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THE
COMMON SENSE
OF
CHOLERA.

BY
A PRACTICAL PRACTITIONER.



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SUMMARY.

Two Primary Questions: I. What is the Disease? II. What is the Cure?

(Both questions as capable of satisfactory answer in the case of cholera, as in that of almost any other malady.)

Under each primary, three secondary questions, bearing respectively on the agent, the material, and the action, thus:

I. WHAT IS THE DISEASE?

1. What is the agent producing the action (or disease)?
(The agent, little known, but about as well known as that of any other disease.)
2. What is the material on which the agent acts?
(The material, vitiated vital conditions.)
3. What is the action (or disease) itself?
(The action, essentially a hæmorrhage: its beginning, slow; its progress, rapid; its end, syncope; its consistence, serum with lymph; and its seat the intestinal capillaries. All other phenomena attending it, referable to its peculiar nature and its peculiar seat. The action may stop and recovery, usually preceded by reaction, occur—spontaneously—at almost any stage.)

II. WHAT IS THE CURE?

1. The agent—to intercept?
(Doubtful, if practicable.)
2. The material—to suppress or disperse?
(Practicable by the usual sanitary and sanatory measures.)
3. Action and reaction—to remedy?
(Both remediable by the principles of medicine in general and by those of hæmorrhage in particular, and not by any nostrum or empirical specific whatever. In the cure, three indications: (i.) To suppress hæmorrhage (by restoring normal capillary action); (ii.) To rally from syncope; and (iii.) To moderate reaction.

THE

COMMON-SENSE OF CHOLERA.

I. WHAT IS THE DISEASE?

FOR an answer to this question, suppose, proceeding as at an inquest, we commence by viewing the body—that is, by seeing a case.

Softly, then, and with an awe-struck heart, approach the bed where lays, in middle of the disarray of bed-clothes, tumbled from the restless, outstretched arms, tossed from the restless, outstretched legs, the ghastliness of cholera. Between the half-closed eyelids, only the whites of the eyes are seen, blank, over an awful, mottled-livid face with shrunken nostrils, and with blue, blue lips. How crooked are the fingers of the hand you take; crooked, blue, and corrugated; contrasting strangely with the pearly nails! How cold the arms you touch, and dark; dark, dark, and icy cold. There is no flutter of a pulse in them. You stoop; you put your fingers on the lips: why, the very breath blows cold upon them! And the tongue? Cold; cold, moist, clean; almost with the feel of raw flesh. You speak to him: he turns his glassy eyes on you:

“Heat,” he whispers—how peculiar is the whisper! —“heat;” and he lifts his dusky, crooked hand down to his shrunken bowels. Heat, internal heat, it tortures him: no draught can slake it or assuage. And yet, how cold the whole surface of his body! Cold, cold; dark, dark! Suddenly, with fearfully rapid toss, with fearfully muffled cry, he startles you! “Cramp,” he whispers with wild eagerness, “cramp!” O soothe his agony! Rub—press—squeeze those knots upon his legs,—before,—behind; those others on his arms—up—down—here—there. Such suffering, such ghastliness, and with a head as clear as diamond: ’TIS CHOLERA!

Having, in this manner, viewed the body, we proceed, in continuation of our inquest, to take the evidence. How came all this? What was its beginning? What was its progress? What were its antecedents generally?

A day ago—two days ago—it may be, three days ago, the subject of our inquiry was in his usual health; or, at most, he complained only of a little indigestion. For half a day—one day—two days perhaps,—a simple diarrhœa followed. Gradually however,—or, in truth, it may be suddenly,—the loose stools of this diarrhœa became more and more frequent, more and more copious, and, at length, colourless. Vomiting, also, of a matter similar to that of the latter stools came on: and these events issued in the prostration of strength, the cramp, and general ghastly condition we now behold.

Indigestion, purging, vomiting! Purging of

peculiar fluid ! Vomiting of a similar peculiar fluid ! What are we to consider the important fact here ? Whichever be the important, is not this peculiar fluid manifestly the prominent ? It is the product at once of the purging and of the vomiting ; and, as a product of either, it is something equally singular and unusual. What can it be ? It looks almost like rice-water ; almost like a thin, weak soup with grains of rice floating in it : but let chemistry examine it, and, having done so, what is the answer ?

According to chemistry, this peculiar fluid is identical with the serum of the blood, and contains coagulable lymph. Now, serum of the blood, we have all seen ; and coagulable lymph we have all seen : for, in the basin, into which we have all looked, on the day after the memorable occasion of a blood-letting, the former is the fluid, while the latter is (part of) the solid ; into which two elements we there find the previously uniform, bright-red liquid spontaneously separated and transformed. In said basin, in effect, the colourless, or slightly yellowish-greenish water, surrounding the dark-red clot, is the serum ; while the yellow, buffy, sisy layer, generally found, more or less thickly, on the upper surface of this dark-red clot, especially when that surface is of a hollow, drawn-together, cup-like form, is the lymph. The soup-like fluid shall be the serum, then ; the floating, rice-like particles, the lymph. But, serum of the blood, lymph of the blood, how came the serum of the blood, the lymph

of the blood there? Constituents of the blood can only come from the blood: how came they, then, to be discharged from the intestines? Is there any connexion between the blood and the intestines—any channel of communication between the two? Yes; certainly! There are the pipes of the intestinal capillaries, which, with their mouths along the whole inner surface of the intestinal canal, terminate, through larger and larger pipes, in the main trunks of the circulatory system.

With this light, we see at once, then, that the serum of the blood, with its contained lymph, has simply drained through the capillaries of the bowels into the canal of the bowels; whence it has been rejected by the consequent acts of purging and vomiting. But, simple and intelligible as this drainage may be, what results from it—say to the blood that remains? For we know now that there is blood that remains, seeing that we have just been made cognizant of the fact that, besides the colourless, represented by the serum and lymph, there is also a coloured blood, represented by the dark-red clot. What of this clot, then? The fortune of the one element, the colourless, the fluid, we see clearly; but what of the other—the coloured, the solid—Ah! being solid, it cannot flow: the blood, drained of its fluid, stagnates in the system, and, unrenewed by circulation, blackens: hence the whole!

Cholera, then, is a loss of the fluid of the blood, and a stagnation of the solid, and, the one event being but the consequence of the other, it may be

defined an epidemic, intestinal, colourless (or serous) hæmorrhage : that is, a man in cholera bleeds colourless blood from his bowels, at the same time that many others in the same neighbourhood are similarly affected.

Having, in this manner, attained to a general conception of cholera, let us now examine it a little more in detail.

To every conflagration, there are two things necessary—the spark and the fuel : in this peculiar conflagration called cholera, then, what is the spark and what is the fuel ? In other words, as in every action there are three elements, to wit, the agent producing the action, the material on which the agent acts, and the action itself, so, in this special action named cholera, must there be three special elements precisely analogous : these we demand. That is, under this first primary question of what is the disease, we put the three secondary ones, and ask : 1. What is the Agent ? 2. What is the Material ? And, 3. What is the Action ?

1. *What is the Agent ?*—Of the two essentials to the production of the conflagration,—of the two elements necessary for the development of the third, this the spark, or agent, is infinitely the more mysterious. We see it come into operation after long and irregular intervals ; we see it affect large masses of the community at once ; we see it travel in a path that is a discontinuous curve of unknown elements ; and we seem to see that it is attended by a peculiar condition of the electric force : the rest

we know not. What peculiar modification of mundane powers, or what subtle, special, and peculiar influence it is that excites such phenomena in us, we know not at all.

Nor, ignorant of it, are we one whit wiser in regard to its mode of action, in regard to the manner in which it penetrates our persons to have power on us. It may enter by the food we eat, or by the air we breath; it may enter like electricity and strike at once: enter as it may, its door of entrance is unknown to us. Of *nexus*, as of agent, an avowal of ignorance on our part must unreservedly be made. But what then? Must we, because of this, put finger in mouth and sit down, wistfully helpless, before the block of our own ignorance? Are we so very wise elsewhere then? And are other morbid agents so very familiar to us? What of typhus? What of plague? What of yellow-fever? What of small-pox, erysipelas, ague? What of influenza? What of scarlet-fever, hooping-cough, chicken-pock, measles, mumps? What, in short, of any ordinary malady in regard to which we hear no loud proclamation of our ignorance? Of the morbid agents of all such diseases, and of most others, in fact, are we not, in spite of all that jargon of contagion and infection, heat, cold, exhalations, emanations, effluvia, animal and vegetable, all but wholly ignorant? Well, is it not strange that we summon up a mystery to appal and stultify us in this case, when, in the others, ignorance itself is as a hearth and home to us for facility of abode? For

our parts, we conclude on this head by saying that, as we are ignorant of morbid agents in general, so we are ignorant of that of cholera in particular; but we have yet to learn what special claim our ignorance has to founder and bewilder us here, when we carry it with such commendable assurance elsewhere. We proceed to ask—

2. *What is the Material?*—And here, fortunately, an answer is easier. Has the reader ever had occasion to witness the advent of worms in a family? Has he remarked that the first child affected was, if not the weakest always, at least, the weakest then? that the next in feebleness was the next also in disease? that child after child, in effect, was drawn into the current of the malady, just in proportion to the deficiency of force he opposed to it? That the air seemed alive with the spark—with the invisible ova and seeds—with the agent, but that action was impossible till the fuel, the material was collected—the necessary nidus formed? Has he ever observed that fever burns there only where its fuel is piled up for it: dirt, putrescence, suffocating foulness; bodily weakness from congenital defect and all subsequent unwholesomeness; mental weakness from ignorance and depravity, from vice and crime? And, further, has he observed that the very denizens of this dread pile burn not themselves till they have flung thereon fuel of their own, fuel specially theirs, the fuel of immediate want, of immediate fatigue, or of newly-terminated foray of vice? Has he seen, for example, that the stout

navvie takes not fever when he has been long in the enjoyment of full work and full food, but then, when he has suddenly attained to these—after his periodic tramp, haggard by previous excess, worn out by fatigue, reduced by want, and chilled by sleeping in the open air?

