

not a spirit very sensibly perceived in drinking, you may conclude the tar water is not good; if you would have it good, see it made yourself. Those who begin with it, little and weak, may by habit come to drink more and stronger. According to the season, or the humour of the patient, it may be drank either cold or warm; in colics, I take it to be best warm. If it disgusts a patient warm, let him try it cold, and *vice versâ*. If at first it create to some squeamish persons a little sickness at stomach, or nauseating, it may be reduced both in quality and quantity. In general, small inconveniencies are either removed, or borne with small trouble; it lays under no restraint as to air, exercise, clothes, or diet, and may be taken at all times in the year.

5. As to the quantity in common chronical indispositions, one pint of tar water a day may suffice, taken on an empty stomach, at two or four times, to wit, night and morning, and about two hours after dinner and breakfast; more may be taken by strong stomachs. Alteratives in general, taken in small doses, and often, mix best with the blood, how oft or how strong each stomach can bear experience will show. But those who labour under great and inveterate maladies, must drink a greater quantity, at least one quart every twenty-four hours, taken at four, six, or eight glasses, as best suits the circumstances and case of the drinker. All of this class must have much patience and perseverance in the use of this, as well as of all other medicines, which, if sure and safe, must yet, from the nature of things, be slow in the cure of all inveterate chronical disorders. In acute cases, fevers of all kinds, it must be drank in bed warm, and in great quantity, the fever still enabling the patient to drink, perhaps a pint every hour, which I have known to work surprising cures. But it works so quick, and gives such spirits, that the patients often think themselves cured before the fever hath quite left them. Such therefore should not be impatient to rise, or apply themselves too soon to business or their usual diet.

6. To some, perhaps, it may seem, that a slow alterative in chronical cases cannot be depended on in fevers and acute distempers, which demand immediate relief. But I affirm that this same medicine, which is a slow alterative in chronical cases, I have found to be also a most immediate remedy, when copiously taken, in acute and inflammatory cases. It might indeed be thought rash to have tried it in the most threatening fevers and pleurisies without bleeding, which in the common practice would have been held necessary. But for this I can say, that I had patients who would not be bled, and this obliged me to make trials of tar water without bleeding, which trials I never knew unsuccessful. The same tar water I found a slow alterative, and a sudden febrifuge. If the reader is surprised, I own myself to be so too. But truth is truth, and from whatever hand it comes

should be candidly received. If physicians think they have a right to treat of religious matters, I think I have an equal right to treat of medicine.

7. Authority I have no pretence to. But reason is the common birthright of all. My reasons I have given in *Siris*. My motives every one will interpret from his own breast. But he must own himself a very bad man, who in my case, (that is, after long experience, and under full conviction of the virtues and innocence of tar water) would not have done as much. All men are, I will not say allowed, but obliged to promote the common benefit. And for this end, what I could not in conscience conceal, that I do and shall publicly declare, maugre all the spleen and raillery of a world, which cannot treat me worse than it hath done my betters.

8. As the morning's draught is most difficult to nice stomachs, such may lessen, or even omit it at the beginning, or rather postpone it till after breakfast, and take a larger dose at night; the distance from meal time need not be more than one hour for common stomachs, when the liquor is well clarified and skimmed. The oil that floated on the top and was skimmed off, should be carefully laid by, and kept for outward sores. In the variety of cases and constitutions, it is not amiss that there should be different manners of preparing and taking tar water. Trial will direct to the best: whether there be any difference between old tar or new tar, or which of all the various tars, produced from different trees, or in different parts of the world, is most medicinal, future trials must determine.

9. I have made a second sort of tar water, to be used externally, as a wash or lotion for the itch, scabs, ulcers, evil, leprosy, and all such foul cases, which I have tried with very good success, and recommend it to the trial of others. For inveterate cases of that kind, tar water should be drank, a quart every twenty-four hours, at four, six, or eight glasses: and after this hath been done at least for a fortnight, the lotion is to be applied outwardly, and warm, by bathing, fomenting, and steeping, and this several times in the twenty-four hours, to heal and dry up the sores, the drinking being still continued. This water, for external use, is made in the following manner: pour two quarts of hot boiling water on a quart of tar, stir and work it strongly with a flat stick or ladle, a full quarter of an hour; let it stand six hours, then pour it off, and keep it close covered for use. It may be made weaker or stronger as there is occasion.

