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ORIGINAL ARTICLES.

ASIATIC CHOLERA—SOME ACCOUNT OF ITS HISTORY, NATURE AND TREATMENT.

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It is the duty of a physician who has lived and practiced in several epidemics of Asiatic cholera to give his impressions and experience. So long are the intervals between the visits of this disease, that it cannot be studied clinically, and so a majority of present practitioners have never seen it. But they must prepare to meet it, and very probably the coming year. I have, as clearly as possible, given a picture of it as it passed before me on several occasions, hoping it may be to young physicians, for whom it is written, of some value in time of need.

When the cholera first appeared in Europe, in 1830, the physicians were at a loss how to treat it.

They searched the reports of the English physicians in the East Indies, where the cholera had been since 1817 under observation, but found little information. Having no better resources, they adopted their crude, heroic treatment. But soon experience of their own, of a very painful nature, drove them from this. The alarming mortality of the cholera in that year, as it traveled from Asia through European Russia and Poland toward the center of the continent, is not to be wondered at when we recall the remedies applied. Venesections of a pound and a half at first, and later in smaller quantities, till blood refused to flow; mustard poultices over the bowels and legs; leeches to the abdomen, and behind the ears; burning on the bowels paper saturated with alcohol, or dropping on them melted sealing-wax, besides bathing patients in a warm solution of liquor caustic.

Internally, twenty or thirty grains of calomel, in repeated doses, was administered until at times, in the then seldom made post-mortem examination, ounces were found in the intestines. Opium (generally in the tincture) was so freely administered that the patient never rallied from the narcotism. Mucilaginous drinks were freely given.

After trying these remedies in vain, the European physicians resorted to astringents, stimulants and opium in small doses (2 to 5 drops of tincture). Sulphuric acid, a remedy long before freely used in diarrhoea, typhus and scarlatina to restore the chem-

ically changed blood to its normal state, was resorted to here also. Tinctures of cardamon, catechu, capsicum, cantharides and camphor, chloroform, emetics and escharotics, calomel and castor oil. In collapse, hydrocyanic acid, brandy-and-chalk mixture and turpentine were used. Of all these remedies, the stimulant tinctures of camphor and cantharides are most valuable. The patient was wrapped in blankets wrung out of warm or cold water.

Hypodermic injections of opium have been resorted to for a long time.

Latently, hypodermic injections of large quantities of water, from two to four ounces, have been experimented with.

But before being justified in the use of such heroic treatment, we must ask, Where does the chemical separation of the blood take place?

Is it in the lungs or in the arteries, after the venous blood has passed, aerated or not aerated, through the lungs, having left more and more the solid parts in the arteries?

Or does this separation begin contemporaneously in the whole circulation? It is found in post-mortem section of cholera bodies as a dark, syrup-like fluid without fibrin, having in the veins and arteries dark-brown lumps. Gradually, as the separation increases, the fluid necessary to life is destroyed.

Can hypodermic injections into the areolar tissue, or infusion with a tap into the peritoneum of water or medicated water, be used in sufficient quantities to replace and correct the first or greater discharges of rice water by the bowels, not to speak of that which is vomited? Can it restore the already separated fluid? The course of the cholera is rapid. There is no time for these injected remedies to be absorbed, even if, as has been well said, it were possible to keep the cramping, restless patient quiet long enough to administer them. Will it not follow in the same rapid course towards the intestines? But can it be prosecuted in an epidemic in which the practitioner is called every half-hour by day, and oftener at night, to other patients? Can such operations be left to the nurse or family in a time when the morale of the community is out of joint, help rare, friend forsaking friend, husband wife, and parents their children? Often the nurse has yielded to the temptation of the plentiful stimulants.

The majority of cholera patients are not found in well regulated hospitals or in palatial residences.

There are floating in the present medical literature, since the cholera is reasonably expected to visit our continent from Europe next year, many theories etio-

logical and some therapeutical which may be read and studied in the room of the student, but are of no practical value to the young practitioner. He has to face this curse of the human family, and needs weapons.

It may not be out of place for the writer to give the practical results of his observation and experience during four epidemics of cholera, in two of which he spent nearly all his bodily strength in attendance on patients day and night.