If our reader, whether by bodily or mental vision, has realized to himself the matter of these questions, he has now no difficulty in understanding what is meant by the material of cholera. When the machine works on with every condition, say, of oil, water, coal, cleanliness, duly supplied to its every member—to its every axle, valve, lever, furnace, and digester—disturbing forces hover about it powerless. But when such conditions are withheld, there come rust and adhesions, there come dust and ashes, there come jerks and stops, and every enemy has a grasp. Derangement of organ, organs, or system generally, from failure in the supply of the due vital conditions; enfeeblement of force; lowering of tone; debasement: these are the precursors of cholera as of all other maladies. For the spark to have power on us, we must have allowed fuel to gather in and around us by sins of previous omission or of previous commission. We have given the enemy a hold on us, by presenting to some one, or to several of our vital functions, an improper aliment—an aliment foul. We have opened ourselves to him by foul breathing, foul eating, foul drinking, by foul clothing, lodging, sleeping,—perhaps, by foul thinking, feeling, acting. He has been able to enter us,

in effect, by the ready loopholes of vitiated vital conditions. Believing now, then, that the material of cholera has been, though briefly, yet sufficiently, indicated, we pass on to demand—

3. *What is the Action?*—The patient we visited gave us an inkling of an answer to this question; and, carrying with us the conceptions of serum and clot derived since from the illustrative basin, we shall just take one other peep at the process.

The alimentary canal, with man, as with the other animals, is a long soft tube or gut, winding from the mouth to the seat, and packed into the belly by folds. Drawn out at full length, there is seen, hanging from this tube, a fringe or web. In regard to the folds, it is the puckering together of this fringe which is the means of their formation, as its attachment to the centre (say) is that of their retention. But, besides acting as means of mechanical attachment between the gut and the centre, this puckered web serves also to keep up the communication between them otherwise; for in it, as nidus, it is, that, from the one to the other, the necessary nerves and vessels pass; terminating on the gut, the one in minute threads or filaments, and the other in minute pipes or capillaries. The inside of the gut, then, is to be figured as drilled into innumerable holes of extreme, and, indeed, invisible tenuity. These holes are the openings into the capillaries, which are hair-like pipes, interlacing with each other into a gauze, into a veritable network, surrounding the gut, and within the tissue of the gut. In the direction of

the centre, the component tubes of this capillary net, passing ever from smaller to larger, continue, in this way, more and more to disentangle and simplify themselves, till, ultimately, they terminate in a single tube—the main trunk of the circulatory system. The business of these vessels is to carry from the gut to the centre, and from the centre to the gut; in the first case, materials extracted from, and, in the second, materials necessary to, the process of digestion. This they are enabled to do by the vitality they derive from the nervous system; for, in themselves mere pipes, and, so to speak, dead, certain little strings, or nerves, are as bridles in their mouths, and give them to the control of the general organism.

Here, then, have we reached the seat of cholera. On the source of vitality to the capillaries of the intestines, there is the impression of an unknown morbid agent. The strings lose power, the pipes lose function: instead of taking up and carrying all the materials they can to the system, they suddenly give out and discharge all the materials they can from the system; and, of this discharge, all the other phenomena are but necessary consequences.

The first link in the chain of phenomena, then, is the impression of some unknown morbid agent inducing derangement of function on certain nerves.

The second link is (in consequence of the first) derangement of the function of certain capillaries with discharge of their contents, to wit, a certain blood.

The third link is (in consequence of the second) obstructed circulation of a certain other and remaining blood.

These three links contain the disease : the rest is but resultant.

To some unknown agent power is given, by reason of the presence of certain known materials—certain known vitiated vital conditions—to modify, paralyze, or reverse the action of the intestinal capillaries. All the blood in the body that through such small vessels can pass, to wit, the colourless, through them does pass, and issuing into the alimentary canal, is rejected thence by purging and vomiting. In consequence of this discharge, this white bleeding, this veritable hæmorrhage, syncope, or, as it is here called, collapse, comes on. The mass of the blood, drained of its fluid, stagnates; ceases to reach the lungs; ceases, therefore, to be oxygenated; and, thus undecarbonized, blackens. The surface grows cold and livid, often—by reason of the presence here and there of larger vessels—in a mottled fashion. The breath, meeting but little or no blood to oxygenate, comes back cold; while, from this very state of the breath, as well as from the general condition of the circulation, the tongue also is cold, at the same time that, from the relaxed and moist state of the intestinal mucous membrane, induced by the powerful determination to its whole surface, from end to end of the tube, it is likewise clean. The circulation stagnating, the usual secretions and excretions of urine, bile, &c. are suppressed; consecutive disturb-

ances of the nervous centres supervene, and, as often in other hæmorrhages, manifest their presence by cramps or convulsions. All the successive symptoms, in fact, correspond line by line with the successive steps of the process, and are manifestly but the outward prints of the inward types.

That death, apparently the only possible consummation to such grave derangement, be escaped (supposing the process uninterfered with), must plainly be by the intervention of syncope at a period sufficiently early to preserve still some stock of fluid to the system. The hæmorrhage stops, the syncope passes, fluid from its natural repositories filters to the obstructed vessels, the stagnant blood thaws, becomes susceptible of the influence of the air—moves, the heart beats, the circulation restores itself, though with reactive violence, heat is generated, bile, urine, and the others are secreted; and, escaping the dangers of the reaction, the consecutive fever, as it is called, with its usual tendencies, as fever, to secondary inflammations of brain, stomach, or other organs, safety and convalescence are, at long and last, only desperately and difficultly reached.

The process, however, can never be expected to run precisely the same course in any two: varieties in the intensity of the agent, as varieties in the amount of the material, must produce corresponding varieties in the action. Cholera, in fact, must, like all other diseases, submit to what are called the usual modifying influences of age, sex, temperament, idiosyncrasy. &c. ; and must present many individual

peculiarities. Children, for example,—possibly from their smaller capacity of resistance to disease, and from death, consequently, taking place ere the loss of fluid has been as total and complete as in the case of adults,—seem to suffer little pain, and die blanched, not livid. Indeed, we recollect to have seen a man of twenty-five dying of cholera with the same blanched look, hurried breathing, partial insensibility, thready pulse, muttering lips, and slight involuntary jerkings which we had once an opportunity of witnessing in a case of fatal hæmorrhage from the femoral artery. Again, the fluid that escapes is not always without intermixture of red blood; neither is it always rejected from the bowels, but may be retained. Nor even where purging is present, does vomiting invariably occur also. In consequence of the very peculiar condition of the patient, at the time he received the shock of the agent, there may be, though very, very seldom, death itself without even the hæmorrhage: for there is always a pivoting population; there is always a certain number of persons in a condition of constituent affinity so loose that they only await the first touch of inflammation, fever, cholera, or almost any other disease, to fall at once into dissolution. And this it is that produces the severity of the type of early cholera,—its immense initial mortality,—as well as the mildness of the type of later cholera,—its inconsiderable terminal mortality; and also the comparatively slight fatality (in other diseases) that, for a season, follows cholera. This,

the great morbid agent, has, in fact, swept off all our pivoting individuals, and left none for the others. But, if such be the unfortunate lot of these, cases again occur in which the agent can only produce indigestion, or at most diarrhœa. In the majority, indeed, we may say, the process is at first very mild and slow; in many it ends there; and, even very late in collapse, recovery is still possible.

We may remark here also, that, besides the hæmorrhages, there is another class of diseases which cholera resembles and with which it may be classed—we mean, the dropsies. The fluid contained in the cavities of the abdomen, chest, &c., in the event of dropsical effusion, is serum containing lymph—precisely the same chemical constituents that are evacuated in cholera. In the one case, however, the effusion takes place into shut sacs which, from their very nature, limit its amount; while, in the other, it takes place into an open tube, whence it may run off interminably. Cholera, then, in this view of the matter, might not inappropriately be termed an intestinal mucous dropsy; and, in that case, there is another theory perhaps more accordant with the name. It is that cholera, in spite of the gorged condition of the gall-bladder, found in its victims, is really due to obstruction of the liver. Indeed, there is a third theory, which, for the sake of completeness, we may mention here; it is the chemical one; and supposes the blood to be simply decomposed into its two elements, solid and fluid, by reason of the presence of a—so-called poisonous—

chemical agent. The reader has, doubtless, already observed that the tendency of our own theory is towards a certain modification of the electric force affecting the ganglionic nervous system, and so the individual nerves of the capillaries: in all the three theories, however, there is the capillary drainage; and that is the essential. We withhold, then, our objections to the other two theories; and merely remark that the great reason of our own preference is the superfluousness of inventing new agents when, for the matter in hand, the old ones will suffice.

