abercrombie observes: 'In the last stages of diseases of exhaustion, patients frequently fall into a state resembling coma, a considerable time before death, and while the pulse can still be felt distinctly. I have many times seen children lie for a day or two in this kind of stupor, and recover under the use of wine and nourishment. It is often scarcely to be distinguished from the coma which accompanies diseases of the brain. It attacks them after some continuance of exhausting diseases, such as tedious or neglected diarrhœa, and the patients lie in a state of insensibility, the pupils dilated, the eyes open and insensible, the face pale and the pulse feeble. It may continue for a day or two, and terminate favorably, or it may prove fatal. This affection seems to correspond with the apoplexia ex inanitione of the older writers. It differs from syncope, by coming on gradually and in continuing a considerable time, perhaps a day or two; and it is not, like syncope, induced by sudden and temporary causes, but by causes of gradual exhaustion going on for a considerable time. It differs from mere exhaustion, in the complete abolition of sense and motion while the pulse can be felt distinctly, and is in some cases of considerable

strength. I have seen in adults the same affection, though perhaps it is more uncommon than in children.'

"In a letter which Dr. Hall received from Dr. Abercrombie, that gentleman observes:—"The state of infants which I have referred to is a state of pure coma, scarcely distinguishable at first sight from the perfect stupor of the very last stage of hydrocephalus, the child lying with the eyes open or half open, the pupils dilated, the face pale. It is difficult to describe distinctly the appearance, but it is one which conveys the expression of coma rather than sinking; and I remember the first time I met with the affection, the circumstance which arrested my attention, and led me to suppose the disease was not hydrocephalus, the state somewhat differing from coma, was finding on further inquiry, that it came on after diarrhœa, and not with any symptoms indicating an affection of the head. The child recovered under the use of wine and nourishment.'

"'The remedies for this affection,' says Dr. Hall, 'are such as will check this diarrhœa, and afterwards regulate the bowels and restore and sustain the strength of the little patient—especially brandy and proper nourishment are to be given according to circumstances— * * * the young milk of a young and healthy nurse is the best remedy of all; in the absence of which, asses' milk may be tried, but certainly not with the same confident hope of benefit.'"

"Dr. Hall follows up this account with some excellent cases very illustrative of his views; he also quotes the following observations of Dr. Gooch, which, like all that this excellent practitioner ever penned, are worthy of attention.

Case 5.—"A little girl about two years old, small of her age, very delicate, was taken ill of the symptoms which I have above described. She lay dozing, languid, with a cold skin, and a pulse rather weak but not much quicker than natural. She had no disposition to take nourishment. Her sister having died only a week before of an illness which began exactly in the same way, and some doubts having been entertained by the medical attendant of the propriety of the treatment,

leeches were withheld, but the child not being better at the end of two days, the parents, naturally anxious about their only surviving child, consulted another practitioner. The case was immediately decided to be one of cerebral congestion, and three leeches were ordered to be applied to the head.

'As the nurse was going to apply them, and during the absence of the medical attendants, a friend called in who had been educated to physic, and who had great influence with the family; he saw the child, said that the doctors were not sufficiently active, and advised the number of leeches to be doubled. Six therefore were applied; they bled copiously: but when the medical attendants assembled in the evening, they found the aspect of the case totally altered, and that for the worse; the child was deadly pale,it had scarcely any pulse, its skin was cold, the pupils were dilated and motionless when light was allowed to fall upon them, and when a watch was held to its eyes it seemed not to see. Who can doubt that here the insensibility of the retina depended on the deficiency of its circulation.