From the researches of Hayem, of Paris, in microscopical examinations of the blood of cholera patients to Koch's last results in which he found that the specific poison is a kind of spirillum rather than a bacillus, limited to the mucous skin of the intestines and is not found in the mesenteric glands nor in the blood. It is only the result not the cause of the disease. Where, then, is the separation or chemical separation of the serum from the solids of the blood? Is it in the mucous membrane of the intestines or in all the capillary vessels of the system? Does this separation begin gradually in the minute vessels and more and more as it reaches the larger vessels leave the solids of the blood and permit only the serum to pass on to the intestinal canal to be accumulated until expelled? It is thus the channel of drainage for the system in normal life when the fountain of the kidneys is stopped. How, then, can this spirillum, found only in the mucous skin of the intestine, destroy life? We have not gained any facts from these chemical and microscopical researches to aid us toward a rational treatment of Asiatic cholera. We have learned practically to prevent and lessen its malignity by the researches of the sanitary branch of the political economists, as seen in the epidemic of 1874 in Europe.

We know now that by the decomposition of animal and vegetable matter in the soil around houses, cess-pools, manure heaps, stagnant ditches and sewer-openings, under proper atmospheric and telluric conditions, the fermentation of the fungus of cholera-poison is bred and transported. In localities where proper sanitary improvements are instituted, this disease has lost its malignity, and by further general and systematic sanitary provision, the sting of this scourge may be removed.¹

An epidemic of cholera is fearful in its mortality from its commencement to its acme; and its departure, as statistics prove, is almost always gradual. The laity, and even some physicians, concluded from this that the profession, if not responsible, are incompetent or helpless in this disease. This is a most unjust charge against a profession which, regardless of self-preservation, is devoted entirely to assisting the helpless victims of this malady, without regard to social distinction. We readily see the injustice of this accusation, when we remember that not every

cholera case comes under the care of the physician, and many who do come only in a collapsed or moribund state.

Often they have been supplied from the drug-store, which early, before a cholera case occurred, in anticipation of a money harvest, advertised by the press and over the counter their nostrums as unfailing remedies. These are not held responsible for the dead, due directly or indirectly to their prevention of the attendance of a qualified physician.

Our profession should be careful in publishing a treatment as successful, before being proved so by the recovery of a majority of the cases under its influence in the epidemic then raging. How unwise to rush into print and claim a specific after the treatment of two or three cases. It is only after a fair trial that a remedy can be entitled to the confidence of the profession. We should not forget the truism—"different people have different resistance."

The vital force in our organizations is more or less developed, and, as every physician knows, plays an important part in the good result of remedies. Frequently a physically frail-built patient, struggling under a dangerous malady, comes up from the brink of the grave; while another, well developed and robust, with the same malady and under similar treatment and surroundings, succumbs. The latter had not the tenacious hold on vitality of the former.

I have seen in cholera epidemics and at other times many unexpected recoveries. After setting aside my remedies, continuing only the careful feeding to sustain life, and with little hope, I have seen the vacillating, flickering flame rally. Success in these cases may add nothing to the physician's prestige, but they establish the fact that some patients *will not die*.

In the fifty years just past, when Europe has been threatened by a visitation of Asiatic cholera, the question of its contagiousness has repeated itself. This prevents the early and proper regulations by sanitary efforts for its prevention and control. State authorities lean toward the non-contagious theory, for quarantine paralyzes commercial traffic and money is lost. Now, setting aside hairsplitting theories, we dare not dispute that the disease is transportable. Another fact which prevents timely prevention, is that the first case is almost always declared by the attending physician and local authorities to be cholera-morbus, or at least it is denied to be Asiatic cholera. It is known that epidemics of all kinds vary their symptoms more or less from time to time. The main symptoms always remain, as red is always red, whether the color be a shade lighter or darker.

Symptoms.—The premonitory symptoms of Asiatic cholera are few, well marked, and more easily detected than those of measles, scarlatina, varioloid, variola, typhoid or typhus fever. They exist but a short time till the disease is perfectly developed. They begin with oppression in the temporal region, ringing in the ears with difficulty of hearing, a dull expression of the eyes, shivering sensations, oppression in the region of the heart and stomach and nausea. After these symptoms have lasted an indefinite time, more or less marked according to temperament and intensity of the poison, a rumbling, like

¹ "Mr. David Richard, in his late experiments on pigs, comes to the conclusion that the alvine discharges at certain stages of cholera contain a powerful poison whose chief function is to enfeeble and destroy the function of respiration—that the rapidity of its action excludes it from being an organism. He thinks it a chemical compound, probably an albuminoid. He thinks the evacuations easily disinfected, probably by permanganate of potash.