10. From what I have observed of the lotion, I am inclined to think, it may be worth while in obstinate cutaneous ailments, leprosy, and weakness of limbs, to try a bath of tar water; allowing a gallon of tar to every ten gallons of boiling hot water; stirring the ingredients a full half hour; suffering the vessel to

stand eight or ten hours, before the water is poured off; and using the bath a little more than milk warm. This experiment may be made in different proportions of tar and water. In Dublin many cases occur for trial, which are not to be met with here in the country.

11. My experiments have been made in various cases, and on many persons; and I make no doubt its virtues will soon be more fully discovered, as tar water is now growing into general use, though not without that opposition which usually attends upon novelty. The great objection I find made to this medicine is, that it promises too much. What, say the objectors, do you pretend to a panacea, a thing strange, chimerical, and contrary to the opinion and experience of all mankind? Now to speak out, and give this objection or question a plain and direct answer, I freely own that I suspect tar water is a panacea. I may be mistaken, but it is worth trial: for the chance of so great and general a benefit, I am willing to stand the ridicule of proposing it. And as the old philosopher cried aloud, from the house-tops, to his fellow citizens, Educate your children; so, I confess, if I had a situation high enough, and a voice loud enough, I would cry out, to all the valetudinarians upon earth, Drink tar water.

12. Having thus frankly owned the charge, I must explain to you, that by a panacea is not meant a medicine which cures all individuals (this consists not with mortality), but a medicine that cures or relieves all the different species of distempers. And if God hath given us so great a blessing, and made a medicine so cheap and plenty as tar, to be with all so universal in its effects, to ease the miseries of human life, shall men be ridiculed or bantered out of its use, especially when they run no risk in the trial. For I can truly affirm, that I never knew any harm attend it more than sometimes a little nausea, which if the liquor be well cleared, skimmed, and bottled, need not I think be apprehended.

13. It must be owned I have not had opportunities of trying it myself in all cases, neither will I undertake to demonstrate *a priori*, that tar water is a panacea. But yet methinks I am not quite destitute of probable reasons, which, joined to what facts I have observed, induced me to entertain such a suspicion.

14. I knew tar was used to preserve cattle from contagion; and this may be supposed to have given rise to that practice of drinking tar water for a preservative against the small-pox. But as the tar water used for that purpose was made by mixing equal quantities of tar and water, it proved a most offensive potion; besides as a fresh glass of water was put in for each glass that was taken out, and this for many days on the same tar, it follows that the water was not equally impregnated with the fine volatile spirit, though all alike strongly saturated with gross particles.

15. Having found this nauseous draught very useful against

the small-pox, to as many as could be prevailed on to take it, I began to consider the nature of tar. I reflected that tar is a balsam flowing from the trunks of aged evergreens; that it resists putrefaction; that it hath the virtues of turpentine, which in medicine are known to be very great and manifold; but I observed withal, that turpentine or balsams are very offensive in the taking: I therefore considered distinctly the several constituent parts of balsams; which were those, wherein the medicinal virtues resided, and which were to be regarded, rather as a viscous matrix to receive, arrest, and retain the more volatile and active particles; and if these last could be so separated and disengaged from the grosser parts, as to impregnate a clear and potable liquor, I concluded that such liquor must prove a medicine of great force, and general use. I considered, that nature was the best chymist and preparer of medicines, and that the fragrance and flavour of tar argued very active qualities and virtues.

16. I had, of a long time, entertained an opinion, agreeable to the sentiments of many ancient philosophers, that fire may be regarded as the animal spirit of this visible world. And it seemed to me that the attracting and secreting of this fire in the various pores, tubes, and ducts of vegetables, did impart their specific virtues to each kind; that this same light, or fire, was the immediate instrumental or physical cause of sense and motion, and consequently of life and health to animals; that on account of this solar light or fire, Phœbus was in the ancient mythology reputed the god of medicine. Which light as it is leisurely introduced, and fixed in the viscid juice of old firs and pines, so the setting it free in part, that is, the changing its viscid for a volatile vehicle, which may mix with water, and convey it throughout the habit copiously and inoffensively, would be of infinite use in physic, extending to all cases whatsoever, inasmuch as all distempers are in effect a struggle, between the *vis vitæ*, and the peculiar miasma, or *fomes morbi*: and nothing strengthens nature, or lends such aid and vigour to life, as a cordial which doth not heat.

