REPORT ON PESTILENTIAL DISEASE

1799

REPORT

OF THE

Medical Committee.

REPORT

OF THE

COMMITTEE,

APPOINTED BY THE

Medical Society,

OF THE STATE OF NEW-YORK,

TO ENQUIRE INTO THE

SYMPTOMS, ORIGIN, CAUSE, AND PREVENTION

OF THE

Pestilential Disease,

THAT PREVAILED IN NEW-YORK DURING THE SUMMER AND AUTUMN OF THE YEAR 1798.

FROM THE OFFICE OF THE DAILY ADVERTISER,

No. 71, Pine Street, NEW-YORK, 1799.

Medical Society, 15th November, 1798.

RESOLVED,

THAT a Committee of three Members be appointed by ballot to enquire into the *origin*, *cauſes*, and *prevention* of the late Epidemic, and report to the Society in writing, the reſult of ſuch enquiry—And that Doctors TILLARY, RODGERS, and MITCHELL, be a committee for the above purpoſe.

Medical Society, December 31, 1798.

RESOLVED,

That the Report of the Committee appointed to enquire into the *origin* [and *prevention* of the late Epidemic, be received, and that the ſame be printed at the expenſe of this Society.

JOHN ONDERDONK, *Secretary.*

Advertisement.

IT seems proper to apprise those who may take the trouble of reading the following report, *that it originated in a communication from the Mayor of this city, addressed to the Medical Society of the state of New-York, about a month ago, expressing a wish from the Corporation, that an enquiry into the* origin and prevention *of the* YELLOW FEVER, *might be attempted by that body. A Committee for that purpose was accordingly appointed, but it was not within the design of the Medical Society, or contemplation of the Committee, to enter* at large *upon the nature of the Epidemic. To the Medical Society, this was* not necessary, *and to the public, for whose benefit it was ultimately intended, they conceived it could* not be useful. *It was indeed within the wish, but they fear beyond the ability of the Committee, to convey to their fellow citizens, some thoughts which might enable them to form a tolerably rational idea of the* manner of its origin, *and particularly of the nature of* THAT AGENT, *which, in their opinion,* every where produces it.— *In pointing out the sources of its existence* in our city, *the Committee are aware, that they differ in opinion on this topic with some respectable characters, and they are convinced, that a defect in the enumeration, as well as in the remedies proposed, will probably occur to some more observant citizens.*

THE Committee cannot help anticipating this objection, by saying for themselves, that they conceived it would have been equally tedious and uninteresting, to enumerate all *the minuted of* bad policy *and* worse practice, *which are permitted to operate in our city in*

this respect. They proposed nothing further than an outline of the abuse of privileges, which decision, tempered by discretion, might easily and effectually fill up; they had neither time nor inclination for more; as it is now presented to the public, it was read before the Medical Society, who directed that it should be published at their expence.

We shall offer nothing further in its vindication, but this—That how defective soever it may appear to the eye of discernment, we can confidently say, that we have allowed it to contain nothing but what we believe to be true, and that the motive for its publication will be found only in the hope of its being useful.

This the Committee trust, will shield them from severe criticism, and guard them from undue censure.

JAMES TILLARY.
JOHN R. B. RODGERS.
SAMUEL L. MITCHELL.

New-York, Dec. 31, 1798.

REPORT

OF

THE COMMITTEE, &c.

FROM the hiſtory of the City of New-York, as well as from profeſſional obſervation in it, the Committee know that it has at different times, ſince its firſt ſettlement, been afflicted by mortal diſtempers; rarely, however, had they aſſumed ſuch malignity as has been experienced ſince the year one thouſand ſeven hundred and ninety-one.

IT was in the ſummer of that year, that a diſeaſe in no feature eſſentially different from the *Epidemic* of the laſt ſeaſon, carried of more than thirty perſons within a ſmall diſtance of *Burling's-Slip*, and that within the ſhort period of 3 weeks. On that ſad

occaſion Gen. Malcom and ſeveral other valuable citizens, were among its firſt victims; but as yet the Phyſicians of New-York had not ventured to call it by the formidable name of YELLOW-FEVER; nor had public alarm ariſen to ſuch a pitch, as to occaſion much ſpeculation, either as to its nature, or origin.

UNHAPILY, however, for our city, this ſlight appearance of Malignant Fever of 1791, has been followed by other and far more dreadful viſitations, cutting off numbers of our citizens between the months of June and November. Since the year 1791, the Committee find, that the Corporation of this city have cauſed ſome ſalutary, though partial, regulations to be enacted, but the evil nevertheleſs has rapidly increaſed—inſomuch, that in the year 1798 the diſtemper became ſo prevalent, as to cauſe two-thirds of the inhabitants to abandon their homes and ſeek ſafety and ſhelter in the ſurrounding country.—Of thoſe who remained, Two Thouſand died between the 1ſt day of Auguſt and the 1ſt day of November.

THIS diſeaſe, ſo terrible in its nature and ſo fatal in its effects, aſſumed a great variety of appearance. The Committee think it foreign to the objects of their appointment, or at leaſt unneceſſary, to mention the multiform and frightful ſhapes which, under different circumſtances, it took on. It will probably be thought ſufficient on this part of the ſubject to ſay (what much practice and many valuable communications from ſome of the moſt reſpectable medical characters in this city abundantly authorize), that it often attacked under the mild and unalarming guiſe of SLIGHT CATARRH, or COMMON COLD, but in its dreadful progreſs exhibited

along with the ordinary ſymptoms of increaſed, or irregular actions, BLEEDINGS from various parts of the body—ABSCESSES—BUBOES OR GLANDULAR SWELLINGS—BLACK VOMITINGS—CONVULSIONS, and MORTIFICATIONS.

THE Committee diſmiſs this painful part of their report, and proceed to make ſome obſervations on the

ORIGIN OF THE DISTEMPER.

IN a great and populous city, where mortality has kept awful proportion with numbers, ſuch a diſeaſe could not long fail to intereſt the feelings and awaken the exertions of the Magiſtracy, as well as the people, to a very ſerious enquiry, In a commercial city too, it was natural to ſuppoſe, becauſe it has not been thought unreaſonable to believe that it *might* be imported from ſome foreign place: —Accordingly ſtories were invented and circulated with great diligence, that the *ſeeds* of this dreadful diſtemper, imported in the firſt inſtance, from foreign ſhores, had been landed among us, and that when the preſent quantity was exhauſted, all would be well again, *provided veſſels from ports beyond the ſeas* were diligently ſearched, to preveut the *introduction of more.* Upon this popular notion of things, the Legiſlature enacted laws to prevent the introduction of infectious diſtempers into the State.

BUT though the Health-Officer, the Pilots, and the Wardens of the Port, ſcrupulouſly executed their reſpective duties and truſts, ſtill the diſtemper increaſed behind them. As it could *never* (within the knowledge or belief of the Committee) be traced to a ſick perſon actually landed, the favourers

of importation found little difficulty in aſcribing it to bags of coffee, bales of cotton, cheſts of clothes, or ſomething of this ſort.