"Although the poison decomposes, it might by desiccation retain its power for some considerable time in clothes, etc., stained with choleraic discharges."—*Indian Medical Gazette*, April, 1884.

water rolling along the transverse colon, with or without pain in the gastric region, with oppression in the chest and a slight dyspnoea, sets in. These symptoms are greatly relieved by the first large watery motion mixed with the contents of the bowels. This relief is so great for a time, many are deceived, and defer calling medical aid till too late. From this time or earlier there is suppression of the secretion of the kidneys, and no urine will be discharged till recovery begins. The next symptom is a large, turbid, thin evacuation, called the rice-water discharge. In the height of the disease the discharges are as clear as well-water. There is no sign of bile in any of the evacuations after the first. It is retained in the gall-bladder and the ductus-hepaticus. No absorption of it seems to have taken place. Nearly all absorption has apparently ceased. I was called to see a farmer a mile and a half from town. The hired man was lying dead on the porch, while the farmer and his wife were in bed, in agony with cholera. Only one neighbor was present to assist. The wife was 28 and the husband 40 years of age. The disease had not so far advanced with the wife as the husband. While I administered medicine to the husband, I observed the wife go to the night vessel, by the help of the neighbor. This she did twice. Shortly after, as I sat by the bed attending to her, I looked into that porcelain vessel nearly full which she had just evacuated, and dropping a pin into it, could see it distinctly at the bottom. The primary symptoms before the rice-water discharges set in, last from one to twenty-four hours. During this time medical aid is most successful. Under the present stimulant-narcotic treatment, this is the only time when a cure can be reasonably expected.

Vomiting begins either with or before the first rice-water discharge. The first vomit consists of the mixed contents of the stomach, the next has in it some mucus, but both are free from bile. These are followed by clear fluid with the drinks swallowed. The oppression in the stomach and dyspnoea increase. Pain in the bowels, cramps in the arms and legs, restlessness, shrieks from the patient now begin or increase with copious vomiting and purging. The skin becomes dry and cold, the eyes red with a blue ring around them, and the pulse diminishes. After this has continued from one to six hours, sometimes longer, the vomiting and purging decrease in quantity and frequency. This is most distressing to witness. The patient is in painful agony and oppression. He springs up in bed only to fall back exhausted, repeating it again and again while the watery stools pass under him. He is tormented with thirst while he continues to call in a hoarse whisper for water. Such torment and suffering are seen in really no other disease.

Now the face takes on a blue leaden hue. The cramps of the extremities are not so severe. The skin becomes ice cold and covered with clammy sweat. The skin of the hands, forearms, feet, and legs is cold and of a dark blue color and wrinkled by shrinking, looking like hands after a whole day's washing. This is the height of the stage of true collapse.

He is indifferent to all his surroundings, even to

his own family. I have never seen a patient after the rice-water discharges appear make his will. He dies in this condition perfectly conscious, but sometimes falls into coma and passes away. Sometimes after remaining twenty or twenty-four hours in this state the pulse fills again, the breathing becomes normal but feeble, the hands fill up, the temperature increases, the circulation returns, the whole body gets warm, the red hue of the skin appears, and in two or three days you see the patient out of bed without any lesion to trouble afterwards. In this state of coma many are buried by the panic-stricken people who are not dead. Let me give a case in proof. A patient in the beginning of collapse was buried against my urgent advice. I was called at 8 o'clock A. M., to a young mulatto, 17 years of age, who, with her husband, were servants in a merchant's family. Both had cholera and died. I found her in the beginning of collapse, having had the second evacuation. At noon I passed a coffin one-fourth of a mile from the house and was told the negro woman was dead. I drove directly to the house and entered the room where the woman lay. The entirely nude body was covered with a sheet. It lay like a marble statue, face chest, bowels, arms, and legs full, without any shrinking, the skin having the mellow yellow color so characteristic of a young mulatto. It was of no avail that I urged delay in her burial, before 2 o'clock she was under the ground. How many such burials take place among a panic-stricken people.¹ They are hard to prevent in this country where permits are only needed in the larger cities. Do many physicians in the cities who grant certificates see the subject?