We have now passed under review the sum of all that can be said as regards the agent, the material, and the action: we have answered, as far as at present lies in our power, the first primary question and its three secondary ones also. We turn now to the second primary question, and ask,

II. WHAT IS THE CURE?

Is there one, then? will be the eager question of many readers here on the very threshold. For it must be acknowledged that, on this head, confusion and embarrassment have been but too prevalent everywhere—whether we regard the learned shepherds or the unlearned sheep. Amiable, scholarly men have applied themselves to all the learning of the gentiles—have dipped deep into Oriental, Greek, Roman, German literature—have compiled statistical tables—have wandered hither and thither, in their closets, over the great ocean of medical science—and have, at length, only desperately stooped on homœopathy

or hydropathy ! These amiable, scholarly men, who read so much, and who see so little, we take leave to say, are sad stumbling-blocks to us practical men ; and empty only vials of misconception and mistrust upon the public. Would to heaven they would, once for all, leave us to our own work—to what we actually do see and treat and have experience of every day in our lives ! Can they not see, after all, that hydropathy is but a resource to be used according to the general principles of medicine ; and that, as such, it is something, and all it can be ? And can they not see, as well, that the conclusion of homœopathy, suppose it to succeed, will only be to give us a supplementary *materia medica*—an additional list of purgatives, emetics, tonics, narcotics, and so forth ; and that the general principles of medicine which have been accumulating, since the first of days till the last, by the labours, recorded or unrecorded, of every worker in the field, remain, in the end, unaffected by either of them ? Let homœopathy and hydropathy be established to-morrow.—and asserting the former to be an exploded absurdity, we admit the partial truth of the latter—the result will be that we shall have only some additional remedial resources to be applied according to the ordinary principles of medicine—precisely that, and no more.

In spite, then, of statistical tables and the labours of reading men, who have never seen a case, we venture to assert that all practical practitioners in the kingdom, who have severally had a score of

cases of cholera under their own hands, are tolerably decided and pretty much agreed as to the only form of treatment that can be of any avail in it. For our own part, we are bound to say that, as we see no unusual difficulty in the nature of the disease, so neither do we see any in the treatment of it. Nay more; we unhesitatingly assert that it is a disease infinitely more under control than many others—say, for instance, scarlet-fever. To the former, we should go with the conviction that we had some power over the process: to the latter, with the fear that we had little or none. The one diseased process is, in fact, under certain conditions, pliable to treatment, while the other is hardly so at all.

One thing—on the general principles of medicine, it is, that cholera, like all other maladies, must be treated. In vain shall we demand specifics—in vain shall we ferret earth and pester heaven for them. They are nowhere to be found: they are secrets of the dead alchemists, and will abide with them. Such as mortals are now, we never shall possess them more. And, however often startled we may be yet by the eureka-cry of antidote, antidote! we hesitate not to affirm that, in the end, epidemic cholera will be found to take up its position quietly on the nosological chart—submit itself to be treated according to ordinary principles—and excite no longer any unusual stir at all.

How then, at last, is cholera to be treated? In what manner shall we intercept the spark, disperse the fuel, and extinguish the conflagration? In

other words, under this second primary question of what is the cure, let us put the three secondary ones with reference respectively to the agent, the material, and the action.

1. *The Agent—to intercept?*—On this head it may be confessed at once, we know nothing. Quarantines, inasmuch as they tend to diminish the number of affected, and consequently viciously-vibrating bodies, may be of some, though manifestly very inconsiderable, and indeed, in view of their other consequences, equivocal, avail. Large fires, mechanical manipulation of metals on a great scale, and similar influences may, by changing the balance of the electric power, produce some effect. But, in these respects, there is hardly anything that we can practically do; and we remain, at last, precisely as powerless to intercept the spark of cholera, as to intercept that of influenza—and not one whit more so.

But if we cannot avert, we can at least avoid. From the known path of the unknown agent, we can always withdraw ourselves; and a very inconsiderable deflection has often proved abundantly efficacious to protect. Those who can, then, should remove themselves, and those who cannot should be removed by the Board of Health. But let us ask,

2. *The Material—to suppress or disperse?*—And, if we can answer this question, the last is evidently of considerably less consequence. If we can remove the material, it matters less that we are powerless in regard to the agent; for to cancel either of the tw

terms, is to cancel the third. On dry stone the whitest spark blackens ; if there be no fuel, there can be no fire ; without the tinder, useless the flint. Agent, or no agent, let there be no material, and there shall be no action. And here, fortunately, we feel ourselves on firmer ground ; for the fuel (the material) is as familiar, known, and ordinary as the spark (the agent) is mysterious, unknown, and extraordinary. These materials, in fact, are vitiated vital conditions : to abolish cholera, then, we have but to abolish these.

Practically, however, the difficulty, perhaps, remains to us. The subject of vitiated vital condition lies still before us formless : and neither method nor rationale rises from it readily. The circumference, indeed, is always thus embarrassing ; the whole soul cannot stretch to take it in ; we wander about it in vexation vainly ; we try here, we try there ; still eyeing wistfully the centre ; longing to leap to it—to reach it at a bound ; assured that, once there, opacity lucidifies, difficulty vanishes, and the whole chaos collapses to our grasp—shuts up into our very hand. But just such virtue lies in ideas : no human speculation but, sooner or later, collapses into the centre of a thought ; dissolves and crystallizes in the menstruum of an idea. Can we find, then (here, on the outside of the circumference of vitiated vital condition, and unable to take into our tractate the whole matter of dietetics and hygiene), any such resolving centre,—any such lucidifying thought ? Can we find here, in short, any one general principle

that will suffice our objects? Well, perhaps such is contained, if not perfectly yet not quite imperfectly, in the following chemical fact:—

A compound in motion (of decomposition) tends to induce a similar motion on a neighbouring compound at rest. The power of the first is relative to the amount of its motion; the susceptibility of the second to the amount of its atomic inter-attraction; and this inter-attraction is, generally, strong or weak according to the fewness or numerousness of the composing elements. Mechanically, this fact is illustrated by a pendulum in motion propagating its own state to a pendulum at rest; and chemically (which is more to our purpose), by the familiar process of fermentation.

It is this chemical idea, then, of sympathetic decomposition that shall serve us as collapsing centre to the yet unexplored circumference of our present question regarding the suppression and dispersion of the materials of cholera. For it is evident that a compound of such numerous elements, as is the human body, must, chemically, be peculiarly prone to decomposition; and that, consequently, considerable influence must be exerted on it by any decomposing bodies placed in its neighbourhood. What is called vitality, or vital force, is that which resists this chemical tendency in our physical frames; is that which forms, as it were, the fixing centre, the knot the confining and retaining knot of the chemical elements of which we are composed. Evidently, then, augment without us the number and activity

of decomposing bodies; or, within us, weaken this vitality, unfix this centre, loosen this knot, and the greater is our tendency to decomposition; the greater our tendency to disease. And remark how, in accordance with this, are all our previous findings in relation to the materials of cholera. These materials are precisely those influences that increase decomposition without and decrease vitality within. On the one hand, they are coarse, unclean, obscene aliment; they are dirt, putrescence, and suffocating foulness: on the other, they are insufficient sleep; they are want, fatigue, cold; they are luxury, indolence, excess; they are congenital defect; they are mental weakness; they are vice and crime.

Practically, then, our duty springs up plain to us; we must lessen decomposition without, and increase vitality within; we must gather the fixed, and scatter the unfixed; we must sweep our external circumference and tighten our internal knot. The material of cholera, in fine, is suppressed and dispersed,—1, by adopting all that tends to fix, and, 2, by discarding all that tends to unfix, the elements of which we are composed. The aim of the former is health; that of the latter wholesomeness. Sanitary measures are the province of the one; and sanatory, that of the other.

It may possibly be objected that we are always in presence of bodies in a state of chemical change; and that some such, even while passing from a fixed to a loose condition, are actually disinfectant. But, it may be answered, that such bodies, if beneficial,

probably operate their benefit by entering into a more fixed combination with other bodies previously less fixed. An objection, too, may be raised on the fact, that it is not always the most fixed bodies that are found to be the most congenial to digestion. Objections, in fact, are numberless, and may even grow to such witticisms as, That we should extinguish our fires, hold in horror the rose, cover up our stringed instruments, and lay our bells in straw. But, perhaps, it is sufficient to remark that, for the process of digestion, fixity must have its limits; that mechanical vibration is not chemical decomposition; and that many of the items capable of being objected, are precisely the necessary vital conditions of sundry organs, as, warmth to the skin and employment to the senses. If, then, we have added anything to the general stock of distinct conceptions; if we have thrown any light on the method and rationale of our industry respecting the suppression of the materials of cholera, we shall not be sorry for what we have written.

We pass on to remark that, on this head, our industry is susceptible of a twofold distinction: 1, That of the individual; 2, That of the society.

As regards the individual, he has, of course, simply to put in practice the two general rules obtained. He seeks health within and wholesomeness without. He avails himself of sanitary measures for the one, and of sanatory for the other. He adopts all that tends to fix, and he discards all that tends to unfix, the elements of which he is com-

posed. With the latter object, he withdraws from the path of the agent, and he removes from his presence everything in a state of chemical motion from fixed to loose; while, with the former, he secures for each of his functions, for each of his organs, stomach, lungs, skin, &c., its due vital conditions, its due aliment of food, air, cleanliness, &c.

But, let us take an ideal individual, and, for a model to ourselves, let us follow him in all his comings and goings, from point to point, throughout the whole course of the diurnal round.