17. The solar light in great quantity during the space of many successive years, being attracted and detained in the juice of ancient evergreens, doth form and lodge itself in an oil so fine and volatile, as shall mix well with water, and lightly pass the *primæ viæ*, and penetrate every part and capillary of the organical system, when once exempt and freed from the grosser nauseous resin. It will not, therefore, seem unreasonable, to whoever is acquainted with the medicinal virtues of turpentine in so many different distempers, for which it hath been celebrated both by ancient and modern physicians, and withal reflects on the nausea or clog that prevents their full operation and effect on the human body: it will not, I say, seem unreasonable to such a one to suppose, that if this same clog was removed, numberless cures might be wrought in a great variety of cases.

18. The desideratum was, how to separate the active particles from the heavy viscid substance which served to attract and retain them, and so to order matters, that the vehicle of the spirit should not on the one hand be volatile enough to escape, nor on the other gross enough to offend. For the performing of this, I have found a most easy, simple, and effectual method, which furnisheth a potable inoffensive liquor, clear and fine as the best white wine cordial and stomachic, to be kept bottled, as being endued with a very sensible spirit, though not fermented.

19. I tried many experiments as to the quantity of water, and the time of stirring and standing, in order to impregnate and clarify it, and, after all, fixed on the forementioned receipt, as the most generally useful for making this salutiferous liquor well impregnated, and not offensive to common stomachs, and even drank with pleasure by many: in which the most medicinal and active particles, that is, the native salts and volatile oil of the balsam, being disentangled and separated from its gross oil and viscous resin do, combined together, form a fine, balsamic, and vegetable soap, which not only can pass the stomach and *primæ viæ*, but also insinuate itself into the minutest capillaries, and freely pervade the whole animal system, and that, in such full proportion and measure, as suiteth every case and constitution.

20. The foregoing general considerations put me upon making experiments in many various and unlike cases, which otherwise I should never have thought of doing, and the success answered my hopes. Philosophical principles led me to make safe trials, and on those trials is founded my opinion of the salutary virtues of tar water; which virtues are recommended from, and depend on experiments and matters of fact, and neither stand nor fall with any theories or speculative principles whatever. Howbeit, those theories, as I said, enlarged my views of this medicine, led me to a greater variety of trials, and thereby engendered and nourished my suspicion that it is a panacea. I have been the more prolix in these particulars, hoping that, to as many as shall candidly weigh and consider them, the high opinion I conceive of this medicine will not seem altogether an effect of vain prepossession or blind empiric rashness, but rather the result of free thought and inquiry, and grounded on my best reason, judgment, and experience. Much complaint is indeed made of the iniquity of the times. However, it is hoped they will not condemn one man's tar water for another's pill or drop, any more than they would hang one man for another's having stolen a horse.

21. Those who have only the good of mankind at heart will give this medicine fair play; if there be any who act from other motives, the public will look sharp and beware. To do justice to tar water, as well as to those who drink it, regard must be had to the particular strength and case of the patients. Grieved

ous or inveterate maladies must not be treated as common cases. I cured a horrible case, a gangrene in the blood, which had broke out in several sores, and threatened speedy death, by obliging the person to drink nothing but this liquor for several weeks, as much and as often as his stomach would bear. Common sense will direct a proportionable conduct in other cases. But this must be left to the conscience and discretion of the givers and takers.

22. After all that can be said, it is most certain that a panacea sounds odd, and conveys somewhat shocking to the ear and sense of most men, who are wont to rank the universal medicine with the philosopher's stone and the squaring of the circle; whereof the chief, if not sole reason, I take to be, that it is thought incredible the same thing should produce contrary effects, as it must do if it cures opposite distempers. And yet this is no more than every day's experience verifies. Milk, for instance, makes some costive and others laxative: this regards the possibility of a panacea in general; as for tar water in particular, I do not say it is a panacea, I only suspect it to be so; time and trial will show.