And now when we collect all the symptoms into one picture and add our own experience to form a diagnosis we come to the conclusion that we have here a shock of the nervous system—prominently the sympathetic. But when we try to explain how this chemical separation and discharge of fluid takes place only by the mucous membrane of the intestines we work in the metaphysician's region of the immaterial and unfathomable law of nature.

Before we speak of treatment, a few words on prevention.

Complete and daily disinfection of all water-closets, refuse barrels and sewers. Immediate removal of all excremental matter after being disinfected with sulphate of iron or carbolic acid, and covered with pulverized animal charcoal or dry earth. The rooms should be purified by the burning of crude sulphur, but in such small quantities that the diluted sulphuric acid will not excite coughing. Exert a moral influence. Abstain from beer, from large draughts of water, ice water, lemonade and ice cream. In cholera epidemics the greatest mortality is on Mondays,

¹Previous to the year 1870 in the immediate vicinity of Bordeaux, France, several workmen in excavating in a churchyard, came upon a belt of ground apparently impregnated with some antiseptic material. All the bodies in the belt, to the number of about 200, were found to be almost as perfect as when buried. I found when visiting the crypt of the cathedral where shown. One was found lying on its side, the legs drawn up, nearly to a level with the abdomen, while the arms were in such a position as to indicate that both these and the legs had been used in a desperate but futile effort to push out the side of the coffin, whilst the look of horror remaining on the face was simply indescribable. In the other case the body was found lying on its face, the arms extended above the head, as if attempting to push out the top of the coffin.—*Lancet*, June 10, 1884.

from the free use of these things on the day preceding. I have seen many young girls and others in full health on Sunday morning, after spending the day in the use of these luxuries and dissipation, die with the cholera on Monday. The diet should not be changed, unless it be to use fruit moderately. Cabbage and green vegetables should be avoided. Those used to liquor should use it moderately, and those who are abstainers abstain. Brandy is only to be used as a medicine. I have seen clergymen, during these epidemics, under the influence of liquor on the streets. Keep from exposure to cold, wearing woolen next the feet and body. Watch yourself and household for the first appearance of illness. As a prophylactic and pleasant drink, use largely diluted sulphuric acid, sweetened if desired, and flavored with orange. Let this be kept in public places and at home as a summer drink. If attacked by cholera when from home, take an aromatic astringent drink, and call your physician.

But one of the most important prophylactic measures, in town or city, would be for the board of health to appoint a committee of sanitary composed of philanthropic citizens. Let them have authority to examine every house and report to the board every foul place. This committee should also freely distribute printed instructions among the people.

Treatment.—The most important thing for the physician to consider when called to the bedside of a patient with this short-lasting disease, is, How can I change the abnormal and rapid secretion of the mucous membrane of the intestines and rally the sinking patient? Such remedies as will in the commencement of the characteristic rice-water evacuations fulfill the indications and promise to reduce the mortality. But a drug which, in this disease as in all others, will cure every case will never be found. Drugs are used for two purposes in the treatment of cholera—to disinfect and for administration. For the latter purpose the majority of physicians use the stimulant, narcotic and astringent remedies. Only a small number *experiment* with other drugs. Still, there are some who obstinately hold on to the old idea that calomel is a universal remedy for all ills. They ignore the teaching of all post-mortem reports since 1817 as to its failure and positive harm.

It is not true that if it does no good it will do no harm. When introduced into a living organism, if dissolved, it must impoverish the little remaining blood, and if not dissolved, it accumulates in the stomach and intestines and acts as a foreign body.¹ In this rapid disease, with its low vitality, such a condition hinders the feeble reaction and prevents the use of other remedies. It requires a stretch of imagination to believe, as Dr. Ayre says, that two grains of calomel placed on the tongue every five or ten minutes, and washed down with an effervescent draught, will do any good. But calomel can

be of service and do good when other drugs may do harm, when reaction from collapse appears. Then, given in small doses every hour or two for a few times, it will help to restore the suspended mucous secretion.