And here, perhaps, in a tractate like the present, pretending only to what is practical, a preliminary apology is due for what may be named the impracticability of much that follows. Circumstanced, indeed, as the masses actually are at present, we fear for this portion of our enterprise the accusation only of dream. Dreams—that is to say, ideals—however, must always precede reals; and only by throwing down from the solution of the former the crystals of the latter; only by converting our castles in the air into castles on the earth; only by opacifying into seen material forms the unseemly spiritual ideas, is it that man's mysterious march, advancing and advancing, grows. And, if new ideals were ever necessary, surely it is now—in these very hours which accomplish the abrogation of all that was ever realized out of the old. For we are at this moment engaged in changing our whole general system of existence; or, as yet, indeed, rather, perhaps, in only destroying that according to which we have for

centuries lived. We have done nothing for some-time now, in fact, but unbind the fastenings which the old ideal, according to its wisdom, and for our good, had imposed upon us; till we begin now, freed from all band and bond, to move (towards the senses) at least "fast" enough; for "fast" is the universal aspiration, and "slow" the most horrid of epithets. This bondlessness appears, however, to have inconveniences of its own: the poet sighs for "the liberty of a wise restraint," and the philosopher rounds his periods with "a necessity in duty that will make us free." Beyond all doubt, in truth, our whole work, for some time to come, must simply be to shackle ourselves anew; to forge for ourselves fresh fetters, whereby the unit, through the wisdom of the all, shall be saved from what is worst in him to what is best in him; shall be secured, so to speak, *to* God and *from* the devil. Such shackles and fetters, such new bonds and ligatures, shall be realized out of many ideals; and, among these, that of health shall surely not remain unsummoned. From whatever point of view, too, we regard it, and in whatever language we phrase it, cholera is certainly a visitation of Providence; is there for a purpose; is there to make us think; is there to force on us the consideration of the laws of health. An ideal life, according to such laws, will not, then, be so far out of place here; and we only wish that the resumption of government (at present capable of little more than the defence of property chiefly its own) were so far advanced as to be able to compel

on us the conversion of the spiritual ideal into an actual, material real. Fain would we see regulations in accordance therewith veritably framed and decerned; regulations which must be obeyed; regulations to which master and man must conform. Fain, in truth, would we be saved from our own selves, and be even forced to practise our own ideal.

The words, dream and impracticability, then, may, as regards our picture, be, in a certain sense, applicable; but, in a different, inapplicable. It is a picture really according to the laws of health; there is not one item in it but can be striven after, and should be striven after; and there is much that is essentially practicable, and absolutely within the power and duty of all. We trust, then, that the reader who has obligingly followed us thus far, will courteously extend that obligation to the very end, and that neither he, nor the practical practitioner himself, both earnestly striving after the whole silk gown of health, may fail of a sleeve of it.

We return, then, to our model individual, and for the moment, he shall be asleep. While he lies there, then, peacefully shut up in his cocoon, we shall have time and opportunity to inspect his periphery.

Evidently, he approves our principles; he dislikes the change from chemically tight to chemically loose; he has laboured to increase all fixed, and to lessen all unfixed. Far and wide, there is a drained, cleared, cultivated champaign. No stagnant marsh, no plashy field, no rank entanglement of weed, with its pecu-

liar atmosphere of suffocation : all is airy, fresh, free, clean, as if the very hand had specially circled and been around each separate tree, blade, pile, and every individual object within the whole compass of the landscape. Nowhere the ragged meagre crop, the thin look, the indescribable, yellow, faded look, that speak of indolence and ignorance, but everywhere, instead, a rich bright fulness, and nature herself rising from her rocks joyfully and gratefully to the hand. For man and nature mutually act and react : he vigorous, she vigorous ; if he forgets not her, she forgets not him ; and the soil the best cultivated yields a progeny the bravest, the strongest, the healthiest, and the happiest.

But, leaving the periphery and drawing nearer to the cocoon, we find the dwelling-house, whether single or in cluster, situated high and dry, open to the sun, open to the air, with position dominating the physical beauty of the prospect. The health of the eye in green field and sunny slope has been present to the mind of the builder, nor has the thought of pleasant occupation, amid the kindly smells of the earth, in gardens of wholesomeness, been absent. Even the wood that barriers the storm, throws not down a humid, shady closeness, but, intersected by pathways, pruned and cleared, it is open, free, fresh, airy almost as the very common. No foul drains are seen around ; no poisonous sinks, no heaps of decaying vegetables, no ordure, no refuse. The walls of the house are of such materials that they neither admit nor retain the damp ; each apart-

ment, suitably large, is, by fireways and airways, thoroughly ventilated : and all, within as without, is sweet, and clean, and dry, and wholesome.

Drawing still nearer, however, to the centre of our picture, we find the bedroom large, roomy, comfortable. In winter, or in wet weather, there is always, during some part of the day, a fire in it. The windows, too, unless when the weather is damp, are daily thrown open, the curtains thoroughly withdrawn, and the whole chamber flooded with the wholesome sunshine and the " caller air." The floors are cleanly scoured, and, when scoured, are expressly dried, and not merely let dry by the process of evaporation. There is no dust in the carpets. The curtain over the bed, or rather by the bed, is but a screen against the draught of door or window. Beneath the bed, we do not find, with Byron, " no matter what : " we see it at a distance on the basin-stand, or know that it is shut up within the night-table. And, in the latter case, we know also that said night-table is daily scoured and daily exposed to the purification of the air. The bed itself is hard, evidently composed of good fixed materials, probably horsehair. The blankets are sufficient, but not too numerous, and the linen clean. The sleeper, too, is clean, and, unless of weak circulation, companionless. Let it not be supposed, however, that, in this age of sundering and dividing, we willingly would loosen wedlock, or untic the sweetest of her bands. To the purity of the marriage-bed, health leaps in his rosiest, and all the virtues bless it. Practically,

nevertheless, let it be understood that, for two, the linen must be changed just twice as often as for one.

It is now between six and seven, however, and our sleeper shall awake. He shall rise quietly, and divest himself of all apparel. He shall take the bath or apply the sponge, and, in either case, shall dry and rub himself vigorously. He shall put on flannel next the skin, for in European climates an artificial fleece is always necessary. His other habiliments shall be clean and sufficiently warm, but not heavy. He shall next repair the insensible perspiration of the night, by a moderate quantity of the usual aromatic drinks, and he shall add to these a slice of bread thinly buttered, with a fresh egg, or two, duly boiled. This light meal he shall follow up by a quiet stroll into peaceful field or gladsome garden, and thus shall sense, organ, muscle, opened, enlivened, and refreshed, prepare itself for pleased resumption of the daily duties. At noon, or perhaps an hour later, he shall eat a chop with bread, and shall drink a glass of sound sherry or port, a table-spoonful of good brandy, whisky, or gin, or half a tumbler of good, thoroughly fermented, not turned, bottled porter. Perhaps he may be in circumstances to substitute for these the wines of France, and, in that case, of the *little* wines (a good ordinary Mâcon or a good ordinary Bordeaux) he may take half a tumblerful, with or without water.

He may then resume his ordinary pursuits; but

to the majority of mankind the afternoon is the season of siesta, of heaviness, sleepiness, and general indisposition to any sort of mental exertion; so that the interval between the meal of middle-day and that of evening had better, for the most part, be given up to out-door occupation, recreation, or amusement. It is now, then, that our model man shall take exercise in walking, in boating, in gardening, in driving, and, in seasons of cholera, preferably on horseback. Between six and seven he shall eat again, and this meal—bearing in mind that it is a season of cholera—shall consist of plain soup, plainly dressed beef, mutton, veal, fowl, or turkey, with a floury potato, the top of a cauliflower, and bread. Of the beverages already named, the quantities previously mentioned may now be safely doubled. He may partake of the ordinary kinds of fish, but he will avoid pork, duck, goose, and all that is known to be gross, heavy, and indigestible. A certain amount of vegetable aliment is absolutely necessary for health, but in seasons of cholera, the floury potato and the cauliflower will suffice. The evening should be passed pleasantly, in pleasant society, without further indulgence in either eating or drinking, unless tea be excepted, or unless a cigar and a glass of grog be extended to those who are accustomed to such luxuries. It does not require to be added, that everything, either eaten or drunk, should be the best of its kind, and, as far as possible, removed from any decomposing vibration. We may

insert here, also, that occasional change of air and scene must not be forgotten as one of the most efficacious of sanitary measures.

In this way, it will be observed, that our model individual must have passed his day in a tolerably unexceptionable manner. There has been cleanliness, there has been healthy air, there has been due food, there have been occupation and amusement, employment and repose: the due aliment, in short, the due vital conditions have been extended to skin, stomach, lung, to nerve, sense, muscle; and when, between the hours of ten and eleven, he once more lays himself on his bed, "shut up in measureless content," he may reasonably dream of a joyful awaking.

It has come out of late, however, and there are certain statistics to prove, that not the animal and sensual conditions only, but also the moral and intellectual are necessary to the procurement of health and the certioration of longevity. Our model-man, therefore, shall know that skin, stomach, lung, that nerve, muscle, sense alone suffice not, but, to the completion of the magic circle which should round existence, the heart, the mind, the soul, are necessary. For the heart, then, he shall find the aliment of the affections. He shall know the richness, the fulness of life secured to a man by a good wife and loving children. He shall have a friend, too, or friends, and know the clear deliverance of a full communion. He shall have sweetened himself by charity; he shall have meekened himself by resignation; he shall have

calmed, cleared, confirmed himself by love,—by forgiveness, not of the big malices alone, but of all the petty spites and slights that barb existence. Neither shall the due aliment, the due vital conditions of the mind be wanting. He shall search, and think, and speculate; for the heavens are questions to him, and the earth and man. He shall widen and illuminate his intellect by the knowledge of his times. He shall purify and fortify the God within him by the study and imitation of the wise, and good, and great, who have gone before him. He shall be religious too: for, as affection to the heart and its own exertion to the mind, so to the soul, which is the inmost entity, the depth of depths, religion;—religion, which is the sum of all, the flower, the crowning, ultimate, and essential fruit, to which the rest are but as root, and stem, and branches. This, then, also shall our typical man possess. He shall, consequently, have made plain to himself the probationary—and even, perhaps, the pictorial—condition of this world, the certainty of a God, the necessity of a future existence, and, thus inspirited and inspired, his whole life shall be a peaceful evolution of duty. He may have fed upon the scepticism of his times; but he shall have healthily assimilated it. He shall have recognised the thinness of its negation, the pretension of its pedantry, the insufficiency of its material hypotheses; and the great, mystic, spiritual truths shall shine out to him, even as to them of old, undimmed, unveiled, unremoved by any of them.

