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1832

CURE OF MALIGNANT CHOLERA

Surgeon General's Office

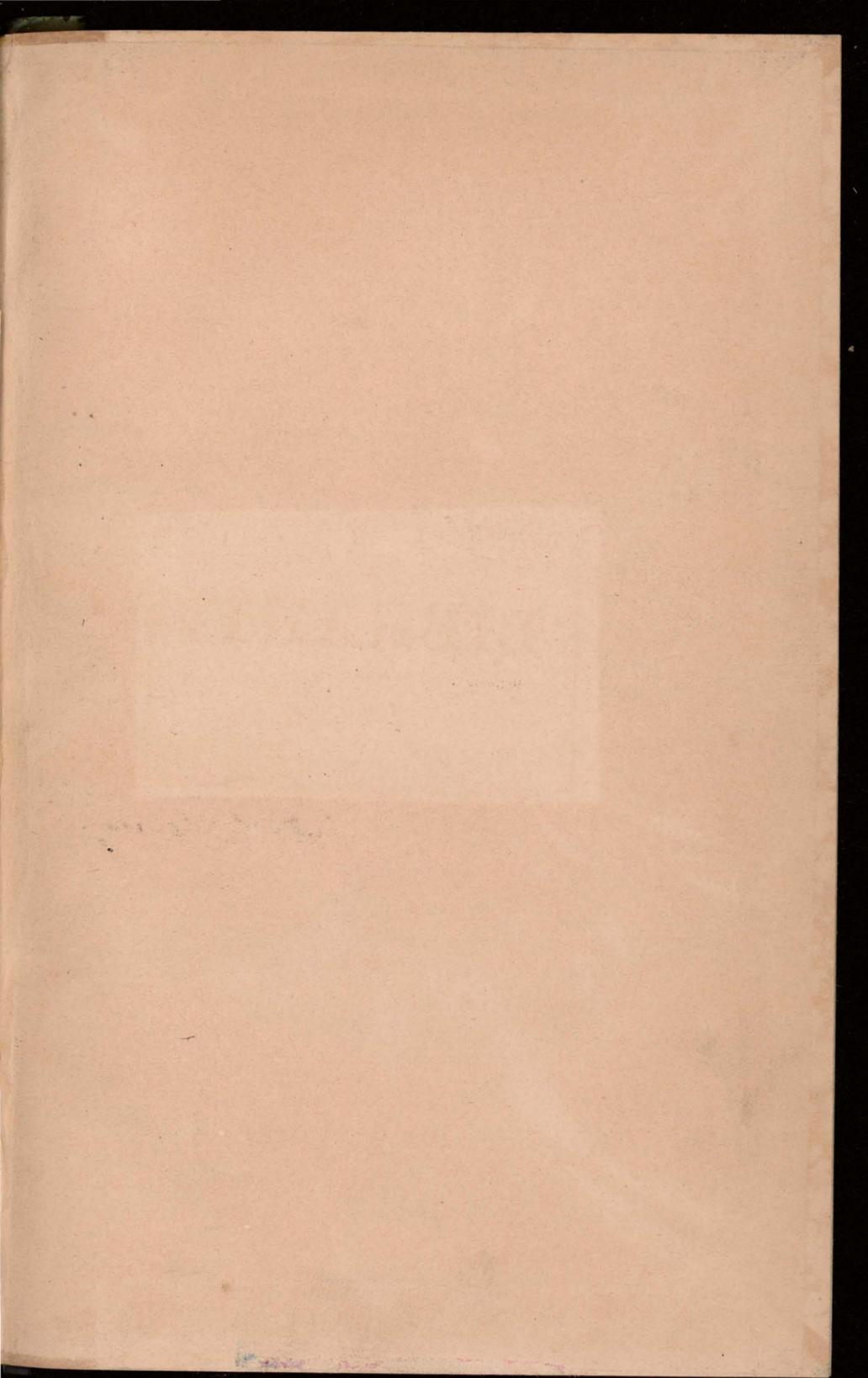
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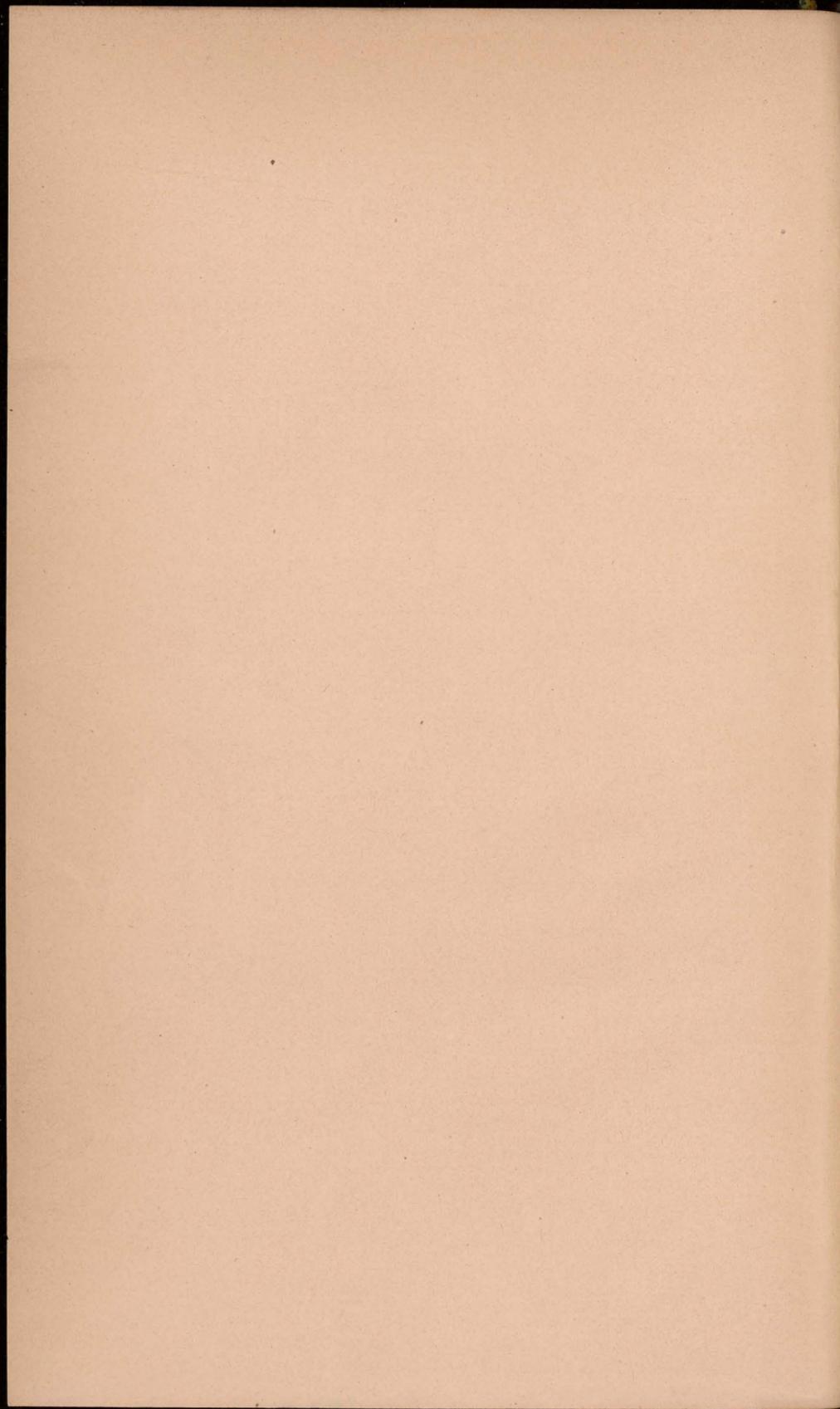