The Committee having been conſtantly on the ſpot, and ſharing by common intereſt, as well as by profeſſional duty, in the general ſolicitude on this ſubject, have been at a conſiderable degree of pains, to aſcertain whether there was a foundation in fact, that this diſeaſe had been in *any inſtance*, ſo imported into our city. Unbiaſſed by any private intereſt, or profeſſional theories, and pledged by the beſt ſecurities which they can offer, that of their integrity and their honour, for a *faithful report*, as far as their judgment and information extend, they have no heſitation in declaring their belief, that theſe ſtories were founded in miſrepreſentation, and foſtered by prejudice. The Committee, however, knowing that *bold aſſertions* had been made, reſpecting the ill condition of the ſhip Olive, and her cargo, of the ſloop Iris, and one of her crew, John Willſon, and of the ſchooner Fox, (all theſe veſſels being from the Weſt-Indies) were extremely anxious to inform themſelves on this point. The reſult of their enquiries has been, that the allegations which have, in theſe inſtances, been hazarded, ſpring, either from ſources of undiſcerning credulity—from motives of ſelf-intereſt—or, from principles of moral turpitude: And they are happy to add, that the *proof* of this matter does not reſt on idle hearſay—popular clamour—or, weak fabrication: They have brought forward the moſt ſolemn evidences which were within their ability to procure, or their power to ſubſtantiate, contained in the ſeveral Affidavits No. 1, 2, 3, 4, 5. The Committee cannot quit this part of the ſubject, without offering one or two additional obſervations. We

would remark then, that the corruption of the perishable materials of cargoes, the intemperance and filthiness of the crews, are the chief of those prolific causes of *Malignant Fevers* which are *generated on board vessels;* and that the locality of the distemper is as clearly to be traced in them, as in a dirty house, crouded jail, or other filthy place; and the cases, and the consequences too, run parallel, in almost every particular. Seafaring men *do not* get their sickness in the West-Indies, by communication with the sick on shore; or, in other words, from *contagion received from deceased persons;* but almost always from intemperance in eating and drinking, exposure to, and sleeping in the night air, (that is, dews impregnated with pestilential matter) in coves and marshy grounds, while engaged in getting wood, water, produce, &c.

The matter of fact appears to us, to be simply this—

The atmosphere of those unhealthy places in the West-Indies, (to the effects of which seamen who voyage to these Islands must be often exposed) acts upon them just in the same manner, though perhaps, in general more powerfully, that the air of the city of New-York, in certain seasons and in particular situations, operates upon fresh healthy persons coming from the country. A vapour risen from the earth, surrounds them, and this vapour or poison which exhales from common *putrescent matter*, (aided, doubtless, in many instances, by some peculiar properties of the air, and predisposition of habit,) is frequently of a nature so subtile and deleterious, as to penetrate to the very brain and vitals, and cause sudden death. But a *specifically contagious matter as such*, immediately de-

rived from the bodies of the ſick, and capable of communicating invariably the *ſame diſeaſe*, as in the *ſmall pocks*, we believe, has nothing to do in this caſe. When, indeed, heat and moiſture are permitted to act jointly upon the matter of perſpiration which is continually exhaling from the ſurface of a diſeaſed body, and is allowed to adhere to clothing, and be pent up with other excretions in the factitious confined atmoſphere of ſuch perſons, without the grand correctives of waſhing, and ventilation being made uſe of, *peſtilence may certainly be produced ;*— and in this manner we know it is frequently produced among the poorer manufactorers in different parts of Europe, and may *be ſo produced in any country* among dirty houſkeepers—badly regulated poor-houſes—confined jails, and filthy ſhips, &c. This is the moſt intelligible idea which we can convey, whereby to illuſtrate the fallacy of thoſe notions which aſcribe peſtilential diſeaſes to a *ſpecific contagion*, and if the Committee did not deem it uſeleſs to dwell longer on this branch of the enquiry, they could adduce many weighty facts and high authorities, to eſtabliſh the opinions, and confirm the diſtinctions here contended for.

But notwithſtanding all that has been ſaid, the belief of a *ſpecific contagion*, in its nature capable of *importation* and *exportation*, continues to form a part of the Medical Creed of ſome reſpectable Phyſicians, and what the Committee conſiders of infinitely greater conſequence, continues to operate the moſt ſerious miſchief in many parts of the world, as well as in our own country.

The Committee take occaſion, at this place frankly to acknowledge that they do not underſtand what is *meant* by a *ſpecific contagion*, when

the term is applied to expreſs an agent capable of producing yellow fever ; but they are at no loſs to comprehend how diſeaſe of the worſt ſort can be engendered, by *heat and moiſture acting upon dead animal and vegetable matter;* and they have the moſt luminous teſtimony, that *peſtilential matter* thus produced, is often of a nature ſufficiently powerful to derange all the animal functions, and deſtroy all the vital energies. There is no truth which our minds are capable of embracing, more certain to us than this—That *Yellow Fever* may be produced in *any* country by *peſtilential effluvia*, without receiving an attom from a perſon ſick of a ſimilar diſeaſe : And that from the moſt accurate reſearches which they have been able to make, they think themſelves warranted in ſaying that the diſeaſe called Yellow Fever may be produced *on ſhore and in this city*, as readily as in the *Weſt Indies* or *on ſhip-board* ; and that this deſtroying though ſecret agent is none other than *peſtilential vapours*. They think moreover that it is in place here to declare, as the reſult of their own experience, that the Yellow Fever is not a contagious or *catching diſeaſe*, in the popular and common acceptation of the phraſe ; that it is not communicable from perſon to perſon in a *pure atmoſphere*, but ſpreads only in an air loaded and contaminated by putrid exhalations.

If this be the fact (and that it is ſo there remains on our minds no doubt) the advocates for *importation* will agree with the favourers of *local origin* in the adoption of adequate regulations on ſhore, let them differ ever ſo widely upon the ſpeculative queſtion.

In all events, it happily turns out that the means neceſſary in the opinion of one party to hinder the *ſpread of Yellow fever imported*, exactly coincides with thoſe recommended by their opponents *for the prevention of its domeſtic manufacture.*

That this diſtemper is *home-bred* or of *local origin*, we poſſeſs ſuch a flood of evidence as, in the judgment of the Committee, puts the matter beyond the limits of conjecture.

From inveſtigations lately made by the Committee, as well as by other phyſicians, it appears that this ſeaſon there have been ſeveral *local centres of peſtilence* in New-York, the moſt remarkable and offenſive of which, as far as they have been able to trace, were thoſe of Lynch and Stoughton's wharf, Pine Street docks, Burling Slip ſewer, [*Appendix No.* 6 *and* 7] James and Catherine Street ſlips, and the [*Appendix No.* 7] nuiſance yard, near Eaſt Rutger's Street. Theſe ſituations, and perhaps ſome others, were evidently rendered ſickly by noxious exhalations, produced in *each of them* independently of *foreign* intercourſe, or of any *communication* with each other. In like manner each ſtore or cellar containing ſpoiled beef, pork fiſh, or other ſubſtance, evolving *putreſcent matter*, was a ſmaller centre of peſtilence; and doubtleſs there were beſides theſe, other receptacles of filth which furniſhed copious materials for ſwelling the volume of peſtilential air.

But quitting theſe partial though productive corners where peſtilence *occaſionally inhabits*, let us turn our thoughts and our eyes for a moment, to thoſe great and *permanent ſources* where it *delights to dwell!*

THE moſt prominent, extenſive, and as we conceive the moſt operative, in this diſguſting group, is the *greater part of the new made grounds on the margin of the Eaſt River.* It is neither our buſineſs or our inclination to enquire into the municipal policy, whence originated the buſineſs of *lot-making and dock-making*, but we cannot refrain from ſaying, that in our opinion, it is of all others, the moſt fruitful nurſery of peſtilential diſeaſes. If we except a conſiderable part of Pearl-ſtreet, which was made in early times, out of the high grounds, dug down to level the ſtreet, we believe we ſhall be fully warranted in ſaying, that a vaſt proportion of Water and Front-ſtreets, have been made out of the moſt exceptionable materials: Many, very many of the lots, bulk-heads and wharves have been filled up by *contract or job;* and that too at thoſe dull ſeaſons and vacant hours, when the labourer could employ himſelf no other way. A dreadful proportion therefore, of bones, oyſter-ſhells, wood-ſhavings, ſtreet-ſcrapings, offals, and in ſhort every thing elſe, ſave good earth, gravel or ſand, have been abundantly employed for this purpoſe.