'The next day she had vomited her food several times, it was therefore directed that she should take no other nutriment than a dessert-spoonful of asses' milk every hour, and this was strictly obeyed and continued for several days. The child wasted, her features grew sharp, and every now and then she looked fretful, and uttered a faint squeaking cry; the eyeballs became sunk in the sockets, like those of a corpse that had been dead a month; the skin continued cool, and often cold, and the pulse weak, tremulous, and sometimes scarcely to be felt. Under this regimen and in this way she continued to go on for several days. At times she revived a little, so as to induce those who prescribed this treatment to believe confidently that she would recover; and she clearly regained her sight, for if a watch was held up to her she would follow it with her eyes. She lived longer than I expected—a full week, and then died with the symptoms of exhaustion, not those of oppressed brain. The head was open-

ed by a surgeon accustomed to anatomical examinations, and nothing was found but a little more serum than is usual in the ventricles.' "

"If the reader has perused the foregoing case attentively, and has reflected on it, he will of course draw his own conclusions. I can draw no other than these; that the heaviness of head and drowsiness which were attributed to congestion in the brain, really depended on a deficiency of nervous energy; that the bleeding and scanty diet aggravated this state, and caused the death of the child; also, that the state of the eye which so speedily followed the loss of blood, and which resembled that occasioned by effusion, did, in reality, depend on deficiency in the circulation of the brain a fact of considerable curiosity and importance.

I will now relate a case similar in the symptoms but very different in the treatment and results.

Case 6.—" I was going out of town one afternoon last summer, when a gentleman drove up to my door in a coach, and entreated me to go and see his child, which he said had something the matter with its head, and that the medical gentleman of the family was in the house, just going to apply leeches. I went with him immediately; and when I entered the nursery I found a child ten months old, lying on its nurse's lap, exactly in the state which I have already described—the same unwillingness to hold its head up, the same drowsiness, languor, absence of heat, and all symptoms of fever. The child was not small of its age, and had not been weak, but it had been weaned about two months, since which it had never thriven. The leeches had not been put on. I took the medical gentleman into another room, related to him the foregoing case, and several similar to it, which had been treated in the same way. Then I related to him a similar case which I had seen in the neighboring square, which had been treated with ammonia in decoction of bark and good diet, which had recovered; not slowly, so as to make it doubtful whether the treatment was the cause of the recovery, but so speedily that at the third visit I took

my leave. He consented to postpone the leeches, and to pursue the plan which I recommended. We directed the gruel diet to be left off, and no other to be given than asses' milk, of which the child was to take at least a pint and a-half, and at most a quart, in the twenty-four hours. Its medicine was ten minims of the aromatic spirit of ammonia in a small draught, every four hours. When we met, the next day, the appearance of the child proved that our measures had been right; the nurse was walking about the nursery with it upright in her arms. It looked happy and laughing; the next day it was so well that I took my leave, merely directing the ammonia to be given at longer intervals and thus gradually withdrawn; the asses' milk to be continued, which kept the bowels sufficiently open, without apperient medicine.

"So inveterate is the disposition to attribute drowsiness in children to congestion of the brain, and to treat it so, that I have seen an infant four months old, half dead from the diarrhœa produced by artificial food, and capable of being saved only by cordials, aromatics, and a breast of milk; but because it lay dozing on its nurse's lap, two leeches had been put on its temples, and this by a practitioner of more than average sense and knowledge. I took off the leeches, stopped the bleeding of the bites, and attempted nothing but to restrain the diarrhœa and get in plenty of nature's nutriment, and as I succeeded in this the drowsiness went off and the child recovered. If it could have reasoned and spoken, it would have told this practitioner how wrong he was; anyone, who from long defect in the organs of nutrition is reduced so that he has neither flesh on his body nor blood in his veins, well knows what it is to lay down his head and doze away half the day, without any congestion or inflammation of the brain.

"This error, although I have specified it only in a particular complaint of children, may be observed in our notions and treatment of other diseases, and at other periods of life. If a woman has a profuse hemorrhage, after delivery, she will probably have a distressing headache, with throbbing in the

head, noises in the ears, a colorless complexion, and a quick, weak, often thrilling pulse, all which symptoms are greatly increased by any exertion. I have seen this state treated in various ways, by small opiates, gentle apperients, and unstimulating nourishment, with no relief. I have seen blood taken away from the head, and it has afforded relief for a few hours, but then the headache, throbbing and noises have returned worse than ever; the truth is, that this is the acute state of what in a minor degree and more chronic form, occurs in chlorosis, by which I mean pale-faced amenorrhœa, whether at puberty or in after life. It may be called acute chlorosis, and like that disease is best cured by steel, given at first in small doses, gradually increased, merely obviating constipation by aloetic apperients.