Such is the existence of our model individual; but that all, or any one of us, can fully attain to it is evidently impossible. There is not one of us, however, who may not attain to some of it; there is not one of us who may not attain to much of it; and to such attainment we have assistance and support in the second or societary manner in which our industry on this head is exerted: for precisely that function has society delegated to a special aggregate of individuals known commonly as the General Board of Health.

Aware now, then, of all that concerns the individual, in what manner shall society, or, rather, in what manner shall the Board of Health, which is the delegate and representative of society, exert its industry for the suppression and dispersion of the materials of cholera? We answer at once: the Board of Health has, by means of the two general principles we have arrived at, simply to do for the individual what the individual cannot do for himself. A duty, however, the complete accomplishment of which is, in practice, utterly impossible. For to that, there is required no less than the extrusion of superfluity and vice, on the one hand, and of poverty and crime on the other: the task plainly not of the Board of Health only, but of "the coming man," and of all coming men. The Board of Health, however, is once for all there; it has a duty to do; and, however shackled and gyved by human limitations that duty may be, it ought not to shrink from it. It is either something

or nothing: if it is nothing, it has no business there; and if it is something, it ought to administer the function of that something. The Board of Health, in short, must look its duty in the face and do it; and that duty, as it is to do for us what we cannot individually do for ourselves, extends not to scavenging only, not to our purlieus merely, but to the very inmost of our very selves—to every faculty and function which our little round contains.

The immediate duty, for instance, is to extirpate cholera: how, then, accomplish that? By voluminously printing and eloquently perorating in the matter of dung-heaps only? Will this suffice while there are such Irish huts, Welsh huts, Scotch huts, English huts still in existence? While the Irish, Welsh, Scotch, English occupants of these huts are, every spring since the failure of the potato, in a condition of scurvy—actual sea-scurvy? And we hope the Board of Health understands here by scurvy, not a scaly skin merely, but black, hard, crippling swellings on each leg, terminating in ulcers, blue, swollen, fungous gums surrounding loose teeth, pallor and prostration, and hæmorrhage from every outlet: a total disorganization of the blood and whole system, in fact, from their own proper constituents being denied them; for, as wheat, which contains flint as an element, cannot be reared on beds which are destitute of flint, so the frame of man breaks up and dissolves when all its own elements are not presented to it in the various aliment it consumes. Well, will voluminous reports, elo-

quent perorations,—mere self-satisfied beatings of one's own drum,—suffice to extirpate cholera while large masses of the community are to be found dragging on existence in such a condition of bodily—and, if of bodily, surely then also of spiritual—disorganization and dissolution? And that such is the case, not in trope, but in truth, our own personal experience of the Welsh workmen and of the Irish navvies amply establishes. Nay, to leave the workmen, does the Board of Health expect that such measures will extirpate cholera, while the very masters are permitted to exist in the condition in which they are but too generally to be found? For the pimpled wine-skin, the coarse vulgarity of tongue, the profuse polygamy, the blown arrogance, the insolent emptiness that all of us have met, is it but an accidental and exceptional disguisement then, or a natural and inevitable transformation? What single noble object is in all that mighty traffic? For what these piles and piles of admirable vestment while the men that made them flutter all in rags? To wrap to beauty and to health this marvellous creature man, is not there their object—there their meaning—and has it once been thought of? Masters—men of perseverance, men of skill, to lead numbers of their fellows in some noble industry—such masters are they? No; knowing but one principle—to get the most for the least—and driven by that principle, however rich they be, however eminent they be, into the most systematic adulteration of every article they deal in, from pipe-clay and

shoe-blackening up to vast railways and huge bridges, they are but too commonly, even as the men they drain, morally and bodily, wrecks. Master and man, then, in such condition, is it by polite inspectors and conventional blue-books that the Board of Health will extirpate cholera? Never. We call, then, to you, the separate and individual members of the Board of Health, to bethink and bestir yourselves; to understand fully the whole scope of your function, and to do what in you lies to accomplish it. Extensions of power, additions of power, no doubt require to be demanded: demand them: to that your duty imperatively bids you. To you by the great British nation is a mighty function delegated: to the great British nation you are the Board of Health: be then a board of health, and give us health! Think of what time you live in, and what task you may accomplish. For that, in these days of the mere siege and defence of property, a board of health should have thus turned up (however incidentally), may prove, if you well understand and well act, one of the most fortunate of occurrences. Industrialism difficultly organizing itself, amid the wrecks of disorganizing feudalism, and only its first weeds of impure monopolism, as yet capable of growth, what a function for the seizing hovers reachable to a board of health! Here is precisely the *nexus*, the middle-ground, the channel of communication, that, enabling the two rivers to flow peacefully, the one into the other, will banish revolution and accomplish progress.

Here we have the very influence that is to modify industrialism aright; for the first want of industrialism, whether in master or man, is that it be made healthy. Here, in such focus, the seed of the new might grow quietly and gradually, feeding itself, unhindered and ungrudged, from the debris of the old. A *punctum* of government to legislate for the health of the community—to govern us into health—is, in short (a board of education being but its complement), manifestly our whole present social desideratum. And if the British aristocracy, descending gradually from all its former functions, and now rapidly ceasing even to officer our equipments of war, would but see where lies security from violent death, would but see where lies the longest and serenest of euthanasias, it would at once resolve itself bodily into one great Board of Health; and thus mediating and administering between master and man, accomplish all that the most fervid friend of progress can possibly pray for.

But now, to sum up finally on this head, for the suppression and dispersion of the materials of cholera we have to decrease the unfixed and increase the fixed. The first object is attained by attending to all the eteteras, external and internal, of our dwellings; and the second, by offering to each of our functions its due aliment: to the stomach, food; to the lungs, air; to the muscles, exercise; to the skin, cleanliness; to the nerves, sleep; to the senses, employment; to the heart, affection; to the mind, intelligence; and to the soul, religion.

Here is the place, too, to remark exceptively that there are special cases not at all susceptible of the general rules contained in our general picture. Every one cannot lie hard; every one cannot leave his bed at six in the morning; every one dare not take a cold bath; every one dare not ride out; every one dare not put himself on the amount of alcoholic drinks specially mentioned. But individuals have it always in their power to consult their medical man, who will instruct them as to what they can bear, or as to what they cannot bear. For people begin to see that, unknown to them, there is a whole world known to the medical man; which he has lived in, and thought in, and worked in; and that their own crude, narrow, and partial views must be as nought beside those which peculiar thought and peculiar practice have bred up in him.

It is, indeed, provoking that, after years of study, years of thought, years of practice, we should find medicine precisely the one thing that everybody in the world knows, and that we should be hampered and badgered in the application of the principles we have so dearly gained by the silly theories and infantile conceptions of every old woman, or by the equally silly paper theories and pedantic conceptions of the mere reader of books. The general reader ought to see that the practitioner has himself gone through all these stages; that, as boy, he shared the ideas of the old woman, and, as student, those of the pedant; and that he, of course, is the best judge finally to pronounce upon them. The general

reader, in short, ought to see that here is a branch which special men have specially studied; that, know little or know much, they, at all events, know more than all others, and that he has, at least, one or two chances more of safety with them than with others. All men, not practical practitioners, ought, in fact, to have the good sense to abdicate their right of private judgment in matters of which they are wholly, or all but wholly, ignorant, give all the information in regard to their condition they can, and leave the rest hopefully to us. But

3. *The Action—to remedy* — Supposing, then, that we have failed to intercept the spark, and that we have failed to prevent the accumulation of the material, in what manner shall we deal with the action—how shall we extinguish the conflagration—how shall we cure the disease? For an answer to these questions we must turn to the general theory for in cholera, as in all other diseases, it is that alone that can assign the stages and prescribe the treatment. Now, in this case, we found the general theory to be contained in three links: the first, the impression of an unknown agent with derangement of the function of certain nerves; the second, deranged function of certain capillaries, with discharge through these capillaries of a certain blood; and the third, stagnation of a certain other and remaining blood. In these three links, then, we must find a once the indication of the stages and the principle of the treatment.

As for the stages, they must evidently be consti

tuted by the links themselves. The first stage, then, shall be that of nervous impression, characterized by indigestion passing into diarrhœa; the second, that of capillary derangement, characterized by diarrhœa passing into serous hæmorrhage; and the third, that of serous hæmorrhage passing into syncope. Our picture of the process, however, would be incomplete without that of the recovery: we add, then, a fourth stage, which shall be that of reaction, characterized by syncope passing into fever. As regards the names of these stages, those popularly in use are, respectively, "premonitory symptoms," "developed cholera," "collapse," and "consecutive fever." In the employment of these terms, however, there is much confusion rife. The phrase, "developed cholera," for example, must, as applied by a distinguished authority of the Board of Health, who is reported by the newspapers to have said that "for developed cholera there is no remedy," mean only the collapse; for remedies in the stage of the rice-water evacuations, surely, even in his idea, are not unknown; and, that being his sense of the term, we beg to observe that if the learned gentleman in question had shaken his wise head over a burst aneurism, and groaned out, ruefully, "Ah! ah! for developed aneurism there is no remedy," he would have been equally happy in his use of words, and equally reasonable. Be this as it may, the existence of confusion in the ordinary terms, and, much more, considerations of the nature of the stages themselves, induce us to apply to these stages, suc-

cessively and respectively, the names of Preaction, Action, Inaction, and Reaction—not without the hope, too, that even the alliterative distinctness here may prove not unprofitable.

Preaction, action, inaction, and reaction, the names of the four stages, then, shall very properly give heading to as many separate divisions under which we shall treat our remaining matter. The preaction, however, is evidently not distinct from, but is really part of, the action; for that reason, then, and for others of a business-like nature in regard to conciseness and the avoidance of repetition, the discussion of the latter shall precede that of the former. So much for the stages and their names, then; and as regards a principle of treatment, we shall endeavour to deduce that from the general theory as it specially affects each special stage.