HENCE it is, that in numerous inſtances, inſtead of making *good grounds* and building *tenantable cellars*, they have fenced off the water and conſtructed *quagmires.* Nearly allied to this firſt ſource of diſeaſe, preſents itſelf in order, and as we conceive in ſtrength, certain *ſewers, ſlips and docks;* theſe, by becoming receptacles of *dead animal and vegetable matter*, when expoſed to the agency of heat, never fail to produce noxious effluvia. From the decompoſition which takes place among theſe vile materials, a peſtiferous air is extricated which contaminates the atmoſphere, and by that means becomes one of the moſt influential cauſes in the *ſpread* of

pestilential diseases. The records of many ages, and the authority of many physicians and philosophers, furnish abundant testimony to the matter of fact on this subject. [*See Appendix No. 6 and 7.*]

Sinks and privies follow in the black catalogue. On this head, the records of the Health-Office of 1798, contain representations to the Police, that the fluid part of the excrement in sinks, had broken thro' their mounds into the neighbouring cellars and kitchens, and into adjoining pumps and cisterns, emitting into the surrounding air, the most noisome exhalations.

It is a fact within our own knowledge, that some of the yards along the east river, and on the water lots too, filled in originally with rotten materials, sink after sink has been so frequently dug, that it is a business of some difficulty to find a fresh spot of ground in the yard, large enough for a new one; wherever the digger introduces his spade, he plunges into an old jakes.—Consider fellow-citizens, (for it is of great importance both to your comfort and your health)—Consider the enormous growth of this evil.—Suppose all the dwelling-houses of this city were demolished, and the temples of Cloæcina alone left standing, what a spectacle would it exhibit? Reflect at the same time, that the evil is not in any degree diminished because the *little houses are hidden*, for secrecy and concealment do not lessen the mischief at all.

Such a quantity of land, exposing such a surface to an August and September sun, is enough, one would think of itself, to poison our best enjoyments, if not to destroy our lives.

Beef and Pork corrupting in barrels—*ſtinking Hides*, and *putrid Fiſh*, are each of them, very capable of becoming a center of noxious exhalations, and we have at this moment before us, very ſatisfactory proof, that during the late Epidemic, they proved fatal to the lives of many valuable citizens —to ſay nothing of their agency in enlarging the extent of an unwholeſome atmoſphere.

The irregular and ſlovenly mode of cleaning back-yards, cellars, &c. and the injudiciouſly heaping together, the various ſubſtances thus collected, with the filth of the ſtreets, and expoſing them in thickly inhabited parts of the city, to wait the tardy removal of a Scavenger, has occaſioned univerſal complaining, diſguſt, and in ſome inſtances, much ſickneſs. The Committee mention with regret, but without any deſign of imputing blame to the Health-Commiſſioners, that the *nuiſance yard* which they eſtabliſhed near the ſhip yards, for the purpoſe of collecting all the putrid refuſe of domeſtic manufacture, became a neighbourhood as remarkable for its mortality during the ſickneſs as any part of the city; and, what is well worthy of particular notice, that this happened in a place recently ſettled, where the ground is clean, and the population not crouded.

The daily accumulation of dead bodies in burial grounds within the city, we are fully perſuaded, is another ſource of noxious vapours. We know too, that this is touching upon a ſubject where the affections and the prejudices of mankind, are extremely intereſted. The committee, however, think from the matureſt conſideration of duty and conviction, and ſupported by the hiſtory of other countries, which have ſeverely ſuffered by the folly

of allowing ſepulture within the city, that this practice ought to be ranked as no trifling agent in the production of diſeaſe.—[*Appendix, No.* 9.]

AMONG other very pernicious modes of cultivating water lots, they rank that of building *ſtore-houſes, and platforms in front of ſtores and dwelling-houſes, ſupported upon piles*, not the leaſt injurious to health.

EQUALLY pernicious with this practice is that of *digging cellars on new grounds during the warm ſeaſon*, which the Committee conſider as plunging into *hot beds of putreſcence*, that cannot fail to contaminate the ſurrounding air, and be of itſelf a ſource of *local origin* for the production of peſtilential Fever.

THE municipal laws, which at preſent exiſt for the regulation of our public markets are, in the opinion of the Committee, extremely defective.—And the contiguity of the *Ferry* to the largeſt and moſt frequented market in our city, is in their eſtimation liable to weighty objections.

The Committee now approach that part of their PROSPECTUS *which they deem* ALL-IMPORTANT, *(viz.)*

THE PREVENTION OF THE DISEASE.

HERE we cannot reſiſt exclaiming in the animated language of a devout poet—"O, that the warning voice of him who ſaw the Apocalyphs," might open our eyes and convince our underſtandings, that we might duly attend to thoſe things which ſo

deeply concern our preſent peace and future happineſs.

THE means of *prevention* are of *two ſorts*, as they relate to *foreign intercourſe, and domeſtic management.*

CONCERNING the means to be employed for preventing danger from *foreign intercourſe*, the Committee recommend—Firſt, that all ſhips and veſſels containing ſick perſons on board—veſſels in a foul condition whether containing ſick perſons or not—and veſſels containing damaged cargoes of ſuch ſubſtances as generate peſtilential air, ſhould be brought to, at ſome convenient place below the city, and all ſick and dirty perſons and damaged articles taken out; and that none of theſe ſhould be brought to town, until pronounced by the inſpecting phyſician clean and ſafe.

THE Committee find that ſince the eſtabliſhment of quarantine laws, no adequate proviſion has been made for carrying them into perfect effect—That no ſtores have been erected for the ſafe-keeping of ſuch articles as may arrive in a damaged condition; and that the hoſpital for the reception of the ſick has been fluctuating from one place to another—from Governor's to Bedlow's Iſland, and from thence to Bellevue. The Committee are of opinion in order to guard the public health, and at the ſame time to preſerve the property of individuals, for it is as neceſſary to protect our citizens from the effects of *decaying merchandize* as from *diſeaſed perſons*—that Bedlow's Iſland ſhould be purchaſed, or if military eſtabliſhments forbid this, a portion of the eaſtern ſhore of Staten Iſland may be procured, on which a Lazaretto, as well as ſuitable ſtores ſhould be built, and every other conveni-

ncy prepared for conducting with preciſion and effect the whole duties of the Health Office.

SUCH an eſtabliſhment as the above, we believe would entirely ſupercede the neceſſity (which our neighbours it ſeems contemplate) of applying to the General Government for a law which would operate as an interdiction of commerce during a conſiderable part of the year; an interdiction, in the judgment of the Committee, which, to ſay nothing of its ruinous conſequences to trade, would be uſeleſs to the end intended, and in the opinion of the Committee altogether unneceſſary.

The means of prevention, which are of domeſtic ſort, *we now proceed to examine, and this we ſhall attempt as conciſely as poſſible, in the order in which we conſidered them, as* SOURCES OF LOCAL ORIGIN OF DISEASE.