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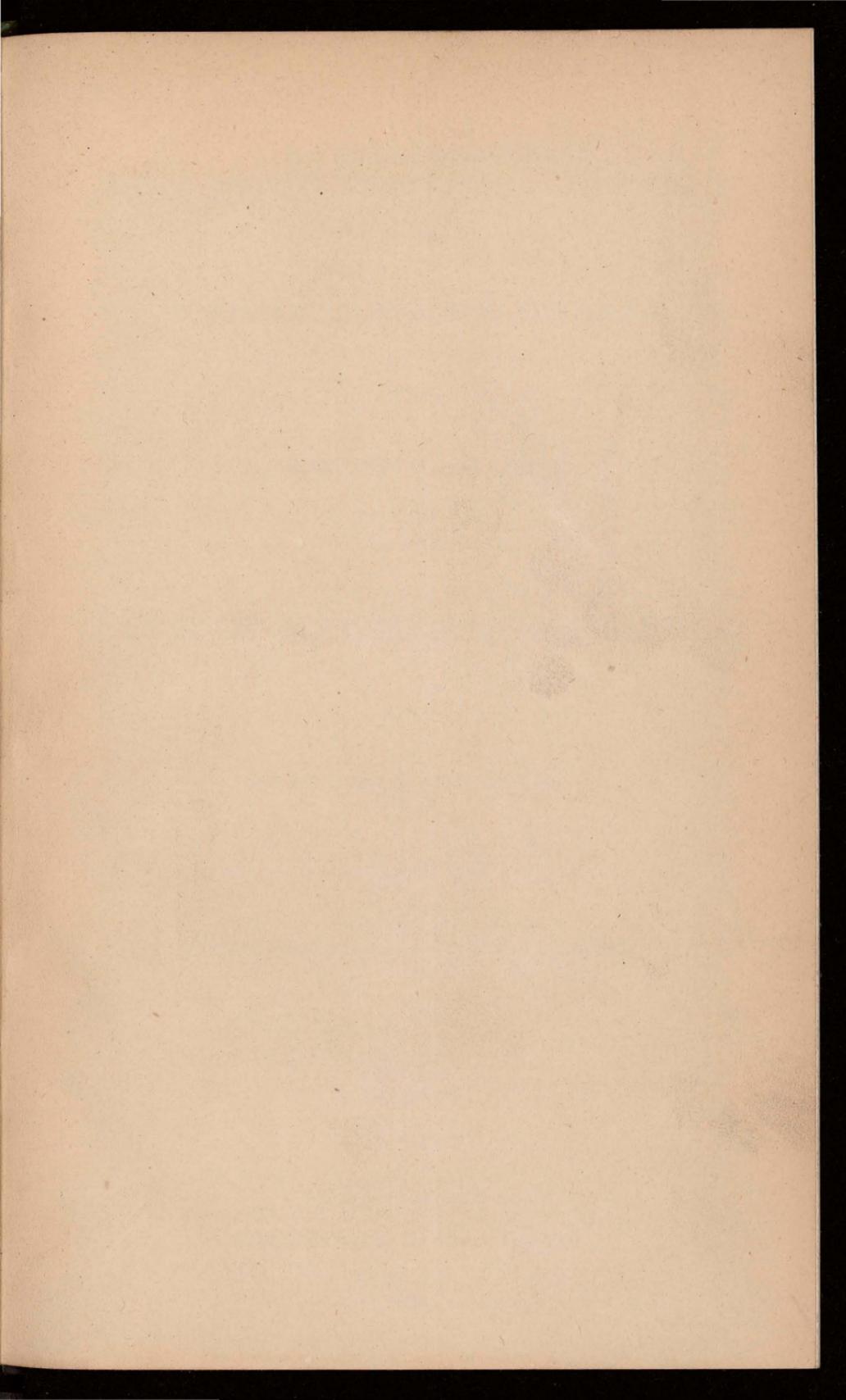
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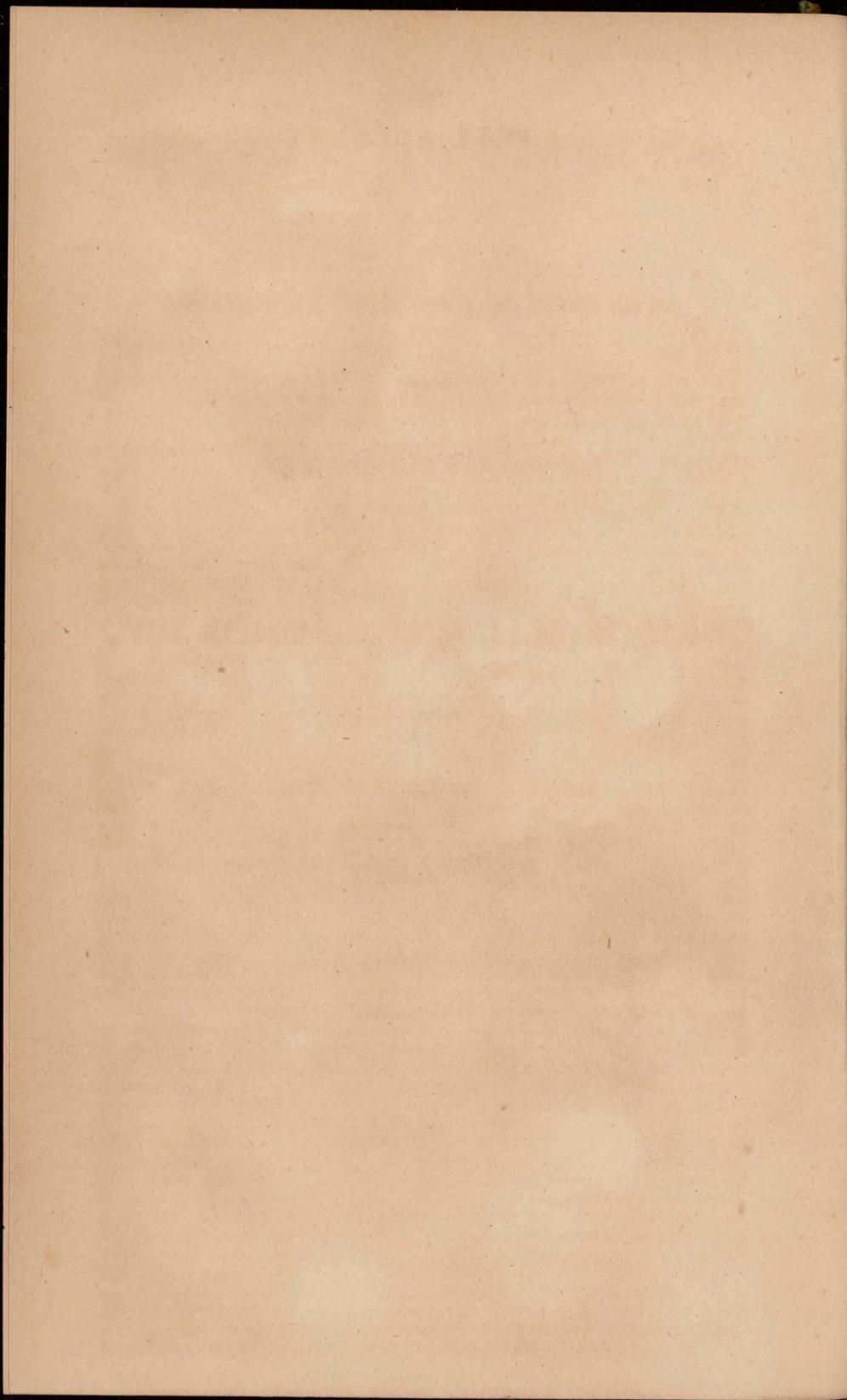
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547
Supplement
Cholera