Opium, when given to control diarrhoea or nausea and vomiting, in large repeated doses, has proved injurious. It paralyzes the vital force and increases mortality. Laudanum in 5 to 10 drop doses hourly, is 60 to 120 drops in twelve hours. After the first dose copious vomiting sets in, soon becoming less, while the pulse gets fuller, but remains small and weak. The head is hot, the eye glassy, the coating on the tongue thicker, the sensorium dull, while the extremities remain ice cold. Stupor and diarrhoea increase, and life ends in coma. But coma should not be the finale of cholera. The mind remains nearly always unimpaired where no narcotic is given. But in the premonitory symptoms opium can be judiciously used, and also as a narcotic and stimulant on the first indication of collapse. Still, opium should not be long continued, for its cumulative effect is to produce stupor, ending in torpor and death. Hypodermic injection of morphine is the same in its effect as opium, only more rapid and uncontrollable. It lulls the pain, but the disease in the majority of cases in which it is given runs its course, like a smothered fire. A correspondent in your journal says "morphia is the king of nervous remedies," and recommends it in cholera. To this I strongly object. For the last ten years I have seen it freely and often injudiciously used by our young practitioners. Placing morphine on the bottom of the cork of a drachm vial of morphine and calling it a sixth of a grain, and in other careless measurements, then injecting, often brings the patient to the danger line, and in two cases under my observation beyond it. No. 1, a young woman 22 years of age, in which the morphine injection was given in the evening to relieve a headache, which of course it did. The next morning her husband found her dead by his side. No. 2, a lady in the prime of life and perfect health, surrounded with comfort. After a hearty breakfast she suffered from a slight pain in the stomach—indigestion. I called, and gave ipecacuanha and two $\frac{1}{6}$ -grain morphine powders; one of these to be given at 2 o'clock, and the other five hours after, if not relieved. In the evening about 10 o'clock a fashionable doctor was called to a patient in the same house. He offered to relieve her pain immediately, and administered a morphine injection. The next morning I was called at 7, and found her dying. Therefore I cannot indorse that morphine is king. It is only uttering again the errors of the fathers of our art of fifty years ago. They believed that calomel in fever and venisection in inflammatory diseases were king and queen of all ills. And what misery I have seen follow these!

Dr. F. P. McFarland gives the result of thirteen years' experience in India (*Dublin Jour. of M. S.*), in which he says more cases have recovered under the salt treatment than under any other.

There are two ways of using the salt. The first mixture, which he considers the best, is: Common salt, dr. 2; bicarbonate soda, gr. 36; chlorate pot-

¹Dr. Joseph Heine, military surgeon in the temporary hospitals of Papanz, Poland, in 1831, made a section of the body of a soldier who had died of cholera after two days' treatment with sulphate of zinc. In the stomach he found several tablespoonfuls of a whitish-grey fluid. At the bottom of the stomach he was able to detach without tearing half of a white membrane the width of a hand. It was a croupous membrane of from 1 to $\frac{1}{4}$ lines in thickness, and on it there were not missing the blood dots or islets.

assi, gr. 10; and water, 8 ounces; to be taken every half hour or hour. The second is half an ounce of common salt in a pint of water, every half hour or hour. (*Jour. A. M. A.*, Vol. 2, page 295, 1884.)

The permanganate is a poisonous disinfectant, claimed to destroy poisonous emanations. It is recommended in diarrhoea, scarlatina, diphtheria, etc., and lately in East India, in $\frac{1}{4}$ to $\frac{1}{2}$ -grain doses, in water, several times a day. As before stated, this has been experimented with in a few cases, and I do not recommend it.

Sulphuric acid is used only as a drink in the manner already described.

Boric acid is highly commended by W. I. Butler, of the Indian service, Madras. He said, as the pure acid was not procurable, the biborate of soda was at first used, and 70 to 75 per cent. recovered. Afterward, when the pure acid was used, all recovered. It was used in ten-grain doses, combined with biborate or bicarbonate of soda. Salicylic acid in 10-grain doses, combined with 5 grains of bicarbonate of soda, and 5 grains of carbonate of ammonia, in an ounce of water, is recommended.

Capsicum was early, and is still, used. I have given it—capsicum, grains 3; bicarbonate soda, 20 grains; water, 4 ounces; give a tablespoon every half hour, or hour, as an auxiliary to other medicines, to allay vomiting.

In the epidemic of 1866, Dr. Spinzig, St. Louis City Hospital physician, says, in report of treatment, August 27, when the disease was at its height, nine were given tincture cantharides, 5 to 20 drops every hour or two; none died. September 12—Sixteen were so treated; twelve recovered and four died. October 10, when the disease was on the decline, twenty-two were treated and nineteen recovered. This tincture was used in Europe in 1831, in very small doses, without any good result.