THE object that firſt preſents itſelf in this review is the *extention of the city* by the formation of *new ſtreets* on both rivers, and the practice of *docking-out.*

To prevent the increaſe of this evil, for it will take a long time to remedy it, no new ſtreet ſhould be laid out on the Eaſt or North river, and the buſineſs of farther dock-making, ſhould be diſcontinued, as ſoon as poſſible; all lots on the Eaſt and North rivers ſhould be raiſed without loſs of time, to a level, ſomething higher than that of the adjoining ſtreets, in order to prevent the accumulation of filth, and that the water may be *entirely drained off.* If through a miſtaken or avaricious policy, the correction of this evil is not immediately ſet about, its permiſſion will keep alive an inex-

hauſtible agent in the frequent and violent returns of peſtilential diſeaſes, and perhaps in a few years render the whole property of the city of very little value. What folly—what madneſs is it thus to encroach upon the water! As if there was not land enough made by nature's hand, of *pure materials*, for ſtreets, ſtores, houſes, and every other convenience which a great and growing city requires.

[*See Appendix No.* 8.]

PUBLIC SEWERS.

THESE ſhould be ſo conſtructed as to carry off their contents, by a more conſiderable declevity than they do at preſent;—not into *Slips at low water*, which, of themſelves, expoſe a large ſurface of *mud*, intermingled with many vile ſubſtances, to the action of a vertical ſun, but in ſuch a manner, as to diſcharge all their feculencies, by a greater projection of their mouths, into the river.

DOCKS AND SLIPS.

THESE ſhould be immediately filled up with clean earth and gravel, or ſand, as has been repeatedly and forcibly recommended by the Health-Commiſſioners, for this moſt cogent reaſon, that the *muddy bottoms may not be left bare at low water*. If this meaſure ſhould be delayed longer than days after the order of the Magiſtracy has been iſſued for that purpoſe, then the work ſhould be completed by public authority, and the property of the individual, made reſponſible for the coſt.

SINKS AND PRIVIES.

In order to remedy, in some degree, the inconveniencies, and to prevent, as much as possible, the *fatal effects* of Sinks and Privies, the Committee recommend, that the whole of their contents be taken out of the city in bulk, or by the wash of streams running thro' water closets, and *well regulated sewers* —Or it may be carried out according to the good old custom of this city—*in tubs*, and thrown into the river ! ! !—Or it may annually, when in a *frozen state*, be carried away in the winter months, (using *lime* frequently at other seasons of the year) and disposed of in same manner. If some of these modes are not adopted, the consequences will be, whether credited or not, that the citizens, from using water for culenary purposes impregnated with human excrement, will continue to *eat*, and *drink*, and *respire* a part of their *own excretions*.

BEEF—PORK—FISH, AND HIDES.

The Committee are of opinion, that it could not be very injurious to the interests or the convenience of merchants, and they are very certain, that it would be preservative of general health, that no person should be permitted to store Beef, Pork, or Fish, from the day of to in the thickly inhabited parts of the city, and that all articles of those kinds (and the interdiction, in their opinion, should extend to Hides), should be kept into public store-houses, to be provided in convenient and safe places for their reception.—*Appendix* 9.

BURYING GROUNDS.

THOSE caverns of putrefying mortality, ſhould no longer be permitted to remain within the city, but removed, as ſoon as poſſible, to a ſuitable diſtance from it. In the opinion of the Committee, this relict of long indulged ſuperſtition, within the limits of the city, ſhould be diſuſed, and abſolutely forbidden by law, and ſevere penalty incurred for every violation of it.

CELLARS—KITCHENS, AND YARDS.

FROM long obſervance, the Committee think, that more adequate municipal regulations ought to be enacted, and *rigidly enforced*, to compel Houſe-keepers to remove every ſpecies of filthy domeſtic manufacture, from their cellars, kitchens, and yards, every day from the 1ſt of June to the 1ſt of November, and during the reſt of the year, at leaſt twice weekly—That a ſuitable number of Scavengers be appointed to remove theſe matters, and that this duty ſhould performed with particular punctuality. It will be an object of ſome conſequence for the Magiſtracy, as well as of great advantage to the citizens, to have the ſuperficial nuiſances which are conſtantly collecting in houſes and ſtreets, *ſo diſpoſed of* as neither to interrupt the comfort, or endanger the health of any part of the citizens. Many of the Yards of this city, are lower than the front part of the lot on which the houſe is built—it is certainly a meaſure that promiſes great ſecurity to the health of the occupants, that all ſuch

yards be raiſed a little above the level of the ſtreet, in order to carry off the ſtagnant water, &c.

THE erection of *ſtore houſes and platforms, upon piles of wood*, they conſider as miſerable contrivances, and fitted for no better purpoſes than that of being reſervoirs of filth and neſts of peſtilence. In like manner, the *digging cellars out of new grounds during the hot months*, and the abominable practice of opening oyſters upon theſe grounds, (or indeed any other) ſhould hereafter be totally prohibited during the ſame period.

THE Committee conceive that it would be a matter very conducive to health and comfort, if our *markets* were under better and ſtricter regulations. They ſubmit too, very reſpectfully to the Corporation, whether it would not be a ſalutary meaſure to remove the *ferry* from the largeſt and the moſt frequented *market in our city*, to ſome other place, and that, for reaſons which we conceive too obvious to need enumeration.

THE laſt thing which we have to propoſe, though among the very firſt in its importance, is to procure for our city, that great deſideratum, a plentiful ſupply of *Pure and Wholeſome Water*.

THIS infinitely valuable article, ſo precious to the comfort, health, and very exiſtence of the people, ſhould be procured without any unneceſſary delay, and from an unfailing ſource, liable to no interruptions, and removed from all the impurities of the city. This agreeable agent, equally ſalutary and powerful, by its rapid currents, might be employed at any ſeaſon, to remove from our houſes, ſtreets,

wharves, docks, and ſlips, all thoſe offenſive materials, which from within and from without, are conſtantly collecting, and hourly acquiring properties every way deſtructive of comfort, and promotive of diſeaſe. From the opinions and enquiries of ſome intelligent and reſpectable citizens, who have been employing themſelves on this intereſting ſubject, we believe that a ſtream from the River Bronx, might without much difficulty be conducted into our city. But from what ſource ſoever it may be thought beſt to derive good water, no hindrance whatever ſhould be thrown in the way to its attainment. No regard ſhould be paid to individual, but to the general intereſts, on this vaſt concern; nor ſhould the Corporation or citizens liſten to, or adopt any plan for its accompliſhment, other than that which ſhall be founded upon mature deliberation, uninfluenced by any principles of a narrow policy or an ill-judged œconomy.

PERHAPS it may be neceſſary, in order to carry the domeſtic regulations, which are here recommended, into full effect, or as many of them as may be thought of uſe, in averting the return of the late calamity, to enlarge, by legiſlative interference, the power of the Corporation.

WE acknowledge ourſelves unacquainted both with the extent of their authority to correct, and the number of their difficulties to ſubdue—we believe the firſt to be conſiderable, and the laſt formidable—If however there be any thing in the foregoing pages deſerving of notice and worthy of being acted upon, it is certainly high time it were attempted. The Magiſtracy ſhould endeavour, we

humbly apprehend, by some decisive exertion, to remove from their Corporate capacity the blame which many citizens think attaches to it, from the belief, that they have a *sufficiency of power*, but from particular circumstances much disinclination, to begin and carry through the essential objects of necessary reform. We suggest, with great deference, as our opinion, that it would facilitate the business designed, if the objects of reform were so divided, as that the completion of them might be put under the direction and superintendence of Boards of Commissioners, specially appointed, possessing full authority, and receiving adequate compensation. This is done to good purpose in other great cities, and why not here? In the city of London the Commissioners of the *common sewers*, hold a place of trust, and exercise an authority, which in point of *importance to the health and safety of the people*, yields to none within the whole kingdom.