A FULL ACCOUNT

OF THE

OPERATION OF INJECTING THE VEINS

WITH

AQUEOUS AND SALINE LIQUIDS,

FOR THE

CURE OF MALIGNANT CHOLERA,

IN THE

MOST HOPELESS CASES.

FROM THE LAST NUMBER OF THE LONDON LANCET.

NEW-YORK:

PETER HILL, 94 BROADWAY.

1832.

A FULL ACCOUNT

OF THE

OPERATION OF INJECTING THE VEINS

WITH

WATER AND SALT LIQUOR

Annex

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F965

1832

CURE OF MALARIAL FEVER

MOST EFFICACIOUS

FROM THE LAST NUMBER OF THE LANCET

NEW YORK:

GEORGE P. SCOTT AND CO.
PRINTERS, CORNER OF ANN AND NASSAU STREETS.

MALIGNANT CHOLERA.

London, Saturday, June 2d, 1832.

THE papers which we publish this day on the effects produced in several desperate cases of cholera by the injection into the veins of water containing the salts of the blood in solution, will be read with the most lively interest and satisfaction.

From the conjoint testimony of the highly respectable individuals who have conducted the various cases, it appears certain that of fifteen hopeless and abandoned cases, five were rescued from apparently certain death by the treatment adopted; while of those which proved fatal, all but one had been complicated with such extensive organic disease, that no method of medication could do more than postpone a little the fatal event. That relieve the injection seems to have procured. In short, according to the evidence before us, the method has only failed in one case in which it had been fairly tried—that is, where no organic disease had pre-existed, and where enough of life was left to sanction the least anticipation of success.

The most startling fact connected with the details of the treatment is the great quantity of fluid injected. In one case nearly seven pounds were at once thrown into the median basilic vein, and in nine hours fifteen pounds were infused. But in this very case—a desperate example of the last stage of a protracted attack of cholera, after excessive purging and vomiting had drained the body almost dry—when the pulse had been imperceptible for hours, the skin livid, and the voice lost, *the patient completely recovered!* While the injection was performing the pulse rose, the heat returned, the lividity disappeared, the countenance became florid and beaming; in short, the patient underwent a change more like the workings of a miraculous and supernatural agent, than the effect of the interposition of medical science.

The case thus alluded to is, we think, one of the most interesting recorded in the annals of our profession. It gives us at least this all-important inference, that the injection of water in these great quantities is not necessarily fatal, or even a formidable measure. It further entitles us to presume, that as organic chemistry improves, as our knowledge of the relation between the blood and remedies of different kinds increases, the art of treating diseases in general will be placed on a more rational and certain foundation. It teaches us how boldly we may proceed when certain and scientific data are before us, and it thus dispels the all-but-cowardly timidity which has hitherto prevented the principles of the treatment in question from being carried into effect.

With respect to the quantity of water employed, two circumstances are to be borne in mind; first, that the opinions which rate the quantity of blood in the adult body at the mean of thirty-five pounds only, rest upon no sure or experimental facts; secondly, that the blood forms at most but a small proportion of the fluids which the body generally contains—which facilitate all the movements, in the due perfection of which health and life are essentially concerned, which cannot be diminished without danger, and which cannot be lost without certain death. Now, when we contemplate the phenomena of cholera, when we see the plump and vigorous limbs of youth and adolescence withered in a few hours to the shrunk dimensions of emaciated old age, it is impossible not to conclude that not only has the blood lost much of its water, as chemistry has so satisfactorily ascertained, but that all the living solids of the frame, its muscles, nerves, its vascular tunics, and its membranes, have been robbed of the bulk of fluid essential to the due discharge of their functions, to the preservation of their vital condition. The quantity of water to be replaced is, therefore, immense, and bears no relation to the presumed quantity of blood which the human body naturally contains. The blood only participates in the general drainage. Unless we limit life to that fluid, unless we

renounce the solidist pathology, and unless we overlook all the most obvious features of the disease in question, we cannot arrive at any other conclusion.

A rapid glance at the history of the administration of remedies by the veins may not at this moment be destitute of value.

The truth of Harvey's doctrines had scarcely been admitted, when the wild enthusiasm of the disciples of the new physiology led them to believe that a path was now opened to the cure of all diseases. The cause of every malady was assigned to the blood. The cure was to be accomplished by substituting for the diseased fluid, blood drawn from a robust and healthy animal. Experiments were accordingly made on animals, and soon repeated upon man. Denys and Emerens, of Paris, were the first who dared the experiment and performed the *transfusion* of the blood of a calf into the veins of an idiot, who seemed to recover his reason. Various accidents, however, soon occurred, to excite distrust in the practice, and the parliament of France and the Sovereign Pontiff almost simultaneously issued edicts, prohibiting its repetition. After a long period, however, Magendie demonstrated, by several most conclusive experiments, that transfusion of blood from an animal of the same species, is attended with no danger whatever. With what signal success Dr. Blundell, in this country, applied the principle to the treatment of uterine hemorrhage, it is needless for us to remark.

The idea of giving medicinal remedies by the veins is of comparatively modern date. Encouraged by Magendie's experiments on animals, Percy and Laurent injected, with success, the decoction of stramonium into the veins of a soldier, affected with tetanus. M. Coindet, of Geneva, performed a similar operation with the solution of opium in an analogous case, and with instant advantage; so that the spasms, which had resisted all other remedies, immediately subsided, and the patient recovered. Several other cases of this description are on record, to which we need not more particularly allude. In the treatment of the diseases of animals, again, the practice was so extensively followed, that at the veterinary infirmary of Copenhagen no other mode of administration of medicines was resorted to, it being found that injection by the veins rendered success more certain, and economized the consumption of drugs.