(i.) *The Action.*—In cholera, as we have already seen, we have, first, indigestion, then mild diarrhœa, then serous diarrhœa, then hæmorrhage, or the evacuation, by purging and vomiting, of an almost colourless serum; and, finally, failure of pulse, with cramps, universally-darkening, universally-cooling surface, and other kindred symptoms. It is evidently then, in reality, a one process; and the assignment of the point where one stage ends and another begins, must, to a certain extent, be only arbitrary. The insensible gradation of one step into another (and yet cholera, in this respect, is perhaps the distinctest of all diseases) must not be forgotten when, to discriminate preaction from action, we draw the line of demar-

cation between the two diarrhœas, and assert the former, beginning with the indigestion, to end at the serous diarrhœa, and the latter, beginning with the serous diarrhœa, to end at the failure of pulse.

The stage presently under consideration, then, that of Action, contains the serous diarrhœa and the hæmorrhage: but the diarrhœa, however coloured (by the as yet unwashed-away usual contents of the bowels), differs not in its essence from the hæmorrhage, however uncoloured: briefly, then, the action is the hæmorrhage. But, as it is in the theory always that the principle of cure is to be found, and as the disease under consideration is a hæmorrhage, it is, manifestly, on the principles of hæmorrhage in general, modified by the peculiarities of this hæmorrhage in particular, that we must base the treatment. Now, the remedial agents directed for hæmorrhage in general, consist of compression, ligature, cold, venesection, counter-irritation, sedatives, astringents, alteratives, and rest; and we shall just see how far the special application of these measures is possible and feasible here.

Compression, as well as ligature, seems to be rendered inapplicable by reason of the peculiar seat of the hæmorrhage. And yet, one is tempted to make the paper-suggestion, that ligatures to the extremities, at the arm-pits and groins, might form diverticula or reservoirs of serum, and might cut off its further supply to the patulous vessels; while, as is practised (by means of a piece of flat board) in India, compression of the digestive organs, through

pads, bandages, and swathes, might not be wholly inefficacious.

Cold has been applied to the spine, in the shape of ice; and it has been thought beneficial. Its more decided application, however, yet awaits a trial. And, really, the fall of a considerable column of water, so as to induce a sudden shock and instantaneous chill, ought to prove (theoretically, at least, whether we look to the nervous centres or to the capillaries themselves) decidedly advantageous. To repress the circulation of the skin, however, is only to determine more powerfully to the mucous membrane: so that the manner and period of any such application must both be chosen wisely.

Blood is very soon required in cholera; and we hardly ever see a case in such time as to warrant its extraction. Such time, however, being given, together with a patient of suitable age and constitution, we are decidedly of opinion that the rapid withdrawal of a basin of blood is a measure worthy of our most serious attention. It tends to produce capillary contraction, and to diminish the amount of the solid and carbonaceous materials which accumulate in the system to their own stagnation, and the further derangement of every other function. This point, indeed, that of the accumulation of the solid material, is one of the very greatest gravity; it is that which constitutes the difference between the syncope of cholera and that of ordinary hæmorrhage; and it is that which mainly causes the infinitely greater difficulty of rallying in the former than of rallying

in the latter. Purposely, and with the lancet, then, to bleed a patient into syncope is, no opposing indication being present, to give him a much greater chance of escape, than to let him bleed into a similar condition by the insidious process of cholera; leaving, as that process does, all the bloodvessels of the system thoroughly drained of their fluid, and well-nigh utterly blocked up by an accumulation of stagnant and contaminated carbonaceous material. And, by the word contaminated, we do not allude to the action of a specific poison here, but simply to that of necessary chemical and vital changes.

Counter-irritation, by means of sinapisms to the abdomen and terebinthines to the spine, is generally put in practice; and, as derivative and stimulant, must contribute towards a favourable result.

Sedatives to allay the pain, the cramp, the general uneasiness, are very evidently indicated. With this view, opium has many advocates, and has been extensively used. We fancy, however, that increased experience has only decreased its fame; and for our own part, believing that drug, in all diseases with tendency to lividity—to impeded oxygenation of the blood—only to hasten the process, we, in cholera, eschew it utterly. With chloroform, however, the case is different. As we shall afterwards see, rest is an indication of the very greatest consequence, and that agent, in soothing the pain, the cramp, the general uneasiness, is an adjuvant as beneficial as it is unfailing. Even the very nature of the gas it introduces into the lung must operate benefit.

It must never be exhibited, however, in such manner as to interfere with the administration of the internal medicine we shall afterwards find necessary; and these two remedial resources must be reconciled as best they can. Of other sedatives we are not called upon to speak.

The astringents special are, to our idea, in the hæmorrhage, useless. The surface on which they are to act is of such magnitude, the discharge in the midst of which they are applied is so overwhelming, that all our kinos and catechus must simply be washed away futile. We know no astringent (properly so called) capable of doing what is required of it here; capable of at once permeating the tube and immediately constringing the infinitude of bleeding vessels there. The want seems to be some indirect astringent that would attack the disease *à tergo*, that would act on the constitution, that would gather up the strings, as it were, at the very centre of the mischief, and so dry up at once, and from behind all those innumerable pipes and pipelets. And this indirect astringent is, fortunately, not denied us; we possess it in alteratives.

In cholera, as we have already seen, it is the capillaries that are mainly affected; what drug, then, in our whole pharmacopœia, is it that possesses the greatest influence over such vessels? Why, mercury. We shall see, for instance, to-day, the white of a man's eye like a scarlet rag in colour and appearance, by reason of the injection with red blood of capillaries that previously carried only

white; and to-morrow, mercury being administered in the interval, we shall see it once more of its native hue. Again, if we say that cholera is a dropsy; that the cause of this, as of almost every other, dropsy is organic obstruction; and that that organic obstruction is most probably situated in the liver,— what drug is it that is the great resolvent of obstruction, and, specially, what drug is it that is the excitant, the very emulgent of the liver? Why, mercury. Lastly, even if we adopt the chemical theory that a poisonous, that a chemical agent has simply induced chemical decomposition in the merely chemical, and partly inorganic, fluid that is contained within our bloodvessels, is not mercury, powerful in the elimination of specific poison, still one of the most eligible of remedial resources. As swayer of the capillaries, then, or as eliminator of specific poison, as resolvent of obstruction, or as emulgent of the liver, it is to mercury that every theory points. Why, it is indicated even by its very weight; opposing a mechanical obstacle to the mechanical influence of the discharges; and, even in ordinary hæmorrhages, it is one of our most powerful auxiliaries. Theory, however, is here, fortunately, not alone; but leans itself on experience that has tried mercury, and proved beyond the shadow of a doubt its extraordinary efficacy in the hæmorrhage of cholera.

In what manner, then, shall mercury be best exhibited? The object should be to get the system as soon as possible under its action; and calomel

should be the form. One or two large doses (of from six to ten grains) may be premised, but repeated small doses, as two grains every quarter of an hour, are most to be relied on. The dose, however, as well as the interval, will vary with the case. The calomel, too, may be assisted by inunction.

The last remedial measure that presents itself for comment is rest. Rest, so useful, so necessary, so indispensable in every other hæmorrhage, is as useful, as necessary, as indispensable in this. Absolute rest in the horizontal posture with the head low: this, the most simple of all resources, is, with but few exceptions, the most efficacious also. The patient should be exhorted, as he values his life, to take that position, and retain that position in all and through all. Neither food nor drink should be allowed him; they can serve no good purpose; they can only irritate the stomach, protract the vomiting, and thwart this most important indication. Even the necessities of the discharges should not change the attitude of the patient: he should be urged, indeed, to exert his very utmost self-control to resist the tendency to purge and vomit, as every one act of either only makes another more certainly succeed, till the system be thoroughly drained, and syncope completely established. Let the vessels have rest, that is the great point. Indeed, the greatest objection to the use of medicine is that its administration necessarily interferes with this indication. The calomel, however, as we have seen, is the only internal medicine required; and it must

be given without disturbance of the patient's body. It should simply be dropped on the protruded tongue; that organ retracted; and perhaps a tea-spoonful of water, or some bland fluid, allowed afterwards to facilitate deglutition. Of the powerful assistance of chloroform in the procurement of rest we have already spoken; we desire to give one other warning, however, against its interference with the use of the calomel.

So much for the treatment of the Action itself, what now of

(ii.) *The Preaction?*—This the stage of nervous impression, is characterized by indigestion passing into Diarrhœa; and, as it is always of the greatest consequence to resist beginnings, it is to this stage that both patient and practitioner should apply the very utmost vigilance. The instant we perceive, at seasons of cholera, any symptoms of indigestion—as oppression over the stomach with tendency to belching—and still more any symptoms of diarrhœa, let us at once take alarm. Let us be sure that the enemy is upon us, or, if not actually so, that we, at least, stand within his danger; and let us at once put ourselves under treatment. And as regards that object, at the same time that vigilance on all the points embraced under the head of the materials of cholera is redoubled, special measures, in accordance with the general principles of medicine affecting the diseases of indigestion and diarrhœa, are immediately to be put in force. We remark, however, that, at such a season, particular regard must be

addressed to the excitant or cause of these diseases, and the treatment modified accordingly. It is an impression on the nervous centres, passing to the capillaries, and terminating in changes of the blood. We must, therefore, apply ourselves to the invigoration of the nervous centres, the removal of all sources of irritation from the capillaries, and the promotion of the action of all the emunctories of the blood.

During the indigestion, then, cold douches and friction with mild purgatives and alteratives constitute the requisites. The best special purgatives are rhubarb and castor-oil; and the best alterative, calomel. In fact, little relief will be procured until this last remedy has evidently acted on the liver, and produced a decided bilious motion; a motion that does not contain, so to speak, the mere dirty washings of the alimentary canal, but a motion that, whatever its size, has some consistence, was hot in passing, and is yellow, brown, green, or otherwise by colour indicative of the presence of bile.