The Committee have thus endeavoured to lay before their fellow citizens, in as concise and intelligible a manner as they were able, a plain view of the *nature*, the *sources* and the *prevention* of Yellow Fever. In doing this, they have not allowed themselves in any instance, knowingly, to wander under the guidance of popular prejudice or party spirit, into the devious fields of theoretical speculation. Conscientiously impressed, as they have been, with the immense consequences of this *serious subject*, to the future health and prosperity of our city, they have permitted no opinion to go forth, nor proposed any manner of domestic reform, which have not sprung from their best apprehensions of *truth*,

and go recommended by the ſtrongeſt convictions of neceſſity and uſefulneſs.

Upon the whole, the Committee cannot help indulging the hope, that by this feeble attempt, they may at leaſt be ſo fortunate as to ſet their fellow-citizens on THINKING, and by that means, lay a good foundation for WORKING. They conclude this report therefore, by entreating the magiſtracy and the people to BE UP and a STIRRING, for they may be aſſured that THE EVIL THING IS NOT DEAD—BUT SLEEPETH.

APPENDIX.

THE reader will find in this Appendix, besides the Affidavits, &c. referred to in the body of the Report, a paper *drawn up exclusively by Dr. Samuel Mitchell, Professor of Chymestry in Columbia College, and one of the Members of the Committee who framed the Report. It contains the result of certain experiments on which Doctrines arise, either not universally admitted, or not generally understood. The Committee are of opinion, that if these experiments be just, and the Doctrine arising out of them be tenable and true, they cannot be too generally known—if false, they cannot be too early refuted. They therefore recommend it, without further preface or comment, to the perusal of the Chymest and the curious.*

[*No.* 1.]

AFFIDAVIT OF MALLEBAY AND DURAND, CONCERNING THE SHIP OLIVE.

City of New-York } fs.

JOHN MALLEBAY and JAMES B. DURAND, of the city of New-York, merchants, being duly ſworn, do ſeverally depoſe and ſay—That on the twenty-third day of June laſt, the ſhip Olive, Iſaac Johnſon maſter, arrived at the port of New-York, from Jeremie, with a large cargo of coffee, and ſome cocoa—That her crew conſiſted of ten perſons, excluſive of the captain, and that ſhe had ſeven paſſengers on board—That the crew and paſſengers were all in good health, except a Mr. Laborde, a paſſenger, who was ill with a conſumption, and was brought on ſhore by order of the Health Officer—That the cargo was landed at the Old Slip, between the twenty-ſixth day of June and the ſecond day of July laſt—That the whole of the cargo was in good order, except about twenty hogſheads of coffee, which being a little damaged, were ſhifted, on board the ſhip, into new hogſheads, and the damaged part was thrown overboard. That on the third day of July laſt, the ſhip, being diſcharged, was removed to a dock near the New Slip, where ſhe remained till the twenty-eighth day of July, then inſtant, on which day ſhe was ſold to Mr. Baingold, of Virginia, and further theſe deponents ſay not.

JOHN MALLEBAY,
JAMES B. DURAND.

Sworn, this 7th day of December 1798, *before me,*
THEOPHILUS BEEKMAN, *Alderman.*

[*No.* 2.]

Pretended importation into New-York in the ſhip Olive.

AFFIDAVIT OF DAVID CATION.

City of New-York, } ſſ.

DAVID CATION, one of the inſpectors of the cuſtoms for the port of New-York, being duly ſworn, ſaith—That he had charge (as Inſpector as aforeſaid) of the ſhip Olive, from the time of her arrival in this port until the diſcharge of her cargo, to wit, from about the twentieth of the month of June, to the ſixth or ſeventh of the month of July laſt. That he was repeatedly in the hold of the ſaid ſhip, and turned up great part of the cargo, which conſiſted of ſugar and coffee; and obſerved nothing materially offenſive in the ſaid ſhip. That there were ſome hogſheads of coffee on board which were damaged in part; which hogſheads were ſtarted on deck at the Old Slip, in ſaid city, and the damaged part thrown overboard. That the crew and paſſengers of the ſaid veſſel were all healthy, as far as this deponent knows, except one man who had a conſumptive complaint. That the ſaid veſſel was commanded by Iſaac Johnſon, and has been informed that ſhe was ſold, after the delivery of her cargo, but does not know to whom.

DAVID CATION.

Sworn before me, this 1ſt day of December, 1798.

JACOB DE LA MONTAGNIE, *Alderman.*

[*No.* 3.]

AFFIDAVIT OF THE MATE OF THE SLOOP IRIS.

City of New-York } ss.

LEVERETT STEVENS, late mate of the ſloop Iris, of New-Haven, being duly ſworn, depoſeth and ſaith—That he knew John Wilſon, the ſailor belonging to the ſaid ſloop—That he, this deponent, was on ſhore with him at the time of his death, and aſſiſted in ſewing up in a blanket, the body of the ſaid John Wilſon, together with all the wearing apparel which he had on ſhore, and that no part whatever, of the ſame, was returned on board of the ſloop. And this deponent further ſaith, that the regimental coat, found in the cheſt of the deceaſed, on board, was a new garment, taken out of a bale a few days before, in the preſence of this deponent, and to the beſt of his knowledge and belief, had never been worn. And this deponent further ſaith, that the jackets and trowſers found in the ſaid cheſt were alſo new, and taken a few days before, in the ſight of this deponent, from another bale of goods; and as this deponent verily believes, had never been worn by the ſaid John Wilſon, in his life-time, nor by any other perſon. And this deponent further ſaith, that being at the compting houſe of Elijah Auſtin, before the opening of John Wilſon's cheſt of things in the ſtore, and before the ſaid Elijah's departure for the city of New-York, whither he ſaid he was going, this deponent heard him complain of being unwell, but

that notwithſtanding, he muſt proceed on his journey. And further this deponent ſaith not.

LEVERETT STEVENS.

Sworn before me, this 16th November, 1798,
GABRIEL FURMAN, *Alderman.*

[*No.* 4.]

Pretended importation of the diſtemper into New-Haven.

AFFIDAVIT OF CAPT. TRUEMAN, OF THE SLOOP IRIS.

City of New-York, } ſſ.