Previous to the proper experimental investigation of the chemical pathology of cholera, numerous speculations were made by different writers on its treatment by venous medication. In Germany transfusion of blood was tried by Scoutteten and Dieffenbach, under the impression (founded on Hermann's erroneous statement) that the blood in cholera had lost its globular structure. The experiments failed remarkably, and one patient died almost instantly after the transfusion had been performed. Again, several writers in England, who had never witnessed the disease themselves, reasoning on the "blackness" of the blood, so prominently described by the Indian and Russian authors, suggested different means of restoring that fluid to the bright and florid color which they took for the test of its healthy condition. With this view one proposed the injection of the oxygenated salts, another of the muriate of soda, both being solely intended to redden the blood, and having no reference to its state of fluidity.

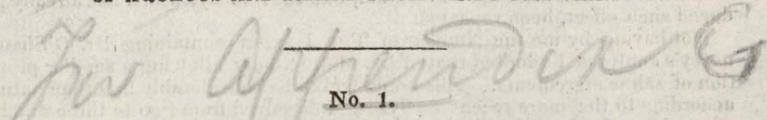
At length Dr. O'Shaughnessy's experiments having shown the deficiency of water, and occasional diminution of the salts, in cholera blood—having proved that its anatomical structure was preserved, and its capacity for aëration maintained, a more rational principle of treatment was pointed out. It was a necessary inference from these experiments that water *essentially*, and salts *contingently*, should be added to the blood before it could again discharge its functions. It was evident, as stated in Dr. O'Shaughnessy's report of his experiments, that water could only be restored in two ways, by absorption or venous injection; and that in the cases in which the power of absorption was irretrievably lost, venous injection left the only hope of a cure. Dr. Latta, of Leith, has now, for the first time, carried this suggestion into effect. We thank him for the intrepidity, scientific zeal, and assiduity he has displayed. His example has been followed by Drs. Craigie and Macintosh, of Edinburgh, and we entertain no doubt that the practice will be repeated all over Great Britain, as a last resource in the desperate cases which have baffled the ordinary methods of treatment, and which would otherwise be abandoned to inevitable death.

We append to the Leith and Edinburgh papers a note we have received from Dr. O'Shaughnessy, containing additional suggestions on the subject.

DOCUMENTS

COMMUNICATED BY

THE CENTRAL BOARD OF HEALTH, LONDON,

RELATIVE TO THE TREATMENT OF CHOLERA BY THE COPIOUS INJECTION
OF AQUEOUS AND SALINE FLUIDS INTO THE VEINS.

 No. 1.

Letter from DR. LATTA to the Secretary of the Central Board of Health, London, affording a View of the Rationale and Results of his Practice in the Treatment of Cholera by Aqueous and Saline Injections.

Leith, May 23, 1832.

SIR,—My friend Dr. Lewins has communicated to me your wish for a detailed account of my method of treating cholera by saline injection into the veins, with which I now most willingly comply. My scope for observation, since I commenced this treatment, has been too limited to allow me to be very copious on the subject, but I think I can adduce sufficient proof to the unprejudiced, not only of its safety, but of its unquestionable utility. I have never yet seen one bad symptom attributable to it, and I have no doubt that it will be found, when judiciously applied, to be one of the most powerful, and one of the safest remedies yet used in the second stage of cholera, or that hopeless state of collapse to which the system is reduced.

Before entering into particulars, I beg leave to premise that the plan which I have put in practice was suggested to me on reading in THE LANCET, the review of Dr. O'Shaughnessy's report on the chemical pathology of malignant cholera, by which it appears that in that disease there is a very great deficiency both of the water and saline matter of the blood. On which deficiency, the thick, black, cold state of the vital fluid depends, which evidently produces most of the distressing symptoms of that very fearful complaint, and is, doubtless, often the cause of death. In this opinion I am abundantly borne out by the phenomena produced on repletion by venous injection.

So soon as I learnt the result of Dr. O'Shaughnessy's analysis, I attempted to restore the blood to its natural state, by injecting copiously into the larger intestines warm water, holding in solution the requisite salts, and also administered quantities from time to time by the mouth, trusting that the power of absorption might not be altogether lost, but by these means I produced, in no case, any permanent benefit, but, on the contrary, I thought the tormina, vomiting, and purging, were much aggravated thereby, to the further reduction of the little remaining strength of the patient; finding thus, that such, in common with all the ordinary means in use, was either useless or hurtful, I at length resolved to throw the fluid immediately into the circulation. In this, having no precedent to direct me, I proceeded with much caution. The first subject of experiment was an aged female, on whom all the usual remedies had been fully tried, without producing one good symptom; the disease, uninterrupted, holding steadily on its course. She had apparently reached the last moments of her earthly existence, and now nothing could injure her—indeed, so entirely was she reduced,

that I feared I should be unable to get my apparatus ready ere she expired. Having inserted a tube into the basilic vein, cautiously—anxiously I watched the effects; ounce after ounce was injected, but no visible change was produced. Still persevering, I thought she began to breathe less laboriously, soon the sharpened features, and sunken eye, and fallen jaw, pale and cold, bearing the manifest impress of death's signet, began to glow with returning animation; the pulse, which had long ceased, returned to the wrist; at first small and quick, by degrees it became more and more distinct, fuller, slower, and firmer, and in the short space of half an hour, when six pints had been injected, she expressed in a firm voice that she was free from all uneasiness, actually became jocular, and fancied all she needed was a little sleep; her extremities were warm, and every feature bore the aspect of comfort and health. This being my first case, I fancied my patient secure, and from my great need of a little repose, left her in charge of the hospital surgeon; but I had not been long gone, ere the vomiting and purging recurring, soon reduced her to her former state of dibility. I was not apprised of the event, and she sunk in five and a half hours after I left her. As she had previously been of a sound constitution, I have no doubt the case would have issued in complete reaction, had the remedy, which had already produced such effect, been repeated.

Not having by me the Number of *THE LANCET* containing Dr. O'Shaughnessy's analyses, I adopted that of Dr. Marcet, only allowing a smaller proportion of saline ingredients. This I now find to be considerably less than natural, according to the more recent analyses. I dissolved from two to three drachms of muriate of soda and two scruples of the subcarbonate of soda in six pints of water, and injected it at temperature 112° Fah. If the temperature is so low as a hundred, it produces an extreme sense of cold, with rigors; and if it reaches 115°, it suddenly excites the heart, the countenance becomes flushed, and the patient complains of great weakness. At first there is but little felt by the patient, and symptoms continue unaltered, until the blood, mingled with the injected liquid, becomes warm and fluid; the improvement in the pulse and countenance is almost simultaneous; the cadaverous expression gradually gives place to appearances of returning animation, the horrid oppression at the præcordia goes off, the sunken turned up eye, half covered by the palpebræ, becomes gradually fuller, till it sparkles with the brilliancy of health, the livid hue disappears, the warmth of the body returns, and it regains its natural color—words are no more uttered in whispers, the voice first acquires its true cholera tone, and ultimately its wonted energy, and the poor patient, who but a few minutes before was oppressed with sickness, vomiting, and burning thirst, is suddenly relieved from every distressing symptom; blood now drawn exhibits on exposure to air its natural florid hue.