23. But I am most sincerely persuaded, from what I have already seen and tried, that tar water may be drank with great safety and success, for the cure or relief of most, if not all diseases; of ulcers, itch, scald-heads, leprosy, the foul disease, and all foul cases, scurvies of all kinds, disorders of the lungs, stomach, and bowels, in rheumatic, gouty, and nephritic ailments, megrims, inveterate head aches, pleurisies, peripneumonies, erysipelas, small-pox, and all kinds of fevers, colics, hysteric and all nervous cases, dropsies, decays, and other maladies. Note, that for agues it should be drank warm, and often, in small glasses, both in and out of the fit, and continued for several days, to prevent a relapse. Nor is it of use only in the cure of sickness, it is also useful to preserve health, and guard against infection, and in some measure even against old age, as it gives lasting spirits, and invigorates the blood. I am even induced by the nature and analogy of things, and its wonderful success in fevers of all kinds, to think that tar water may be very useful against the plague, both as a preservative and a cure.

24. But I doubt no medicine can withstand that execrable plague of distilled spirits, which do all, without exception (the fire of the hot still imparting a caustic and coagulating quality to all distilled spirits, whatever the subject or ingredients may be), operate as a slow poison, preying on the vitals, and wasting the health and strength of body and soul: which pest of human kind is, I am told, gaining ground in this country, already too thin of inhabitants.

I am, &c.

FARTHER THOUGHTS ON TAR WATER.

A SECOND LETTER TO T. P., Esq.

1. YOUR attention to whatever promotes the public good of your country, or the common benefit of mankind, having engaged you in a particular inquiry concerning the virtues and effects of tar water, you are entitled to know what farther discoveries, observations, and reflections, I have made on the subject.

2. Tar water, in the several editions of *Siris*, hath been directed to be made by stirring three, four, five, or six minutes, a gallon of water and a quart of tar. But although it seem best made, for general use, within those limits, yet the stomach of the patient is the best rule whereby to direct the strength of the water; with a little more stirring, six quarts of good tar water may be made from one of tar; and with eight minutes' stirring, I have known a gallon of tar water produced from second-hand tar, which proved a good remedy in a very bad fever, when better tar could not be had. For the use of travellers, a tar water may be made very strong, for instance, with one quart of water, and a quart of tar, stirred together for the space of five minutes. A bottle of this may serve long on a road, a little being put to each glass of common water, more or less, as you would have it stronger or weaker. Near two years ago, a quart of about this strength was given to an old woman, to be taken at one draught by direction of a young lady, who had consulted one in my family about the method of preparing and giving tar water, which yet she happened to mistake. But even thus it did service in the main, though it wrought the patient violently all manner of ways: which shows that errors and excesses in tar water are not so dangerous as in other medicines.

3. The best tar I take to be that which is most liquid, or first running from the billets of fir or pine, which grew on the mountains: it hath a greater share of the anti-scorbutic vegetable juices, which are contained not only in the leaves and tender tops, but in all parts of the wood; and these, together with the salts of woodsoap, being in the composition of tar superadded to turpentine, render tar water a medicine, if I am not mistaken, much more extensive and efficacious than any that can be obtained from turpentine alone.

4. The virtues of the wood juices show themselves in spruce-beer, made of molasses, and the black spruce-fir in the northern parts of America; and the young shoots of our common spruce-fir have been put to malt liquor in my own family, and make a very wholesome drink.

5. Tar water seldom fails to cure, or relieve, when rightly made of good tar, and duly taken. I say of good tar, because the vile practice of adulterating tar, and of selling the dregs of tar, or used tar for fresh, is grown frequent, to the great wrong of those who take it. Whoever hath been used to good tar water can readily discern the bad by its flat taste, void of that warm, cordial quality found in the former; it may also be expedient for knowing fresh tar, to observe, whether a fat oily scum floats on the top of the water, which is found to be much less, if any at all, on the second making of tar water. This scum was directed to be taken out, not from its being apt to do harm when drank, but to render the tar water more palatable to nice stomachs. Great quantities of tar are produced in Germany, Italy, and other parts of the world. The different qualities or virtues of these it may be worth while to try, and I wish the trial were made principally by observing, which giveth most sense of a lively, cordial spirit upon drinking the water.