DANIEL TRUEMAN, late commander of the ſloop Iris, which ſailed from New-Haven in the winter of the year 1794, on a voyage to Martinique, being duly ſworn, depoſeth and ſaith—After his arrival at the port of Saint Pierres, his veſſel was taken from him by the authority there—That while the veſſel was detained, he, this deponent, and part of his people, lived on ſhore—That after the condemnation and ſale of his veſſel, he, this deponent became the purchaſer. And this Deponent further ſaith, that the remainder of his crew, conſiſting of his mate and two men, were employed, during part of the time aforeſaid, in the buſineſs of droguing, in the employ of the government there—That on the return of the mate and the two men aforeſaid, he this deponent, took poſſeſſion of the ſaid ſloop Iris, and carried his whole crew on board, and that afterwards, within

three days, one of the men, named John Wilſon, was taken ſick of a fever, and within a few hours was carried on ſhore, where he died, and was buried in the clothes which he wore during his ſickneſs, no article whereof was returned on board the Iris. And this deponent further ſaith, that on ſetting ſail, his crew, including paſſengers, to the beſt of this deponent's recollection, conſiſted of fifteen perſons—That the cheſt of the deceaſed John Wilſon was opened by this deponent and his mate, Leverett Stevens, twice during the paſſage, and that it contained a ſoldier's regimental coat, a great coat, ſeveral jackets and trowſers and a few other things, none of which the ſaid John Wilſon wore during his illneſs. And this deponent further ſaith, that during the paſſage from Saint Pierre's to New-York, and from New-York to New-Haven, the whole of the perſons on board enjoyed good health, and no fever or other diſtemper prevailed among them: And this deponent further ſaith, that after his arrival with a healthy crew at New-Haven, Elijah Auſtin, the perſon in whoſe employ the deponent ſailed, was preſent when this deponent opened the cheſt containing the effects of the ſaid John Wilſon, in a certain ſtore where they had been carried from the veſſel ſeveral days before; and that the ſaid Elijah Auſtin, before the opening of the ſaid cheſt, and before his departure for the city of New-York, to which he was then about to go, complained of a head ache, and ſaid he muſt proceed nevertheleſs to New-York. And further this deponent ſaith not.

DANIEL TRUEMAN.

The foregoing depoſition was ſworn to before me, this 16th of November, 1798.

GABRIEL FURMAN, *Alderman.*

[*No.* 5.]

Pretended importation in the ſchooner Fox, into New-York.

AFFIDAVIT OF VINCENT G. COUET, A PASSENGER.

City of New-York } ſs.

VINCENT GUY COUET, at preſent of the city of New-York, gentleman, being duly ſworn, depoſeth and ſaith—That he arrived in the port of New-York, in the ſchooner Fox, from Jeremie, on the fifteenth of July laſt—That there were four paſſengers on board the ſaid ſchooner, who, together with the crew of the ſaid veſſel, were, during their paſſage and at the time of their arrival here, in good health—That he left Jeremie on the 24th of June laſt, at which time it was generally very healthy at that iſland—That he has not heard of any contagious diſorder exiſting there at the time he left it—That the veſſel in which the deponent came to this city, was commanded by a Mr. Dandelot.

COUET.

Sworn before me, this 4th day of December, 1798,

THEOPHILUS BEEKMAN, *Alderman.*

[*No.* 6.]

Concerning the effects *of the Exhalations from Burling's-slip sewer.*

ON the 23d and 24th of Auguſt, being two very cool mornings, preceeding the extreme heat of ſome days before, almoſt the whole neighbourhood of the top of Golden Hill, and in Cliff-ſtreet, were ſeized with ſlight affections of the heart, and with ſymptoms of contagion. Two days before this, while ſitting with a neighbour at the corner of Cliff-ſtreet and John-ſtreet, directly facing Burling-ſlip, they experienced an uncommonly offenſive odour, coming from Burling-ſlip and brought by the ſoutherly wind; this ſmell had been perceived for ſome days before (but not ſo extremely diſagreeable) whenever the wind was ſoutherly, and was conveyed as in a funnel up the hill to John-ſtreet—the corner houſe of theſe ſtreets, ſeemed to divide the funnel, and at this houſe, the firſt perſons took ſick, and they were very ſeverely attacked. There were many cellars in this neighbourhood filled with beef, which at this time was in a putrid ſtate. Mr. Renny, (the taylor) who lives below Dr. Faugeres, near the corner of Pearl-ſtreet and John-ſtreet, alſo related to Dr. F. that his cellar was filled with beef, which had emitted a very diſagreeable ſmell for ſome time before this, and that the ſmell was very offenſive to all his family. Renny's wife and himſelf took ſick the latter end of Auguſt, ſhe died—he recovered!—Dr. Faugere ſays, that when the ſcuttles of the common ſewer were opened, in order to have quick lime thrown in, two young men of the

neighbourhood, from motives of curioſity, looked into the drain, and that theſe young men both took the diſorder and died.

[*No.* 7.]

Poisonous exhalations from the sewer of Burling's-slip.

ON the 14th day of Auguſt, there fell, during a ſhower in the morning, an unuſual quantity of rain. The fall was ſo ſudden and copious, that many low lots of ground and cellars were partly filled by it. Hot weather continued and encreaſed, after this exceſſive precipitation of water; and the concurrence of theſe two cauſes, doubtleſs, largely contributed to put the putreſcible ſubſtances in the city into rapid fermentative action. In parts of the city, where the *kind* and *quantity* of ſuch matters favoured the production of peſtilential vapours the neighbourhood ſoon grew ſickly; but in no place, was its local generation and diffuſion more evident than around the upper opening of Burling-ſlip ſewer, in Pearl-ſtreet. It may be remarked, in general, of our ſewers, that they have not deſcent enough to enable fluids to run briſkly through them. They are of courſe very liable to obſtruction; and the complaint very generally made by the citizens on this head, do not apply to *Sewers, as ſuch*, but they evince in ſtrong terms, that ſome ſewers, which underdrain the ſtreets, *are*

ſhockingly projected and executed. The following narrative will ſhew this :

THE waſh of ſeveral ſtreets, is intended to be emptied into the Eaſt-River through the ſewer.— The impetuous fall of rain on the fourteenth, cleanſed the ſtreets of almoſt every naſty thing, ſo that the pavement appeared uncommonly nice and bare ; and if it had been *low* water, all this amount of foul and putrid matter, from the ſtreets, would have paſſed freely through the ſewer into the river, and the city been benefited by its removal. But it happened at that time to be *high* water, which made ſuch reſiſtance at the lower end of the ſewer, that the waſh of the ſtreets could not force a paſſage faſt enough, but ſtopped and ſtagnated until the receſs of the tide. A quantity of the putreſcent materials depoſited by the waſh, ſettled along the bottom of the ſewer, and as ſoon as the
day of Auguſt, emitted exhalations from the mouth of the ſewer, highly offenſive to the neighbouring inhabitants and to perſons walking along the ſtreets. At the time the ſubſtances below were emitting theſe vapours, the wind blew from the S. or S. E. and on the ſome of the inhabitants living to leeward of the mouth of the ſewer, were taken ſick. The *poiſonous* air extricated, probably did not continue to flow for a long time ; but as it paſſed along the *leeward* ſides of Pearl, John, and Cliff-ſtreet, it ſcattered ſickneſs and death among the people. Its malignity was dreadful, and it ſpread to leeward until it ſpent its force among the houſes, or became diffuſed and attenuated in the atmoſphere. To ſtay the progreſs of the miſchief, a parcel of quick lime was thrown into the ſewer.— The watery vapours proceeding from it, as it paſſed was driven by the wind in the ſame direction, as

the peſtilential ſtreams had travelled, and rendered their march and diſſemination, in a manner, cognizable by the eye. A peſtilential exhalation, riſing from the ſlip where the lower end of the ſewer terminated, exerted its poiſonous influence upon part of a ſloop's crew, which laid there; and a portion of the vapours from this lower ſource, waſted to leeward by the E. S. E. wind, appears to have deſtroyed a number of lives in Water-ſtreet, near the place of its production. The Committee believe, not a ſingle citizen ever doubted the local origin of the poiſon in this place.

[*No.* 9.]

Danger of Burying Grounds in Cities.