Such symptoms, so gratifying both to the sick and the physician, must never allow the latter to relax in his care—the utmost vigilance is still necessary. At first the change is so great that he may fancy all is accomplished, and leave his post for a while. The diarrhœa recurring, he may find his patient, after the lapse of two or three hours, as low as ever. As soon as reaction by the first injection is produced; mild warm stimulants, such as weak gin-toddy, mixed with some astringent, should be freely and assiduously administered. An attempt should be made to fill the colon with some astringent fluid. That such is requisite, is evident from the watery diarrhœa returning with violence, and if not restrained, death will ultimately make sure of his victim, therefore, so soon as the pulse fails, and the features again shrink, the venous injection must be repeated, taking care that the fluid in use retains its proper temperature. The injection should be carried on very slowly, unless the patient is much exhausted, when it may be used more rapidly at first, until a little excitement is produced, after which it should not exceed two or three ounces per minute, and now is the time for the exhibition of astringents by the mouth, which will be retained, for in general the sickness entirely leaves during the operation.

Such remedies must be persisted in, and repeated as symptoms demand, or until reaction is permanently established. I have witnessed no violent symptoms accompanying the rapid injection of the fluid, but I have thought that the hasty repletion of the system was followed by great increase of the evacuations, and consequently, a more sudden depression of the powers of life. The quantity to be injected depends on the effect produced, and the repetition on the demands of the system, which generally vary according to the violence of the diarrhœa; the greater the degree of collapse, the greater will be the quantity needed, though not uniformly, for a very slight loss produces much depression in some systems; hence

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there is often great collapse, without much vomiting, purging, or cutaneous discharge.

Although in every case, even the most desperate, the cholera symptoms were removed, some of my cases failed, which I attributed to one or other of the following causes—either the quantity injected was too small, or its effects were rendered abortive by extensive organic disease, or its application was too late.

I have already given an instance where deficiency in quantity was the cause of failure, which I will now contrast with one in which it was used freely. A female, aged 50, very destitute, but previously in good health, was on the 13th instant, at four A. M., seized with cholera in its most violent form, and by half-past nine was reduced to a most hopeless state. The pulse was quite gone, even in the axilla, and strength so much exhausted, that I had resolved not to try the effects of the injection, conceiving the poor woman's case to be hopeless, and that the failure of the experiment might afford the prejudiced and the illiberal an opportunity to stigmatize the practice; however, I at length thought I would give her a chance, and in the presence of Drs. Lewins and Craigie, and Messrs. Sibson and Paterson, I injected one hundred and twenty ounces, when, like the effects of magic, instead of the pallid aspect of one whom death had sealed as his own, the vital tide was restored, and life and vivacity returned; but diarrhoea recurred, and in three hours she again sunk. One hundred and twenty ounces more were injected with the same good effect. In this case three hundred and thirty ounces were so used in twelve hours, when reaction was completely re-established; and in forty-eight hours she smoked her pipe free from distemper. She was then, for better accommodation, carried to the hospital, where probably, from contagion, slight typhoid symptoms were produced. She is now, however, convalescent.

The second cause of want of success is the presence of organic disease; this, probably, renders the possessor very liable to attacks of cholera; and the latent evil, which previously gave but little uneasiness, suffers aggravation in all its symptoms, more especially after reaction has been produced, and has evidently, in many cases, been the cause of death. A delicate young female, of strumous habits, who had been for some years subject to pectoral complaints, was rescued from a state of collapse by the injection of sixty ounces of the saline fluid, administered in separate portions, within the space of twelve hours. After lingering for ten days she died; the heart was found in a state of atrophy, covered with strong evidence of the existence of ancient disease, and floating in eight ounces of pus. In another case every internal organ was diseased; some of them so much so, that it was astonishing the individual lived so long.

The third case of the occasional want of success, is the late application of the remedy. Hitherto I have had opportunity of injecting only in extreme cases, after every other means had entirely failed, cases which apparently soon would have proved fatal. Here the obstacles to be overcome have been of no ordinary kind, notwithstanding the result of the practice is of the most encouraging nature, and the number of cases now convalescent or doing well highly gratifying. In every fatal case we have had an opportunity of examining, independent of organic disease, I have found a large quantity of fibrin in the cavities of the heart, especially on the right side, where it had extended from the auricle through the ventricle in the pulmonary artery. Such deposition must have formed a certain obstacle to recovery, and is, no doubt, from the interruption it gives to the pulmonary circulation, the cause of the heavings of the chest, and the inordinate action perceptible in the centre of circulation many hours before death. Now surely it is reasonable to suppose, that if this, the most simple of all remedies, were applied early, before the blood drained of its water has collected in the larger vessels, in fact before such fibrinous depositions have taken place in the cavities of the heart, is it not reasonable to suppose that such would be entirely prevented?

But not only is early injection advisable on this account, not only is stagnation of the blood prevented by it, and the laborious breathing, and the præcordial oppression, the intense sickness, the burning thirst, the extreme depression of the vital powers, and the chances of aggravating chronic disease, or of producing new organic lesion, in a great measure avoided: but it is rational to suppose that the consecutive fever will be rendered much milder, and that this is the case, is supported by my own experience, even though the remedy has not been applied earlier, indeed the fact is very evident. In an ordinary attack of cholera, much fluid is lost; and if the individual is so fortunate as to get out of the stage of collapse, if

consecutive fever of typhoid type comes on, the system, left to its own resources to replace the lost serum, must be but ill fitted for the task, for the debility is extreme, absorption goes on slowly, the fever will be much aggravated by the irritation of internal congestion; local inflammation will thereby be produced, and the chance of recovery will be but small. Much of this evil is to be mitigated or entirely avoided by injection into the veins, of which circumstance I can adduce living instances; and where the patient, who had been injected, has sunk under organic disease, the usual marks of congestion are not perceptible.

The apparatus I have used, is Read's patent syringe, having a small silver tube attached to the extremity of the flexible injecting tube. The syringe must be quite perfect, so as to avoid the risk of injecting air; the saline fluid should never be injected oftener than *once* into the same orifice, and the vein should be treated with much delicacy to avoid phlebitis. The wound should be poulticed and carefully watched, if it does not heal by the first intention.

I am, sir, your most obedient servant,

THOMAS LATTA, M.D.

No. 2.

Letter from Dr. LEWINS, to the Secretary of the Central Board of Health.

Results of the Injection Practice in the Drummond-street Cholera Hospital, Edinburgh.

Sir—You will receive from Dr. Latta, the details of two or three cases treated by saline injections. We have both been so much occupied to-day, that we have not had leisure to get our communications ready to be sent in the same envelope. We steal an hour from the time usually allotted for rest to write to you. In case Dr. Latta should omit to mention the circumstance, I beg to mention that his patient, Cousins, the woman who was injected to the amount of 376 ounces, and who promised to do well, for a considerable time, was a person of very dissipated habits.

In the Drummond-street hospital six patients have been injected, and three recovered, or are recovering. In the three that died, extensive organic disease was found on dissection; disease that had existed previously to the attack of cholera.

I send herewith the report of two cases, treated by Dr. Craigue of this place, which, at my request, he furnished me to-day for the perusal of the Board.

I intended to have sent an account of an interesting fatal case, the only one in which the venous injection may be said to have fairly failed where it was fairly used; that I shall do to-morrow.

I have the honor to be, sir, your most obedient servant,

ROBERT LEWINS, M.D.