Mr. Solly further says:—"My esteemed friend and colleague, Dr. Risdon Bennett, in his admirable work on hydrocephalus, advocates the doctrine that this disease assumes very distinct forms, and that though it undoubtedly does arise in some instances from inflammation, in others it arises from an opposite condition. He says—'There can be no difficulty in admitting that the physical alterations of softening and serous effusion may be induced by functional and organic changes, very different from inflammation or any allied morbid action.' He considers that in by far the largest class of cases, the disease is essentially the *result of Scrofulous action*, and may or may not be attended by the signs of inflammation."

I have omitted to place in italics any further phenomena of the above cases, because the *whole* observations and illustrations are emphatically in point. The views and cases are altogether apropos. They run in the same orbit—are of the same character, stripe and type, as thousands of cases in the United States yclept Cholera Infantum, that are treated with leeches to the temples, ice to the head, mercurial alterative powders in broken doses internally, blisters behind the ears, innutritious arrowroot and gum Arabic diet, &c.; but they soon pass from the hands of the doctor into those of the undertaker.

Call it, reader, what you please, either as Mr Solly does, *anæmic coma*, or as Dr. Marshall Hall does, an *hydrencephaloid affection*, or as Dr. Abercrombie inclines with the authority of the older writers, *apoplexia ex inanitione*, or by the cognomen it bears in the United States, *Cholera Infantum*—I hesitate not after many years' observation and the proofs of treatment in a goodly number of cases, to pronounce it the more common mode in which *scorbutus* manifests itself in infants.

What one learns by studying the symptoms, signs, and proofs of treatment in the school of experience, little by little, during his wearing and anxious professional devotions at the bed-side, through many long years of practice, it were idle to gainsay, discredit, dispute or lightly conclude that he may be mistaken in his knowledge. When I say, then, that twenty years ago, cases of this kind began to impress me with intense anxiety, not only as a physician but as a father, and that situated in practice where the *land scurvy* in the form of that anomalous affection called in the United States the *Nursing Sore Mouth*, or *Puerperal Anæmia*, was epidemic during certain years, and infants at the breast were often observed participating in it, with all the symptoms of *Cholera Infantum*, this running into *Anæmic Coma*, often into convulsions, and so into the hands of the undertaker, I was forced into this generalization of the matter; and twenty years observation has but added new proofs, strengthened and confirmed, and finally settled this great truth in my mind. I could draw up and detail any reasonable number of cases beyond what I have, but have preferred to offer Mr. Solly's views, with the respectable illustrations, parallel views and cases of the distinguished authors he quotes, in place of my own, but running precisely parallel with mine, except that we differ a little as to the name by which the affection should be called.

I must be permitted to remark here, that calling this starved pathological condition the one thing or another as those respectable London practitioners have done, as *anæmic*

coma, an *hydrencephaloid affection*, or *hydrocephalus from softening* of the brain, answers no profitable end, scarcely, in indicating what should be done, or in applying the knowledge of former medical experience to usefulness. Yes, calling it *anæmic coma* does advance truth and stave off leeching: and calling it *apoplexia ex inanitione* throws more light on the subject, and begins to indicate by a name what the cause is, and what course to pursue to overcome the difficulty; but still, this does not bring down the treasures of professional knowledge laid up in the overlooked name I give it, and hold that it legitimately deserves, and no other, viz., *scorbutus;* which tells the whole story, and indicates the proper treatment with the same certainty in results as quinine produces in ague. It not only tells the tale as to the sick infant, but as to the mother, aye, the whole family; for often quite a plurality of the family, perhaps all, or all but one of the little innocents of certain families, pass away from the hands of groping physic into the grave, during the same season—the same scorbutic year.

I have known as many as three children of a family to fall victims of this scourge in several instances—to be swept off to the grave the same season—the hopes of parents crushed, their spirits broken, when *all* on which their affections centered were thus rapidly snatched away from their embrace. This was particularly the case in 1835, in 1846 and 1847, and in 1849, the constitution of which years I have before considered, showing, past all doubt, that the inlaid scorbutic diathesis in those families was the difficulty—but this essay is now already too long.