ON the ſubject of Burying-grounds, and the danger ariſing from the accumulation of dead bodies in Churches and Church-yards, an inſtructive little work, in two Eſſays, was written in Italian, by Mr. PIATTOLI, and publiſhed more than thirty years ago, by order of the Duke of Modena. In the firſt part, the Author recites the cuſtoms of different people of antiquity concerning funerals—the times when interment begun in inhabited places, and Churches—the progreſs of this abuſe, and the different laws both civil and eccleſiaſtical, which have been enacted and re-enacted on this ſubject: In the ſecond, he has recourſe to experience and actual facts, to demonſtrate the danger of interment in Churches and Towns. Air charg-

ed with animal exhalations, is already known by its pernicious effects :—If ſuch air proceeds from a corrupting corpſe, it becomes the more dangerous by being confined in cloſe places, where it has little communication with the free atmoſphere. The unhappy events, occaſioned by theſe terrible exhalations, evince the neceſſity of eſtabliſhing an unreſtrained current of air in burial-places. Grave-yards ought therefore to be removed from the abodes of the living, and ſhould be carried quite out into the country :—And ſuch is the concluſion which the author draws from the aſſemblage of all his proofs and all his arguments.

What can illuſtrate it more ſtrongly than the following fact ? At Saulieu, in Burgundy, there prevailed a catarrhal epidemic fever of a mild type ; and there had been buried in the pariſh church of St. Saturninus, the carcaſe of a groſs and corpulent man. Three and twenty days afterwards, a hole was made along ſide of that wherein he had been buried, to inter a woman who had died in child bed of the prevailing diſtemper. From the moment the ground was opened, a very fetid exhalation filled the church, and was perceptible by all who entered it. In letting down the carcaſe of the woman the coffin was ſhaken by the ſliping of the rope, and a quantity of corrupted matter ran out and affected the aſſiſtants. Out of one hundred and ſeventy perſons who entered the church, after the grave was dug to the time of its being cloſed, one hundred and forty-nine were attacked with a putrid malignant fever, which had ſome characters of the prevailing catarrh ; though the nature and violence of the ſymptoms left no room to doubt that its peculiar malignity was derived from the infection of the church.

It is well worthy of remark that the wiſeſt princes and prelates have uniformly oppoſed interment in cities and churches; but ſuperſtition has always riſen up in oppoſition to their laws, and but too frequently prevented their execution. On this point the people have ſhewn themſelves peculiarly prone to tranſgreſs, and therefore it becomes a legiſlature to provide againſt the repetition of ſimilar offences by energetic and deciſive meaſures. *Vi'cq D'Azyr's Eſſai ſur les De la Sepulture, &c.*

Theory of the Muriate of Soda or common ſalt, in preſerving the Fleſh of Animals, by Dr. Mitchell.

EXPERIMENTS have abundantly ſhewn, that muriatic acid, poured upon animal bile, combines with the ſoda and conſtitutes common ſalt. In this experiment, the bitter of bile is precipitated or ſet looſe. It does not yet appear to be quite ſettled wherein *bitters* exactly differ from *aſtringents*. With reſpect to their compoſition, I ſuſpect the difference is rather in *degree* than in *kind*. If ſo, then as *aſtringency* conſiſts in the combination of the gallic acid and the earth of allum, there can be conceived nothing injurious to health in that portion of the ſecretion of the liver.

If muriate of ſoda, can be thus produced artificially and *out of the animal body*, there can be no doubt of the poſſibility of its formation by a natural proceſs *within* the body, where the ſpirit of ſalt is taken as an article of food or of medicine. *Glauber* ſeems firſt to have practiced the extraction of this

ſingular and moderate acid from its alkaline baſis in ſea-ſalt, [2 *Boerhaav Chem. Proc.* cxliii.] and to have given an account of its excellence in diet and domeſtic œconomy. BOOERHAAVE deſcribes it as "remarkably agreeable to the ſtomach, promoting appetite, attenuating mucus, aſſiſting digeſtion, preventing putrefaction, &c." and concludes the character of this liquid procured from ſea-ſalt, by affirming that "it is above all praiſe." [*Ibid.*] And HOFFMAN [*Obs. Phy. Chem. lib* 2, *obs.* xvii.] ſpeaks of the uſing of the ſpirit of ſalt with fleſh-broths as a common practice. It is rather a pity the oxigenated forms of this acid and their combinations, have chiefly attracted the notice of the more modern chymiſts.

YET, though the ſpirit of ſalt is ſo ſafe and valuable a preparation, the untutored appetite of man and other animals, has led them to prefer the muriatic acid in conjunction with ſoda, that is, ſea-ſalt or common ſalt, to the ſpirit of ſalt itſelf. There muſt be a reaſon for this, and this reaſon, which is founded deep in the nature of things, is worthy to be ſearched for.

THUS the conſtitution of many creatures is ſupplied not only with the *bitter of ſoda* (bile or gall) furniſhed by the liver, but with the *muriate of ſoda* taken in with food. Then the queſtion before us is, what are the chymical effects of the muriate of ſoda taken into the ſtomach with the aliment? Now I ſay, in creatures who eat ſubſtances which contain ſepton, or the baſis of the acid of putrefaction, there may happen caſes of ſurcharge, retention or indigeſtion; and at ſuch times, may be formed within the ſtomach or inteſtines, a portion of that offſpring of corruption, the ſeptic acid, after the

ſame manner as in other putrefactive proceſſes. —Beſides the agreeable ſtimulation afforded by the muriate of ſoda, to the palate and ſtomach, its alkali lies ready to ſeize and neutralize any little parcel of ſeptic acid that may happen to be produced. After this manner, that injurious acid is taken out of circulation, and the mild and ſalubrious ſpirit of ſalt is extricated in its ſtead. And in a ſimilar way, the ſoda of ſea-ſalt has an operation in the ſtomach, ſimilar to the ſoda of the gall in the inteſtines. In the former caſe the muriatic acid is ſet looſe, in the latter the bitter principle. In both, the ſoda will quit its preſent connections, to combine with a ſtronger acid. In ſuch caſes, cubic nitre is the new product. Where no acid is generated, there will be no decompoſition of either. The reaſon then is apparent, wherefore it is better to take the muriatic acid *with ſoda*, than without. There may be a further uſe, that from this ſource, the bile itſelf may derive its alkali.

The principle wherefore ſea-ſalt acts in preſerving food, may thus be conſidered as inveſtigated. But it may be aſked, why the muriatic acid is ſo much milder than the ſeptic? To this I reply, that as the unknown radical of that acid attracts oxygeny more forcibly than any other known ſubſtance, it acts with moderation upon almoſt every other body; not like the ſeptic powerfully acting and being itſelf powerfully acted upon, but on the contrary, not readily decompoſing other bodies, nor being itſelf readily decompoſed. When the baſe of the muriatic ſhall become known, certain doubts and difficulties which beſet this part of the inquiry will be cleared away and not until then. This diſcovery is a great deſideratum in ſcience.

YET the muriate of soda is not only mingled with food when eaten, but many substances intended for nutriment, are sprinkled, pickled, or impregnated with it in the larder and kitchen, before they are served up at table. Sea-salt is preferred for culinary purposes, not because it is the *strongest*, but the most *palatable* and *agreeable* of antiseptics. This may be best understood by shewing what soda can do alone.