Leith, May 27th.

No. 3.

Details of Two Cases of Malignant Cholera treated by Venous injection, by Dr. CRAIGIE, of Leith.

No. 1. Case successful. 15lbs. injected at intervals in nine hours.—Martha Smith, aged 38, a noted drunkard, thin and debilitated, in sixth month of pregnancy, admitted into the hospital at 8 p. m., May 16th, 1832.

It appears she had had vomiting and purging since Sunday morning, 12th inst. Cramps came on about four hours ago in both legs; great evacuations both upwards and downwards like dirty water. The countenance is now collapsed; eyes sunk; tongue cold; pulse imperceptible at wrists; very small in brachial artery; 124.

℞ *Muriat sodæ* ℥ij;
Carbon. sodæ ℥i;
Aq. calid. lb.vj. *solve. Ft. Enema statim injiciend.*

Sinapisms to spine and epigastrium; let her be placed on heated tin mattress.

Nine a. m. Has a good deal of vomiting; is getting warmer; pulse now perceptible in right wrist; tongue warmer; she allows the enema to come away without giving notice to nurse. Saline enema as above, with the addition of white of eggs, to be repeated every half hour.

Ten. Vomiting and purging of watery fluid, with slimy matter in it.

Half-past ten. Cramps have returned severe in left leg; pulse again imper-

ceptible; urgent thirst, and constant vomiting. *Rep. enema et pulveres effervescentes.*

Half-past eleven. Breathing becoming much affected; extreme restlessness; cramps severe in legs, and every symptom of sinking. Let the following saline solution be injected into one of the veins of the arm.

℞ *Muriat. sodæ* ℥i;
Carbon. sodæ gr. x;
Aq. calid. lb. iij, *solve temp.* 105° *Fahr.*

Noon. When about lb. i had been thrown in, the pulse was perceived to flutter at the wrist, and gradually strengthened as the injection was proceeded with. By the time lb. iiii had been injected, the countenance, which was before quite death-like, now beamed with the appearance of health, and she began to converse freely. Pulse 96, moderate. To have ℥i gin in warm water with sugar.

Half-past one. The gin was immediately rejected. Pulse has again gradually become imperceptible, and respiration quick and laborious.

Two. Let the venous injection be repeated to lb. vij.

The effect of the injection, as formerly, was very striking. To see an individual who seemed in *articulo mortis* brought back, as it were, in so short a space of time to an apparently tolerable state of health, could not but astonish the beholder. Before the injection was finished the pulse had returned to a healthy fulness and firmness. Expresses herself much relieved; no purging, but vomits much serous matter.

℞ *Muriat. sodæ* ℥ij;
Carbon. sodæ ℥i;
Alcohol. dilut. ℥i;
Aq. calid. lb. iij. *M. ft. enema statim injiciend.*

Four. Enema retained about an hour and a half; surface of body now comfortably warm; she has not passed more fluid by stool than was thrown into the rectum.

Six. Has slept softly for an hour; the first sleep she has had for many days.

℞ *Subm. hydrarg.* gr. v;
Pulv. opii gr. ss. *M. sumat stat. et rep. 3tia quaque hora.*

Nine. Complains much of vomiting and sense of weakness; countenance rather collapsed; breathing rather difficult.

Let ℥lxxx be injected into the veins again gradually.

After the first few ounces were thrown in she complained of an acute pain at the epigastrium, and faintness, probably arising from the fluid being thrown in too fast upon the heart, or from the passing of a bubble or two of air, which may have got in from the inaccuracy of the injecting apparatus used. Be that as it may, the circulating system was so much affected, that the pulse, from being distinct though feeble, became quite imperceptible, but on stopping the injection for a few minutes the pulse gradually returned, and the pain abated. She expresses herself as always getting relief from the operation.

Eleven. Vomiting continues urgent.

App. emp. cantharid. epigast.
Effervescing draughts occasionally.

May 17th. Has passed about lb. j. of urine, of natural appearance; this is the first she has made since she was brought in.

From this time she went on gradually to improve, but stomach continued very irritable, and the matter vomited was bilious.

21st. Labour pains came on, and she was delivered of a still-born female child.

22d. Symptoms of phlebitis in right arm came on, proceeding from the wound upwards, but this yielded to the ordinary treatment, and she may now be considered out of all danger, though she is not yet reported cured.

THOMAS CRAIGIE, M. D.

Leith, May 26th, 1832.

No. 2. *Case fatal—appearances on dissection.*—George Cousins, aged 10, was brought into quarantine at nine, a. m., 13th May, on account of his mother be-

ing ill of cholera. About an hour after admission began to vomit and purge, and it appears he has had diarrhoea severely all the morning. Pulse 102, extremely weak; complains much of sickness; countenance collapsed; areolæ rather dark under the eyes; voice very weak.

He had hot air-bath immediately, and got the following dose:—

R. *Ol. ricini* ℥ss;
Tinct. opii gtt. xv;
Aq. menth. pip. ℥iiss *M. fl. haust.*

Half-past eleven, a. m. Draught retained; sickness has gone off; complains of heat of bath; let it be removed.

Noon. Has vomited some watery matter, with undigested potatoes in it, and again a rice-watery fluid with flocculi. He has now a considerable degree of jactitation; countenance more sunk, and great desire for cold water. These symptoms went on increasing in severity in spite of sinapisms to spine, effervescing draughts, calomel, and Dover's powder, warm water, enemata, &c., and head symptoms were now making their appearance.

Half-past two p. m. Pulse quite imperceptible, and has been so for an hour and a half; he lies quiet and drowsy, with eyes turned upwards; face bedewed with cold perspiration; hands and feet cold and very blue.

My colleagues, Drs. Combe and Lewins, saw him with me at this time, and concurred with me in thinking him not only beyond all hope of recovery, but likely to die *within an hour or two*.

From what I had seen of the resuscitating powers of Dr. Latta's treatment on the boy's mother this morning, by venous injection, I determined on giving it a trial, though this was a case rather likely to bring discredit on the remedy than otherwise. The following solution, at temperature 102° F. was slowly injected into the median basilic by means of a common silver blowpipe attached to Read's enema syringe:

R. *Muriat. sodæ* ℥i;
Carbon. sodæ gr. x;
Aq. calid. ℥vj. *solve.* T. 102.

Three p. m. A few minutes after the injecting was commenced the pulse returned to the wrists, the blueness and coldness of the extremities gradually wore off; the countenance was much improved; and the whole fluid was injected within twenty minutes.

Half-past three p. m. He has now a healthy blooming appearance; is sitting up in bed, and looking about him as if awoke out of a dream. Pulse 110, natural; extremities of good colour and warm; voice much stronger.

Half-past four p. m. Pulse has been gradually falling off since last report; is getting listless, and dislikes to be troubled with questions; breathing becoming laborious, and head symptoms more marked, with squinting to a slight degree superadded.

Seven p. m. Pulse again imperceptible; respiration quick and laboured; countenance collapsed; tongue and breath cold; says he is dying.

Let the venous injection be repeated to lbij.

Half-past seven p. m. Pulse immediately returned, of natural strength and fulness, and continues so.

Nine p. m. Lies very quiet; pulse good; breathing more natural; surface of body covered with warm perspiration.