In conclusion—I am well aware that new truths involving issues of the importance these herein offered do, are apt to be very cautiously received, and make but slow progress, opposed by old errors; but, though their progress be slow, they finally prevail, independently of authority.

APPENDIX.

December, 1855.—Since writing the foregoing Essay in April last, opportunities have presented, during the past summer and autumn, for still farther observations in the treatment of Cholera Infantum on the anti-scorbutic plan, with lemon juice, punch, the native acids of fruits, and a nutritious diet; and in not a single instance, out of some twelve well formed, well marked, strongly characterized cases, has the treatment failed; to say nothing of its success in the frequent minor manifestations of the complaint, met with. In one family, four of the children were attacked, and the mother had the Nursing Sore Mouth. The infant at the breast, six months old, was a fat, plump subject, and seemed the picture of health when the characteristic fœtid, watery diarrhœa set in, about mid-summer; another child of four years of age,was attacked, another of thirteen, and the fourth was a lad turned of sixteen. One vial of four ounces of the rhubarb mixture, together with all the acids that they could be induced to make use of, set them right and kept them right. The oldest subject was the most violently attacked, and his case would doubtless have been pronounced Asiatic Cholera, had it been epidemic at the time. He had diarrhœa for four days, when vomiting supervened and held for the best part of two days, considerable fever or reaction being present at evening and a very foul tongue presenting. A surfeit of unripe cherries, some five or six days before I saw him, was said to be the exciting cause of the diarrhœa. He was attacked about the last of June, and I prescribed for him on the 4th of July. His case was the first. Teaspoonful doses of the astringent rhubarb and catechu mixture, in toddy, soon arrested the vomiting and purging, together with punch and lemonade, the juice of stewed cherries, vinegarade, &c., under the use of which his fever entirely abated, and his appetite returned. The dietary of this family, all the winter and spring, had been mostly destitute of succulent vegetables. The objective signs of Scurvy were present in the mouths of all the members of the family. In the autumn, the father, mother, and the only child that escaped a Cholera Infantum attack in the summer, had an attack of the ague and fever. These are suggestive facts.

The Scurvy was notoriously inlaid and manifest all over the western country last spring, and the past summer and autumn have revealed a more widespread epidemic of the ague and fever character than has been seen probably since 1835, after the great blight in vegetation and scarcity of succulent vegetable food of the preceding year. These facts point to the dietary, vicious

alimentation, as the cause of fever epidemics—vicious alimentation *versus* malaria.

I suggested in the Appendix to my essay on Epidemic Cholera, that the prevalence of the Yellow Fever during the past summer, was suggestive that *it* might possibly be a scorbutic fever. The facts point that way; and wherever facts lead, the science of medicine must follow. Has any one ever suggested before that Yellow Fever might be a scorbutic fever? Its first appearance was in 1730, in Guayaquil, where it was called *vomito negro*, if I have rightly posted myself on the subject, and it followed a blight in vegetation—disastrous years. It prevailed again in 1740 to '44, during which years a world-wide blight in vegetation occurred—a series of disastrous years following in succession. Lord Anson made his memorable voyage round the world, during those years, and lost the most of his crews by Scurvy. Bisset made his observations in the West Indies, during those years, the basis of his admirable contribution to the literature of Scurvy; and both speak of the tropical fevers of those times as *Scurvies*, in the plural number, inlaid by defective alimentation and developed by tropical heat. This makes it of quite as domestic origin as our learned La Roache would have it, or any one need desire. Bisset says the course of these *hot Scurvies* is swift to death. Is not this the case with Yellow Fever? Whoever will consult the history of the visitations of this American plague, Yellow Fever, will find that it holds an intimate relation to disastrous years and blights in vegetation; that its ravages in Philadelphia in 1793, and other cities of the United States, thence to 1796 or '97, followed blights, dearth and scarcity of succulent food; that the epidemic at Norfolk and Portsmouth, the past summer, obeyed the same law; and it is only necessary to point to New Orleans, the stronghold of Yellow Fever, the great metropolis of the planting States, where sugar, cotton, hemp, rice, corn, tobacco, are the great staples, instead of potatoes, turnips, pumpkins, apples and cider, to wake at least the medical mind to a more promising source of its etiology than is to be found in the sandy deposits of its river levee.