If the indigestion has passed into diarrhœa, our sollicitude must increase, and continue to increase in proportion to the number, size, and wateriness of the evacuations. The disease, however, if it has advanced, has not changed; and the indications remain the same. The cold affusion should be employed to the back so as to induce a sudden shock and instantaneous chill. This should be followed by rapid and vigorous friction. The patient should be then put to bed in the horizontal posture, with

the head low; and this position should be retained certainly till the appearance of the bilious motion described, and more safely till the disappearance of all the morbid symptoms. The important medicine is still the calomel; and, until the result indicated has been obtained, must, as a general rule, be administered in doses of two grains after every loose stool. The particular patient, the number, size, and serousness of the stools, will further, to the practitioner of judgment, indicate or contra-indicate the auxiliary measures of venesection, sinapisms to the stomach, and terebinthines to the spine. For it is not the rice-water evacuations, but the serous, coloured or uncoloured, that constitute cholera; and we must not wait for the colourless discharges before we apply the name and resort to the treatment. Before the serum can issue colourless, the process must have existed for some time; for such time, in fact, as has enabled it to wash the bowels free from every trace of their usual contents; and, before that could take place in the case of a canal of such magnitude and intricacy as this, evidently much time and much fluid must have been expended. Let patient and practitioner, then, call the diarrhœa cholera, and treat the diarrhœa as cholera, the moment there is a large loose stool,—the moment there is a discharge of serum, coloured or uncoloured.

The two stages we have just treated, constituting the whole of that part of the process which may be appropriately called action, it is in place here to demand what are the practical findings we have

now reached. Preaction and action are not different; they are the same; indigestion, diarrhœa, hæmorrhage, are but successive steps of the same process, consecutive results of the same agent. They are, then, to be treated on the same principle; and that principle is, in the main, the restoration of normal capillary action. The remedies of bleeding, cold, rest, calomel, counter-irritation, and chloroform, with, perhaps, swathes to the abdomen, and tourniquets to the extremities, are applied, all of them, on that one principle, and must be exhibited consecutively according to the condition of the patient, and the exigencies of the case.

In actual practice, the country-practitioner, whose patients are miles asunder, and who has little time to spend by the bedside of any one of them, will be found to limit himself, in the stage of hæmorrhage, to rest, calomel, and counter-irritation. Rarely will he find persons to whom he can trust the office of mercurial inunction, and as rarely will he find cases eligible for the lancet, or for the application of cold. Opium he will abandon, and, as for compression and ligature, he will be glad to hear of the results of their use in some great hospital. The town-practitioner, who has more chance to see his patients in the earlier stages, will have more opportunity to practise venesection and to apply cold. He will probably have time also to perform mercurial inunction and to use chloroform. Both country and town practitioner, however, will bear in mind the all-importance of the stage of pre-

action. Not in the diarrhoea only, but even in the indigestion, vigilant to look out for cases eligible to bleed, they will be prompt, vigorous, and decided in the use of cold, rest, and calomel: for these are the remedies, and all our chalks and ammonias, ethers and orange-peel, are but foppery and futility.

It is worth while remarking, however, that these and other popular or professional medicaments are not without their meaning. The oleaginous treatment, for example, incapable of constituting the cure of cholera, is, as tending to obtund the bleeding points, capable of constituting a cure, or a means of cure; and we ourselves are in the habit of following it to the extent of prescribing an equal part of olive-oil in each dose of the castor-oil which at such seasons we may find it necessary to administer. In like manner, a utility can be found for each of the innumerable acids, alkalies, earths, salts, and metals which have been suggested,—if we will but keep in view the object with which we apply them. Some, for instance, capable of constringing the capillaries, are in place at first, when the indication is simply to prevent the escape of fluid; while others, containing certain elements of the blood, are in place afterwards when the indication is simply to restore the fluid and other materials lost: but they are uninterchangeable and, taken singly, cannot be called cures of cholera. In pushing a chest of drawers up a stair, though whistling magical words or chalking cabalistic letters would hardly be efficacious, yet every old stool and broken broomstick may, if we but use

our eyes, find a function. So, in cholera, knowing what we want to do, means the most opposed and measures the most miscellaneous are capable of application; while, not knowing what we want to do, the contents of Apothecaries' Hall would prove insufficient. Admitting a certain efficacy, then, in some of the medicaments alluded to, we reject the majority of them as either superseded by others, or futile in themselves. Still, the method of treatment which, as a whole, we recommend for cholera seems, as will be seen more clearly afterwards, sufficiently miscellaneous: we advise cold, we advise heat; we forbid fluid, we prescribe fluid; we take blood, we give blood; we find a place as well for Stevens and his salines, as for Airy and his calomel, and are not disdainful even of the hydropathist. We treat cholera, in short, on what are called general principles, and recognise no specifics. At one time we have to arrest, and at another to restore the loss of fluid; and the means applied for ends so diverse must be as diverse. Hocus-poens swallows a mysterious pill that mysteriously produces a mysterious crop of ribands; but a similar mysterious pill mysteriously to eliminate a mysterious entity, called cholera, remains a desideratum, or rather, a delusion. That Boards of Health should deny the existence of a remedy at all, then, that Colleges of Physicians should recommend chalk as such, and that the *Time*-newspaper should be open to the assassinating suggestions of every wretched old woman, may well make a practical practitioner think. It is

really wonderful if mankind, that has advanced in all else, has, for two thousand years, remained stationary in medicine; if disease has still to seat itself on the wayside for the prescription of the passenger; and if, with Boards and Colleges and Schools innumerable, we have, in spite of them, to advertise, through the columns of the *Times* for our medical treatment. But let us consider

(iii). *The stage of Inaction.*—This we found to be the stage of circulatory stagnation, characterized by hæmorrhage passing into syncope. It begins with the failure of pulse, and ends (if not in death) in the process of recovery by means of reaction. Further description of its peculiar phenomena is here unnecessary, however; for the case with which we opened this little tractate is there for the reader as an example and type. And it is a painful fact that, in the country especially, though frequently also in the town, the patient, generally from his own ignorant indifference and unintelligent self-neglect, has but too often reached this stage, or is fast verging on it, before the services of the practitioner are sought for, or can by any possibility be procured. Can it be wondered at, then, that so many deaths occur? A man exhausted of all his fluid blood, the remainder stagnant, processes necessary to life unable to go on, others destructive of life impossible to be prevented, how shall he live? It is reassuring to admit, however, that though, as we cannot help believing, the majority of those who reach this stage (or who cease to have pulse) die,

yet some live; and, in the interest of these and of all, we are not to slacken in our efforts, nor bate one jot of energy or skill. How then shall we direct these efforts—apply that energy—exhibit that skill? In other words, by what means shall we rally from the collapse, or syncope, that is here before us? Why, plainly, by no other than those used in the syncope of other hæmorrhages, but modified by the peculiarities of this. What, then, are these? They are: Prevention of the continuance or recurrence of the cause; rest in the horizontal posture; stimulants; and transfusion.

The prevention of the continuance or recurrence of the cause is manifestly a measure absolutely necessary, and is to be accomplished by perseverance, in such manner as the particular case admits, in the use of mercurials; which are further indicated to stimulate the liver; for, though the gall-bladder is distended with bile, no portion of that fluid is excreted, and the carbonized and dark materials are allowed to accumulate in the system, to the augmentation of every other mischief.

Before finally leaving the question of calomel however, we shall permit ourselves a few remarks deprecatory of objections. For the inefficiency of calomel in cholera has been stoutly maintained especially by the advocates of what is styled the saline method of treatment: and that the follower of that system should object to calomel is hardly to be wondered at, for the main function of the calomel ends where that of the salines begins. In the ac

tion, where the indication is simply the prevention of the loss of fluid, calomel, from its known influence on the capillaries, may reasonably be expected to succeed; but, in the inaction, where the indication becomes the restoration, and not the prevention only, of the loss of fluid, that mineral, possessing no such virtue, ceases to be principal, and rests auxiliary. The reader will understand, then, that calomel is proposed as a remedy, not for cholera, but for the hæmorrhage of cholera; nor can it be expected, even there, however great its power, always to succeed. No practitioner, for instance, can administer it with hope to the Welsh workmen or the Irish navvies previously spoken of. How can he? What good influence can ever be expected from mercurialization in the case of frames already in a state of disorganization and dissolution? But the Welsh workmen and the Irish navvies do not constitute the whole of that "pivoting population" which we have already signalized. There are thousands of others, and from a thousand different causes. The Hindoos, for example, cannot be considered as much better than "pivoting;" and calomel cannot be expected to be of much benefit to them. Calomel, then, is to be judged of not at the beginning only of the epidemic, when the attacked pivoting must die; but the results of its use, as employed throughout the whole course of the malady, are those only which it is fair to accept. It is to be borne in mind also, that only for its influence in stopping, and not in restoring, the loss of fluid, is it that it is to be

tried or valued: and, in that respect, we for our part give it our most unhesitating confidence. We are decidedly of opinion, indeed, that the majority of those on whom it has been employed, during a reasonable period previous to the failure of pulse, recover.

Rest: on this head we have already said enough; and all that has been already said is capable of repetition here.

As for stimulants, meaning, by this term for the moment, only those of an alcoholic nature, as they are popularly considered *the* remedy for cholera, it will not be out of place here to examine their admissibility or inadmissibility with special reference to each particular stage.

In the preaction, they are certainly of service; and on the double principle of assisting digestion and of stimulating under shock. They must be administered, however, strictly according to these two principles; and, that is, in the most moderate quantities; for, in large, they just controvert and oppose both.