Ten p. m. Large watery evacuations from the bowels came on soon after last injection; the quantity cannot easily be guessed, but must have been considerable, as it is running through the mattress on the floor. Pulse scarcely perceptible; screams loudly like a child in hydrocephalus.

Eleven p. m. Pulse quite imperceptible; is sinking fast; venous injections attempted a third time, but desisted from as it was not productive of the first good effects. Both pupils much dilated. Died at two a. m. 14th.

Dissection fifteen hours after Death—On exposing the brain and spinal marrow, but before opening their investing membranes, the least pressure with the fingers on the middle of the hemispheres of the brain caused a remarkable undulating down to the middle of the back, showing the existence of a fluid beneath the membranes, and on opening them about two drachms of pure serum flowed out.

The surface of the brain was rather vascular, and the blood in the most mi-

nute vessels particularly bright. A few ecchymosed spots on its surface. All the other viscera were found healthy. The urinary bladder contained about half an ounce of urine.

Leith 26th May, 1832.

THOMAS CRAIGIE, M.D.

No. 4.

Note from Dr. MACKINTOSH to Dr. LATTA.

My dear Sir,—You will be delighted to see the enclosed. Our old patient up to this hour is doing well. Send this to Dr. Lewins.

Yours, &c

Dr. Latta.

J. MACKINTOSH.

Note from Mr. RACY to Dr. MACKINTOSH.

Drummond-street, 11 o'clock.

Dear Sir,—Another case has just come in, and we have transfused 6lbs. of saline mixture in presence of Dr. Alison at the patient's house with better success than in any of our other cases. The Doctor is quite delighted.

Yours, &c.

JOHN RACY.

No. 5.

List of Queries addressed to Drs. LEWINS and LATTA, by the Central Board of Health, London, relative to the preceding cases, &c.

QUERIES BY THE CENTRAL BOARD.

1. Were any of your patients bled previously to, or after, the saline injections into their veins?
2. Were the evacuations by purging, vomiting, or perspiration, increased by the injections?
3. Did any of the patients submitted to the saline injection plan die; and if examined after death, what were the appearances?
4. Had the pulse at the wrist absolutely ceased, and for how long, or had blueness of the surface taken place, and to what extent, in any of your patients before the injection of the saline fluids; and how many of such patients recovered under that treatment?
5. Had suppression of urine been perfectly established and for how long, in any of your cases previously to the saline injection, and what effect did that practice appear to produce on the urinary secretions?
6. What effect did the injections appear to have on the temperature of the patient?
7. Were the blood and evacuations analysed before and after the injections?
8. Did consecutive fever occur in any, and if so, in how many of your cases, whether successful or otherwise?
9. Was the quantity of the evacuations noted before and after the injections in any of your cases?
10. Please to give the details of two or three cases treated by saline injections with age, condition of life, temperament, habits, &c., and particulars of such other treatment as may have been adopted in addition to the saline injections.

ANSWERS BY DR. LEWINS.

1. None before. One to the amount of twelve ounces immediately after the first injection.
2. The evacuations by purging and vomiting, in most of the cases continued. In some of them the purging, the discharge from the bowels at least, was increased. Perspiration was increased in all.
3. Yes; no less than ten of the fifteen that have been injected up to the present day; but under such circumstances as do not detract from the general

merits of the practice: this will be made evident by the history of the cases that will be sent by to-morrow's post.

4. Yes; even at the axilla in some of the cases, blueness of the surface had taken place to a considerable extent. Five of these patients recovered.

5. Complete suppression, I think, in all except two, and for hours. In all the successful, and in some of the unsuccessful cases, the effects of the injection in restoring the secretion of urine were most evident.

6. The injections raised the temperature of the body; but in all the successful cases where the veins were injected, the patients complained of cold soon after the injection.

7. Neither the blood nor the evacuations were analysed, but I sent some of the blood of a patient that had been injected by the veins to Dr. Reed for analysis to-day.

8. The consecutive fever in all the patients who were injected has been slight.

9. No; but they were excessive in most of the cases.

10. Question ten shall be fully answered by to-morrow's post.

ROBERT LEWINS, M. D.

6 Quality-street, May 26, 2 o'clock a. m.

No. 6.

Latest Communication from Dr. LEWINS to the Secretary of the Central Board of Health.

Sir,—The urgency of my present private and public duties prevents me from communicating more to you to-night than the following brief particulars of a case that occurred at the Leith Cholera Hospital yesterday:

A woman of about forty years of age was admitted on Sunday evening at seven o'clock. She was *pulseless* even at the axilla, *sightless*, *cold* and *blue* over almost the whole body. *Respiration* very slow and irregular—in a word, she was all but lifeless. It was feared she would be dead before the operation of injecting could be commenced. Between seven at night and two o'clock next morning, there were thrown in 234 ounces, upwards of twenty-three pounds. The report of her situation at 2 on Monday morning, in the hospital book, is as follows:—"A change for the better that appears almost miraculous has taken place. The action of the heart is greatly improved; respiration not in the least laborious, but quicker than natural; pulse 120, small, but distinct. She can articulate distinctly; countenance natural; lips red; tongue moist and warm; she perspires freely; heat over the whole body natural."

A full report of this wonderful case shall be forwarded soon.

I remain, Sir, &c.,

ROB. LEWINS.

P. S.—In one the pulse had ceased at the wrist eight hours before the injection. Dr. Alison had seen the patient eight hours before the operation, and the pulse was then imperceptible.

Quality-street, Leith, May 29, 1832, 1 o'clock a. m.

NOTE FROM DR. O'SHAUGHNESSY.

Proposals to combine Simulants and Astringents with the Aqueous and Saline Injections.

To the Editor of THE LANCET.

SIR,—Having learned from the Central Board of Health the circumstance of Dr. Latta's peculiar practice, I may be perhaps excused for requesting the immediate insertion in your Journal of the following brief observations:—

Although I expected great benefit from the injection of water into the veins, and although I believed that the addition of small quantities of salt to that water would contribute powerfully to the restoration of the blood to its natural

state, I beg to state that the results of the practice described by Drs. Latta and Lewins exceed my most sanguine anticipations. When we consider that no practitioner would dare to try so novel an experiment, except in cases beyond hope of relief by any ordinary mode of treatment, and consequently desperate to the last degree, even a solitary instance of recovery affords matter for congratulation.

I write now for the purpose of offering the following suggestions to the gentlemen engaged in these experiments.

Although by the injection of water and salts (in quantities varying according to the previous extent of the evacuations), we may restore the efficient fluids of the body, and bring back the blood to its normal state, thus possibly removing a powerful cause of death in this disease, we must still remember that the unknown *remote* cause, and other agents, may be and still are in operation, and require to be remedied before a perfect cure can be performed. The great debility, the natural effect of the evacuations, will probably require some stronger stimulant than the new and artificial blood will afford. Some means will also have to be taken to prevent the recurrence or continuance of those evacuations, an event of constant occurrence in Dr. Latta's cases.