Liebig soup was extolled by some physicians as a cure. Collodion treatment: An external application of collodion, 6 drachms; castor oil, 1 drachm; M., and smear the abdomen, covering with cotton-wool. A French physician used and recommended this as a cure for diarrhoea and light cholera. I mention it as a curiosity. (*L'Union Medicale.*)

Castor oil is very warmly commended by some English physicians. It is used in moderate doses when the power of elimination is active. Seldom more than two or three doses are said to be necessary. It is said to be very efficacious in diarrhoea, before the cholera symptoms appear.

Tartar emetic and ipecacuanha are reported as successful in many cases. But how many of the recoveries, after using these last-named remedies, are the result of, and due to, the *vis medicatrix naturæ*? Drenching the bowels with water by the mouth is reported as successful, and as an improvement, using the hypodermic syringe to inject medicated water into the subcutaneous areolar tissue. But to more quickly reach the center of the supposed cause of cholera, infiltration, by means of an aspirator, of the peritoneal cavity with artificial serum has not been tried. An effort is made to replace the rapidly

wasted fluids. This I only allude to here as a novel therapeutic addition to the literature or the art and science of medicine.

Camphor and chloroform, which are used separately by many physicians as favorite remedies, I have referred to last, because *combined* they have proved valuable remedies to me, not only in Asiatic cholera, but also in many other diseases where a sedative stimulant, and may I say also astringent remedy, were indicated. I have received more satisfaction in a long practice from its use than any medicine of its class. I present it with much confidence; not claiming it as an arcanum.

Knowing how unsatisfactory was the treatment in Europe during the epidemic of 1831, I tried in 1848 to procure the best information possible in this Mississippi valley. In the course of my research I found in the January number of 1848 (when the Asiatic cholera appeared to an alarming extent and of a malignant type in Europe) of the *American Journal of Medical Science*, vol. 1, page 170, the following article: "Champhor and chloroform mixture by F. and H. Smith, M. J., and Retrospect of M. S., Nov., 1848. There is great difficulty or rather an utter impossibility of administering camphor in a state of solution in doses of sufficient potency in some cases. The form of pills, the only mode of giving large doses of the medicine is objectionable in many cases and in others altogether inadmissible. The camphor, being merely in a state of mechanical division, on being set free in the stomach, from its extreme lightness quietly separates and floats about, thus producing in many cases *much local irritation* in that organ, instead of soothing or arousing the general system.

"Messrs. T. & H. Smith, chemists of Edinburgh, give a formula for exhibiting camphor in doses of almost any amount of strength—certainly as large as any case can require—and that in perfect solution, thereby allowing of a nice adaptation of the dose to the circumstances of each case. The formula is as follows: Three drachms of solid camphor are dissolved in a fluid drachm of chloroform. This is, perhaps, one of the most remarkable cases of solution the whole range of chemistry presents to us. The solution is most rapid and complete and the bulk of the liquid is now increased from one to fully four liquid drachms. This solution rubbed up with the yolk of one fresh egg may be formed into an extremely elegant emulsion by the addition of water without the slightest separation of camphor or chloroform; in fact no separation of any kind takes place. If to the proportions given above as much water be added as to make a four-ounce mixture, each teaspoonful of the mixture when formed will contain about five and a half grains of camphor and about two minims of chloroform. This mixture can be administered in any ordinary vehicle, such as water, without any separation; indeed the mixture is readily and completely effected, as cream with tea or coffee."

This struck me favorably on account of the perfect chemical solution of the camphor in chloroform, a pleasant stimulant and a gentle astringent of two sedatives of great volatilization. I had found that for which I searched to replace the strong astringents,

tannin, gallic-acid, ammonium, pepper, brandy, alcohol, and that powerful one, lead.

When cholera reached us in 1849, I administered this camphor mixture in the premonitory stage in all cases and in the beginning of collapse. It relieved the oppression in the gastric region, the flatulence, nausea, vomiting and diarrhœa. I prescribed every hour a teaspoonful with two drops of laudanum so long as the premonitory symptoms lasted, and afterward, if no collapse, I gave it every two hours with one drop of laudanum, for a short time. If collapse set in I gave the mixture every hour without the laudanum, but added instead every half hour or hour a teaspoonful of the following:

R Capsicum powder. gr. iii.
Bicarbonate of soda. ʒii.
Water ʒiv.