6. This medicine of tar water worketh various ways, by urine, by perspiration, as a sudorific, carminative, cardiac, astringent, detergent, restorative, alterative, and sometimes as a gentle purgative or emetic, according to the case and constitution of the patient, or to the quantity that is taken; and its operation should not be disturbed. I knew two brothers ill of a fever about the same time; it wrought on the one by copious sweating, on the other altogether by urine; and I have known it to act at different times differently, even on the same person, and in the same disorder; one while as a diaphoretic, or sudorific, another as a diuretic. Its general character is diuretic, which shows, that it cleanseth the urinary passages, preventing thereby both stone and gravel, against which it hath been found very useful, and much safer than mineral waters, by reason of its balsamic healing quality.

7. Tar water doth recover and impart vital heat, but imparts no inflaming heat. I have seen a wonderful cure wrought on a child about eight years old, and past all hopes, by pouring several spoonfuls of tar water down his throat, as he lay quite subdued by a most violent fever, without any appearance of sense or motion, the nostrils drawn back, the eyes fixed, the complexion deadly wan. And yet tar water, forced down by spoonfuls, seemed to kindle up life a-new; and this after sage-tea, saffron, milk-water, Venice treacle, &c., had been used without any success.

8. This is of itself a sufficient cordial, friendly and congenial to the vital heat and spirits of a man. If therefore strong liquors are in the accustomed quantity superadded, the blood being already, by tar water, sufficiently warmed for vital heat, the strong liquors superadded will be apt to over-heat it, which over-heating is not to be imputed to the tar water, since, taken alone, I could never observe it attended with that symptom.

9. And though it may be no easy matter to persuade such as have long indulged themselves in the free use of strong fermented liquors and distilled spirits, to forsake their pernicious habits, yet I am myself thoroughly persuaded, that in weakness or fatigue of body, or in low spirits, tar water alone doth far surpass all those vulgarly esteemed cordials, which heat and intoxicate, and which coagulate the fluids, and, by their caustic force, dry up, stiffen, and destroy the fine vessels and fibres of the unhappy drinkers, obstructing the secretions, impairing the animal functions, producing various disorders, and bringing on the untimely symptoms of old age. Nothing doth so much obstruct the good effects of tar water, as the abuse of strong liquors. Where this is avoided, it seems no chronical malady can keep its ground, or stand before tar water constantly and regularly taken, not even hereditary distempers, as the most inveterate king's-evil, nor even the most confirmed gout; provided it be drank a quart a day, at six or eight glasses, and at all seasons, both in and out of the fit, and that for a great length of time, the longer the better. It is to be noted, that in fits of the gout, colic, or fever, it should be always drank warm. On other occasions, warm or cold, as the patient likes.

10. The inference I make is, that those who expect health from tar water, have less need of any other cordial, and would do well to sacrifice some part of their pleasure to their health. At the same time I will venture to affirm, that a fever produced either from hard drinking, or any other cause, is most effectually and speedily subdued, by abstaining from all other cordials, and plentifully drinking of tar water; for it warms the cold, and cools the hot; simple water may cool, but this, at the same time that it cools, gives life and spirit. It is, in truth, a specific for all kinds of fevers; the same medicine, which is a leisurely alterative in chronical disorders, being taken in larger quantities, is a speedy cure in acute ones.

11. Those who, without knowledge or experience of tar water, have been so active and earnest to discredit its virtues, have much to answer for, especially with regard to acute inflammatory distempers, in which it doth wonders. It is in those disorders, so fatal and frequent, that I have had most opportunities of observing its virtues, nor can the world ever know the just value of this medicine, but by trying it in the like cases.

12. When patients are given over, and all known methods fail, it is allowed to try new remedies. If tar water was tried in such cases, I do verily believe, that many patients might thereby be rescued from the jaws of death: particularly, I would recommend the trial of it, in the most malignant and desperate fevers or small-pox, attended with purple, livid, or black spots. It is my sincere opinion, that warm tar water, drank copiously, may often prove salutary, even in those deplorable cases.