IF I am not mistaken, the operation of this alkali, to overcome the harmful products of putrefaction, is amply supported by the ancient mode of embalming, as practised in Egypt. For HERODOTUS, in describing the process, particularly mentions among other things, that the bodies *were salted* and hid in NITRE for seventy days—[B. II. cap. 85, 86.] "The use of which was to dry up all their superfluous and noxious moisture." The Greek Historian uses both the word and the atticism to express the substance used for salting the bodies. Now, it is a settled point, that these words though translated "nitre," mean not the "Salt-Petre," of the moderns, but the soda or the basis of sea-salt. This chymical correction, strengthened by the authority of WARBURTON, [3 *Divine, Leg. B.* 4 § 3.] contending that the body of ISRAEL [*Genesis, c. l.* 2, 3.] was kept by the embalmers, the customary time in nitre, [*Carbonate of Soda*] evinces how long ago it was known that the mineral alkali, absorbed the septic fluids produced during the corruption of human bodies.

SODA alone then can preserve the flesh of an animal from corruption; and if mere preservation was all that was intended, this alkali, would, by it-

ſelf anſwer the purpoſe, and ſo would Pot-Aſh.—But there is ſome quality in the muratic acid, which makes the compound, which it forms with Soda, a far preferable ſubſtance to prevent the corruption of meat intended to be eaten.

In order to underſtand what effect the muriate of ſoda has, it will be proper to conſider what change the piece of meat in the larder was undergoing, which could be arreſted by the ſea-ſalt. The fleſh of animals, we mean particularly the muſcular or lean parts, may be conſidered as verging towards a putrefactive ſtate from the time the fibres loſe their irratibility and become rigid, and one of the ſigns of incipient putrefaction, under circumſtances favourable to that proceſs, is ſometimes a *fourneſs* or *production of acidity* in the ſubſtance [4 *Fourcroy*, *Chap.* xvi.] and this acidity is inherent in the meat, and quite another thing from fixed air. What I mean is the *ſeptic acid*, which ſometimes poiſons diſſectors, and which, when volatilized into gas and diffuſed through the atmoſphere, cauſes violent endemic diſtempers. When produced, it is formed early in the putrefactive proceſs, and before the whole fleſh has undergone total diſorganization. But fortunately for mankind, it is not *always* engendered during the putrefaction, even of thoſe ſubſtances which contain its baſis, ſepton. This radical frequently eſcapes in the form of azotic air, without combining with oxygene at all, and in ſuch caſes the exact matter of peſtilential fluids is not formed.

In caſes where the ſeptic acid is formed in ſalted meat, the muriate of ſoda is decompounded: and while the alkali attracts the deſtructive ſeptic acid to itſelf, it lets go the muriatic. The fleſh, in proportion as it becomes impregnated with this new

and preserving ingredient, progresses afterwards slowly towards decomposition, because it is inveloped with a liquid acting feebly upon it, and upon which it can exert in its turn but a feeble action. Hence, when beef, or any other lean meat, is plentifully charged and surrounded with salt, there is enough of soda to neutralize the acid of putrefaction, should any be formed, and there is also a corresponding proportion of the spirit of salt disengaged, from which latter proceeds in a certain degree the agreeable smell and pleasant taste of well salted provisions.

To preserve the flesh of animals, there must therefore be not only salt enough in the barrel, but this salt must be applied to every part of the meat, by cutting it into pieces of a moderate size, and by rubbing in the salt with a strong hand, as well as by the application of brine or pickle. When too little salt is applied, and provisions are become tainted or corrupt, there is not soda enough to arrest the septic acid, nor a sufficiency of muriatic acid extricated to impregnate and preserve the remainder of the meat. From this septic matter disengaged, with a portion of hydrogene, phosphorus, &c. proceed the disgusting flavour and sickly nauseating fœtor of badly cured provisions. [*See Mitchell's letter to Professor Woodhouse, &c.*

Good qualities of the Bronx River Water.

The Committee suppose that it may aid the publicity of Dr. Browne's valuable Memoir, presented

to the Corporation of the city of New-York, to add the following extract from it, on the means of ſupplying the city with Water, from the River Bronx.

THE ſtream in the County of Weſt-Cheſter, known by the name of Saw-Mill river, which empties into the North river, beyond the nineteen mile ſtone, has been mentioned by ſome as excellent water, and capable of affording all that is wanted. I have no objection to make to the truth of this aſſertion—but the expence of bringing this water nineteen miles, over ſo rough a country, would be greater than could be probably raiſed for this purpoſe, even admitting the neceſſary ſupply could not be had otherwiſe—but fortunately New-York is not in this dilemma, for there is another ſource equally copious and full as pure, that may with great facility be obtained for a quarter part of the expence (to wit.)

THE RIVER BRONX,

WHOSE principal ſource is from a ſmall lake, about four miles Northward of the White Plains. This lake is nearly three miles in length and half a mile wide. After meanding twenty miles through a rocky part of the County of Weſt Cheſter, it falls into the Eaſt river, juſt above Hunt's Point. The neareſt point of its approach to the City of New-York, is at preſent about 12 miles from the City Hall.

THIS water is remarkably pure and pellucid, and from a chymical analyſis which has been made of it, it may be relied on as poſſeſſing no noxious qualities. The inhabitants who live near its banks,

are in the conſtant habit of uſing it in preference to other water during cold weather, and experience no bad effects from it. It may not be amiſs to mention a few teſts that are the only ones neceſſary to aſcertain what is good water—the firſt is to boil leguminous vegetables in it, the ſecond to mix it with ſoap, for water that contains any of the ſalts with an earthly baſe, ſuch as nitrate of lime and magneſia, muriate of lime and magneſia, ſulphat of lime, or carbonate of lime and magneſia, will not do well for either of the above purpoſes, for having a great affinity to the mucilage of plants, it extracts, and thereby renders them hard and diſagreeable to the taſte. Soap is likewiſe an excellent teſt, which is known to be a chymical compound of alkali and oil or fat. All ſalts with an earthly baſe, decompound ſoap by a double exchange; their earth unites itſelf with the oil or fat, whilſt their acid combines with the alkali of the ſoap, and by the combination of the oil and earth, is formed a ſoap which is inſoluble in water, and makes thoſe clots or curdles, which we perceive in mixing ſoap with what is generally called hard or crude water. Water then that is clear and from a running ſource, that boils leguminous vegetables tender, in which ſoap readily diſſolves, and has no bad flavour, may be pronounced good water—to all theſe teſts, the water of the Bronx has been ſubmitted, and from whence we cannot but pronounce it excellent.

I SHALL now endeavour to point out an eaſy method of carrying it to New-York. It has already been mentioned that its neareſt approach to the City Hall, is about 12 miles diſtance; but at about 14 miles diſtance, which is half a mile below Williams's bridge, is a piece of low meadow ground,

in which ariſe two ſprings—one of which runs eaſterly, and empties itſelf into the Bronx, at not more than 400 yards from its origin. The other ſpring runs ſoutherly and empties into Haerlem River, after traverſing a diſtance of about ſix miles. The place where thoſe ſprings originate, is not more than five feet above the level of the Bronx, and ſometimes part of the river, when raiſed by a conſiderable freſhet, has run over part of this meadow and emptied itſelf into Haerlem River. From thoſe reaſons, then it is obvious that by building a Dam, five feet in height, acrofs the Bronx, below where the firſt mentioned Spring empties itſelf into it, and by digging a Canal 400 yards in length through the meadow, the whole of the Bronx, if neceſſary, might be diverted from its old rout, and thrown into Haerlem river, at about eight miles diſtant from the City-Hall. The place where the Bronx may be thus divided, is about 50 feet above high water mark.

FINIS.