But if this failed I used instead of it, tinc. cantharides, 10 drops every half hour. In making the mixture of camphor I used 2 drachms of chloroform instead of 1, I never united the laudanum with the mixture, but dropped it into the teaspoonful of the mixture, so that it could be used without the laudanum when needed.

During the past thirty-five years I have used this mixture without laudanum in almost all cases of diarrhœa—except feculent—in which I give it after the action of an aperient. I use it in small doses with other medicines in diarrhœa of children, and use it in all diseases where camphor is indicated. Of all the mixtures in which no alcohol is used it remains most free from ferment, does not separate and lasts for years if kept from frost.

But we cannot depend upon drugs alone for success. Drink, food and external applications play a very important part in the treatment if judiciously used. Especially is this true regarding the temperature and quality of the water used as drink.

It always seemed strange to me that ice should be recommended—pieces in the mouth and ice water to drink and alternating hot medicines with pieces of ice in Asiatic cholera.

Cold water cannot produce reaction, invigoration or warmth to the parts to which it is applied, when the heat is under the normal and the vitality at the lowest ebb, as in cholera. Ice satisfies thirst only for a very short time. At first it creates a burning sensation, pleasant to the drinker, but when it is melted the burning sensation is gone and the desire for more is craving. Cold or ice water can only be used when the temperature of the body is above the normal and the vitality must not be below its normal stage. It is contra-indicated when chilliness prevails. When ice water is introduced into the torpid stomach, it must destroy that small spark of vitality left. About the same is true of warm water. It never produces a sensation of warmth; but diminishes it and relaxes where the heat is under the natural standard. Instead of being a stimulant it is a nauseant. I have long held that warm water encourages vomiting, while hot water allays and stops it. Hot water is a decided stimulant, increasing the circulation; as seen in gynecology a remarkable astringent. I use

it and recommend its use in Asiatic cholera. At first I give it freely between the medicines, in doses of a teaspoonful or dessert spoonful of clear hot water, free from any smell, so as not to be offensive. As the sickness advances I give it in tablespoonful doses. It is a decided sedative to the stomach, acting far more rapidly than narcotics. At first the patient may refuse it and desire cold or ice water, but soon he realizes the good effect of the hot water and asks for it. In the collapse I give between the medicines, every half hour, a teaspoonful of the yolk of a fresh egg with milk. Leibig or beef soup in four ounces, of which I mix the yolk of a fresh egg and some brandy and hot water, and egg-nog I also use. When reaction sets in I increase the quantity. Now I also administer, every two hours, two grains of calomel combined with bicarbonate of soda. Warm baths can hardly be used in private practice. The undressing and dressing of the patient, heating the water in such quantities, procuring a bath-tub, and lifting the patient in and out with so little help make this a very difficult procedure.

I always order calico wrung out of hot water to be wrapped around the extremities and covered over the bowels, and this repeated often, that they keep hot. Bottles filled with hot water placed around the body and between the limbs are a good appliance. When none of these can be had, I have learned from the old ladies that boiled ears of corn wrapped in domestic are as good and retain heat longer than the bottles. In all this treatment the patient must lie in a horizontal position and keep as quiet as possible, speaking only encouraging words. Cholera seldom leaves any lesion, but sometimes the patient goes into a secondary fever. Still, this is so rare that the treatment is best left to the judgment of the attending physician. As the judge said in his final charge to the jury: "If you think this, you must do that, but if you think that, you must do this." There is one fact to be mentioned of some importance. A month or six weeks after the cholera disappeared, our section of the country was nearly free from febrile diseases. After that, bilious intermittents appeared, when, if as usual a cathartic was given, it would produce a copious watery evacuation with bile. This prostrated the patient. In about twelve to twenty hours another of the same character would be dejected, typhoid symptoms would set in, ending in coma and death, generally in four days. I have seen in the same season several puerperal-fever cases, which ran a similar course. It seemed as though a type of cholera still remained.

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METHODS OF TREATMENT OF RESISTANT CLUB FOOT.

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Certain cases of neglected club foot are occasionally met of such an obstinate character as to resist ordinary treatment by tenotomy and mechanical appli-