In the stage of action, where we have to lull rather than excite, they are all but wholly contra-indicated; and, for the most part indeed, are productive of the most serious and fatal injury. Occasional cases, however, are found, in which there is so much weakness of original constitution, or so much depression, more from the shock of the agent than from the loss of fluid, that the practitioner or experience cannot help prescribing there even the

very strongest cordials. But these cases are to be regarded as the exception to the rule; and that rule teaches to avoid all stimulants during the stage of action.

In the stage of inaction, however, where life seems at its very lowest ebb, no remedial measures appear more imperatively indicated. Their use, even here, however, is found by experience to be only unsatisfactory; and the reason probably depends on this, that the carbonized materials are retained in the system, and that alcohol can only add to them. Still there are cases, similar to those which have been just referred to, where we feel ourselves constrained to exhibit wine or even brandy. The peculiarity of these is that they lie in a state of shock and still retain a considerable stock of fluid of which to avail themselves.

In the stage of reaction and fever, stimulants are generally contra-indicated, and are only admissible on the ordinary principles of all such diseases.

We conclude, then, by prohibiting the use of alcoholic stimulants, as a general rule, throughout the whole course of cholera; and by permitting their use only exceptively in exhaustion rather from shock than from loss of fluid.

As regards the other stimulants, electricity, possessing no virtue to restore fluid, can be of small avail; while our professional ornaments of camphor, ether, &c., may, on an occasion such as the present, be best consigned to the hairdresser.

Friction tends to promote the circulation, to rally

the vital energies, and to soothe the cramps; where persons willing to undertake it can be procured, it ought never to be neglected. Heated flannels may assist the friction; and hot bricks, or bottles, are always adjuvant.

The warm bath, however, holds out hopes of more important benefit than any of these; for, besides being the best medium for the communication of heat, it may also, through the process of absorption, yield to the system a most salutary supply of fluid. We recommend, too, that such salts be dissolved in the water as may produce a sort of artificial serum.

Transfusion, if we bear in mind that the want now is blood, blood that will circulate, must be regarded as a measure, theoretically, most feasible. It would appear, however, that as only a portion of the blood escapes, only that portion need be returned. But, again, as the discharged serum contains lymph, and as chemical changes on the blood that remains have already taken place deep in the system, an artificial serum alone seems inadequate to the emergency. The most plausible expedient would be healthy red blood diluted—and that by means of a proper saline solution. At such seasons, however, red blood is not likely to be very willingly parted with; and, unless the lower animals can stand us, we are compelled, after all, to fall back on the artificial serum. And, in the event of the adoption of that resource, which, in view of its own risks, must always be regarded as a last and desperate one, we must expect the unsatisfactoriness of result that

attends transfusion generally. With the country practitioner, also, the want of time is a serious obstacle.

But the point presently under consideration is too important to abandon yet; and it is here that we can most appropriately speak of the saline treatment.

In the stage of inaction, it is evident that the great object to be accomplished is the restoration of the circulation. And that object we seek to obtain : 1. By the prevention of the continuance or recurrence of the cause through rest and calomel; 2. By exciting the vital energies through cordials and other stimulants; and 3. By the restoration to the system of the fluid and other materials lost. Now, the last of these measures is evidently by far the most important. As, during the action, the great necessity was to stop, so now, during the inaction, it is to restore, the expenditure of blood. But, towards that end, we have already brought forward two means : the first was the presentation of an artificial blood to the skin; and the second, the introduction of such blood into the veins. The former of these measures is evidently the feebler, but the safer; while the latter, in view of its general unsatisfactoriness, must be regarded as a resource only forlorn and desperate. There exist, however, other intermediaries than either skin or veins. Fluid and salts, similar to those of the blood, may be introduced by the mouth, and they may be introduced by the rectum; and on such introduction rests the system of treatment which has been named saline. For this treatment consists of the plentiful admi-

nistration to the alimentary canal, as well from below as from above, of hot saline solutions that, in chemical composition, more or less, simulate the sanguineous serum. And, so far, this method of treatment is evidently not unreasonable; for it is plain that restoration of the circulation cannot take place till the lost elements are once more refurnished to the retained, stagnant, and decomposing blood. That it be useful and efficient, however, a power of absorption on the part of the digestive organs must necessarily be presupposed; for, if no such power exists, the result must be negative, and worse than negative: for such drenches must tend to excite vomiting, must tend to excite purging; and, these processes being excited, the bleeding capillaries, allowed no rest, must evidently yield their fluid to the extremest drop. It is just of the existence of this power, however, that we have reason to doubt: for that vessels which have just discharged, and which, perhaps, now actually lie in contact with, a natural, should be capable of absorbing an artificial, serum (at the same time, too, that they are blocked up by a stagnant and decomposing clot), appears but questionable. To the followers of the saline treatment, it appears by no means questionable, however; and, with the view of emptying the bowels of what they assert to be their poisoned contents, they strenuously exhibit their peculiar drenches from the beginning to the end of the entire process. There is no evidence, however, that the contents of the bowels are poisoned; and, when the indication is manifestly to retain fluid, surely it is absurd to adopt such measures as

necessitate the very processes that discharge it. In the use of the warm bath, if absorption will take place, well ; but, if it will not, we have done nothing to occasion any unfavourable consequence. In the saline treatment, however, failure of absorption is not thus innocent ; and the protraction or re-excitement of the hæmorrhage may, in a few minutes, place our patient beyond all hope for ever.

And here we shall place an observation which we cannot help thinking not only damaging but destructive to the pretensions of the salines both in theory and practice. Granting, in respect to the serum, that what remains to be proved is proved, we ask : If the white blood be poisoned, is it not presumable that the red, or rather black blood is poisoned also ? and, if so, does it not follow that the more sedulously you loosen the one, the more certainly you fix the other ? An industry, then, that directs all its efforts to the elimination of one half of the poison, while, by these very efforts, it irretrievably consummates the retention of the other and infinitely more dangerous half, can hardly be called either reasonable or consistent. The induction of syncope by the slowest and most gradual general bleeding, so as to disembarass the vessels largely of the poison, as a whole, and leave them pervious to the introduction and circulation of healthy materials : here, for the salinists, would be a practice at one with their theory ; but as they comport themselves at present, the one and the other are mutually contradictory, and evidently utterly irreconcilable.

It will surely, then, be neither unreasonable nor unjust, if, in pronouncing sentence on this mode of treatment, we assert it to be no general remedy for cholera, but, at best and most, merely an additional means of introducing fluid into the system; and that, even in that character, as tending to interfere with the repose which is so needful, and which nature herself is now administering, its value is equivocal and questionable.

The indication of restoring fluid, however, remains still one of the principal; and the four means of accomplishing it (by skin, by mouth, by anus, and by veins) must never be lost sight of. Were we ourselves reduced to the inaction of cholera, for the restoration of fluid, the warm bath is the first measure we should wish applied. If that seemed inadequate to supply a sufficiency of fluid, and if the hæmorrhage had apparently for some time ceased, we should desire to have administered, cautiously and sparingly, by mouth and anus, some very mitigated form of the saline solution. If hæmorrhage continued, and complete exhaustion of fluid seemed imminent, we should possibly not object to the transfusion of diluted red blood, but hope itself should have become despair.

We do not altogether condemn, then, the saline treatment, if it will only be applied open-eyed, and for the purpose in hand; and we should be more apt to anticipate success (and this extends to the other measures of warm bath and transfusion also), if we knew the bloodvessels to be, in some degree, disembarrassed of stagnant carbonaceous material

by an early bleeding. The chest of drawers is once for all to be got up the stairs, avail ourselves of whatever contrivances we may: and the loss of fluid is to be stoppèd, the loss of fluid is to be restored, treat cholera as we may. So much now, then, for the stage of Inaction; we turn now, finally, to

(iv.) *The stage of Reaction.* The reaction may take place without the intervention of inaction; but, with or without it, it is not unlike the reaction of other hæmorrhages: the retention alone of the carbonized materials it is that makes the difference.

The signs of the presence of this stage are the reddening and heating of the previously darkening and cooling surface, the secretion of urine and the appearance of bile: there is also the return or augmentation of pulse which, resting not at par, passes with reactive violence into actual fever.

The question of treatment need not detain us here; it falls under the general principles of practice, and presents no special difficulty. It may be viewed under the three heads of simple fever, typhoid fever, and cerebral affections; and the measures indicated are: Rest; caution in the supply of materials; removal of carbonaceous matter by mild purgatives; gentle stimulation of kidneys and skin; blisters on the appearance of head-affection, or of special inflammation anywhere; and poultices to abscesses apt to form at the angles of the jaw.

We have now brought our views on this most important subject to a close. We have found that cholera is the loss of the white, followed by the stagnation of the red blood; that the process has

four well-marked stages, each of which is to be treated on its own principles; and that the indications in these are, respectively, to prepare and support each function, and the system generally, with special reference to the peculiar nature of the process threatened or commenced, to suppress hæmorrhage, to rally from syncope, and to moderate reaction. It will be useful, also, to bear in mind that during one-half of the process we have to retain, and during the other to restore fluid.

We shall be pleased if we shall have spoken not quite uselessly; if we shall have shown that the nature and treatment of cholera are about as well known as those of any other malady; and that we (all practical practitioners) deserve the support and confidence of the public as fully here as elsewhere. We take the liberty, in conclusion, also, to exhort our brethren not to increase the general confusion by any special confusion of their own: we urge them not to run hither and thither in disconcerted eagerness of quest for panaceas that can never be accorded, but to look calmly at the matter, to see what process it is that is really taking place, and to meet it on those great principles of medicine and common sense which it has taken so many men and so many centuries to provide—such as they are—the best, as yet, our hands can seize upon.

THE END.