I would therefore recommend, that in addition to the injection of water, either simultaneously or subsequently, as circumstances would suggest to the operator—*medicinal agents*—of the stimulant or *astringent* classes, for example, *should also be injected in minute doses.*

In selecting the agents employed, it is to be cautiously observed that they must not be chemically incompatible with the blood. They must not coagulate albumen, fibrin, or colouring matter, or darken the colour of the latter. As a general rule they should be soluble in water.

As *stimulants*, minute quantities of *carbonate of ammonia* dissolved in water might be used. Dupuy, of Alfort, has found that this salt may be injected with safety into the veins of horses. Small doses of the *sulphate of quinine* might also be thus administered. Even extremely dilute spirits might be employed.

Weak decoctions, or solutions of the vegetable *astringents*, might also, I conceive, be injected with great advantage. Gaspard's experiments fully warrant me in stating that these cannot induce any *bad* effect, and that they may therefore be tried with perfect safety.

I am, Sir, your obedient servant,

W. B. O'SHAUGHNESSY, M. D.

London, June 2, 1832.

APPENDIX.

THE injection of a saline fluid into the veins, has been repeated in this city during the present epidemic, and not without success. The following case occurred in the practice of Dr. F. T. Ferris, the particulars of which are briefly as follows.

The patient was a woman of 50 years old, and exhibited every appearance of approaching dissolution. The median cephalic vein being opened, a solution of

R̄ Mur. sodæ ℥ij
Sodæ sub. carb. ℥ij

in six pints of water at 11²⁰ were injected. After introducing about ℥lv, a small and tremulous pulse began to be perceived at the wrist. In 25 minutes she observed that she felt as well as she had ever done in her life, and asked her husband for a pinch of snuff, which she seemed greatly to enjoy. In about half-an-hour the discharges returned, and she was again speedily reduced to her former condition. Seventy-five oz. were again injected; the first 25 oz. quickly, and the remainder more slowly: the whole process occupying about 40 minutes. She again revived, and continued to all appearance on the recovery when I left her at $\frac{1}{2}$ past 1 a. m.

At 5 a. m., I was again called to her. She had no vomiting, but large discharges from the bowels, and was again in a state of collapse. Transfused as before, 90 oz.; the effect was immediately beneficial. The pulse remained good for an hour, when as it began to sink, 50 ounces more were gradually injected. The pulse now became natural, and so continued throughout the day. Towards evening, congestion of the brain, occurred, with delirium, and subsequent insensibility; and she died at 10 o'clock, a. m. of the 24th.

A short time previous to her decease she was bled 6 ounces, the blood drawn being of natural quality and appearance. The pulse at the time of her death was rather more frequent than was natural.

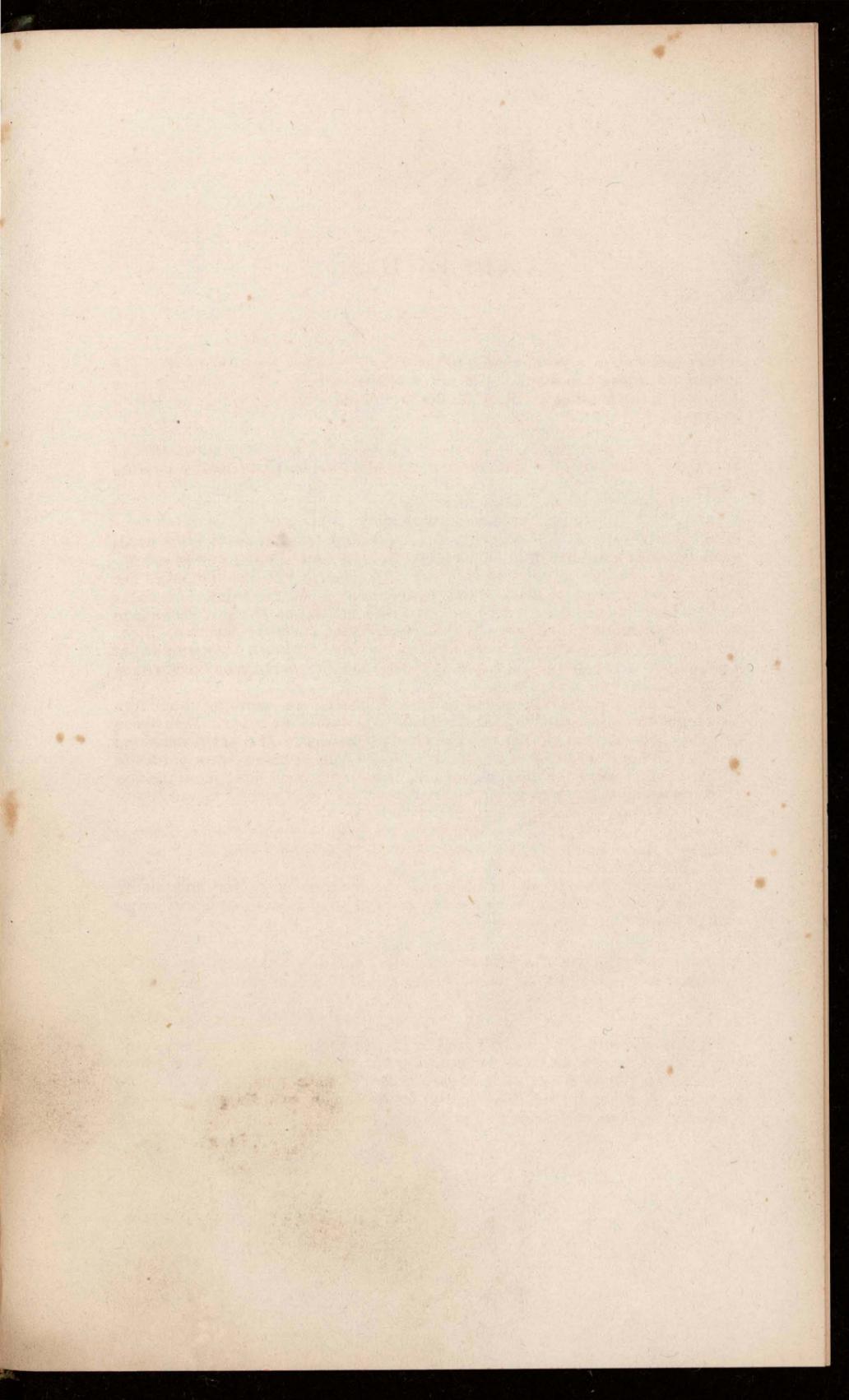
The quantity injected was in all 270 ounces, which produced every anticipated effect: and but for the consecutive typhoid symptoms, the case would in all human probability, have done well.

The following notice of a case successfully treated in the same way by Dr. Rhinelander we extract from the published minutes of the Board of Health.

Board of Health, July, 23, 1832.

Dr. Rhinelander stated to the Board of Health that one case had been cured in the Crosby-street Hospital by injecting the veins with a saline solution. Twenty-four ounces of a solution of carb. sodæ. ℥i, sodæ mur. ℥ij, to six pints of water, were injected. The name of the woman was Margaret Mehan. The operation was performed at 7 p. m., July 21.

J. MORTON, Sec.



APPENDIX

The following is a list of the names of the persons who have been appointed to the various positions in the office of the Secretary of the State, since the last meeting of the Board of Education.

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