These however are but suggestions. I have not had opportunity for making observations in yellow fever epidemics. I have not tried the therapeutic effects of lemon juice and other acids; but had I the opportunity I would saturate my patients with the juice of oranges and lemons, which Bisset found his only reliance in the hot scurvies of the West Indies, and which seem to me to be identical with the yellow fevers of the Southern States. I would try to bleach the yellow Scorbutic hue out of some few, anyhow, with lemon juice, and drive away their rheumatic bone-aches with it, since it is proved to be a sovereign remedy in Rheumatism, and this was so common a form of scurvy in earlier days. But more especially would I try its prophylactic power, aware of the great danger of sudden death in some manner, form or fashion, under even slight manifestations of Scorbutus. In Southern regions, if people do not live on succulent food and imbibe acid drinks all the time, the soluble salts of the blood pass off so rapidly by perspiration that nature will rebel. But I am elaborating a suggestion that is only incidental.

To return to Cholera and Cholera Infantum. I will observe that other practitioners than myself have tried the acid treatment during the past season, at my suggestion, and some have reported very favorably, as the following note establishes. I could extend this appendix by publishing other similar communications, but they really seem unnecessary, and as the promised limits of this essay are filled they are therefore withheld.

November 1, 1855.

M. L. KNAPP, M.D.—Dear Sir: Your paper on Cholera lately came into my hands. Your theory with treatment seemed at least plausible enough to warrant a trial.

Sep. 20, 2 o'clock, P. M., was called to see Mr. R., laboring man aged about forty years. Learned from the attendants the following history of the case. Was seized with severe watery diarrhœa accompanied with vomiting, at two o'clock, A. M. Was visited by Dr. Green who prescribed calomel, camphor, and opium, to be given every two hours. Dr. Green having other engagements of imperative nature, left at six, A. M., giving urgent instructions to call other assistance.

Present symptoms—countenance anxious, eyes sunken, voice weak and husky, tongue slightly furred, gums very red, skin clammy and torpid, extremities cold, pulse altogether imperceptible, lower extremities constantly and severely cramped, frequent vomiting, diarrhœa ceased at twelve o'clock, M. Patient very restless, constantly throwing himself about on the bed.

I immediately ordered of Citric acid a drachm, Sulph. quinine five grs., Morph. Sulph. one gr., Spt. vin. Gall. four ounces, sacch. alb. one oz., water two pints, mix. A wine-glassful every 20 minutes. Nourish patient with vegetable soups.

At four o'clock P.M. there was an evident improvement. Skin warmer, voice stronger, vomiting less frequent, pulse just perceptible at the wrist. Visited patient again at ten o'clock, P. M., still improving. Continue treatment. September 21st, at eight o'clock A. M. visited patient; symptoms of previous day absent; pulse regular but small and weak, patient very drowsy; withdraw Morph. from prescription. Four o'clock, P.M.; patient still improving; give mixture at longer intervals, and take Hydr. Sub. Muriæ. gr. jjj every three hours until bowels are moved.

From this time on, the patient gradually recovered his strength. Some two or three days afterwards the gums bled quite freely, and the patient had much difficulty in swallowing; complained that, the sorness of the mouth extended down the œsophagus to the stomach. There was also considerable bleeding from the anus, which was surrounded by a red raw sore. I should have said above, that until the patient was almost entirely recovered, the gums remained of a fiery red color. The patient's diet during the summer was mainly salt pork.

How much the favorable result of this case is owing to the calomel administered or to your treatment I will not presume to say. I would not think myself justified in adopting a new theory and new practice, in any disease, from its success in a single case, far less justified in rejecting a theory the application of which has been seemingly successful, without giving it a further and more thorough trial.

Yours, &c.,

17th Ward, Cincinnati. E. H. FERRIS, M. D.

P. S.—In the treatment of Cholera Infantum, during, the last summer, I have in almost every case used only lemonade, brandy, and quinine, and have been well satisfied with the results of that treatment. E. H. F.