13. My opinion is grounded on its singular virtues in correcting, sweetening, and invigorating the blood, and in curing cancers and gangrenes, or beginning mortifications, such as those spots do indicate. I have lately known it drunk with good success in a very painful and unpromising wound; and am persuaded, that if it were drank plentifully, during the dressing of all sorts of dangerous wounds, it might assuage the anguish, and forward the cure; as it abates feverish symptoms, and by rendering the blood balsamic, and disposing the parts to heal, prevents a gangrene.

14. Tar itself is an excellent medicine, being spread on a cloth, and applied warm to an ulcer or wound. I have known the same applied to a very large and painful tumour, caused by a sprain or bruise, speedily assuage the pain, and reduce the swelling. I may add, that tar (mixed with honey to make it less offensive, and) taken inwardly, is an admirable balsam for the lungs; and a little of this, taken together with tar water, hastens its effect in curing the most obstinate and wasting coughs; and an egg-shell full of tar, swallowed and washed down with a quart of tar water, night and morning, hath been found very useful for the same disorder in horses.

15. Sitting over the vapour of the heated lotion, described in my former letter, is excellent in the cases of piles or fistula; especially if fomenting with the same lotion be added, as also anointing with the oil scummed from the top of tar water. Tar water hath been snuffed up the nostrils, with good success, for a great heaviness of the head and drowsiness. It is a very useful wash for weak, dry, or itching eyes; an excellent preservative for the teeth and gums; also a good drink and gargle for a sore throat: I may add, that I have known it succeed in cases where it has been tried without hopes of success, particularly in deafness. I have known life sustained many days together, only by drinking of tar water, without any other nourishment, and without any remarkable diminution of strength and spirit; it may therefore be of singular use, and save many lives in the distress of famine at sea, or in sieges, and in seasons of great scarcity. The virtue of tar water flowing like the Nile,* from a secret and

* The Nile was by the ancient Egyptians called Siris, which word also signifies, in Greek, a chain, though not so commonly used as Sira.

occult course, brancheth into innumerable channels, conveying health and relief, wherever it is applied; nor is it more easy and various in its use, than copious in quantity. How great havoc, nevertheless, is made by the small-pox, raging like a plague, in New England, and other parts of America, which yet abound with tar! and how many thousand sailors, in all parts of the world, are rotting by the scurvy with their remedy at hand!

16. Many in this town of Cloyne have, by the copious drinking of tar water alone, been recovered of the most violent fevers, attended with the most threatening symptoms, and much heightened by relapses from mismanagement. It would be tedious to enumerate all the cases of this kind which have happened at Cloyne and in my own family; where many fevers, pleuritic, as well as others, attended with violent stitches, difficulty of breathing, and spitting of blood, have been cured by tar water; and this I can with truth affirm, that I never knew it regularly tried, in any inflammatory case, without success: but then it must be given in bed warm, and very copiously, with all due caution against cold, noise, and improper diet.

17. I have often observed, when a patient, on the first attack of a fever, hath betaken himself to his bed, and drank tar water regularly and constantly; that he hath had such favourable symptoms, so good appetite, and so sound sleep, that the fever passed almost as nothing; nor was to be distinguished otherwise than by a quickness of pulse, a little feverish heat, and thirst. The more that patients in a fever drink, the better they find themselves; and their liking to tar water grows with their want of it, by a certain instinct or dictate of nature; insomuch, that I have known children, in very high fevers, who, at other times, could hardly be prevailed on to drink a single glass, drink six or eight in an hour.

18. I can truly affirm, that for the cases within my own observation, inflammatory acute distempers cured by tar water, have been, at least, ten times the number of any other. These, indeed, oftenest occur, as causing the chief destruction and general ravage of mankind; who are consequently debarred from the principal use and benefit of this medicine, so long as they give ear to the suggestions of those, who, without any experience thereof, would persuade them, it is of an heating or inflaming nature; which suggestion, as I am convinced myself, by long and manifold experience, that it is absolutely false, so may all others also be sufficiently convinced of its falsehood, by the wonderful fact attested by a solemn affidavit of captain Drape, at Liverpool; whereby it appears, that of 170 negroes, seized at once by the small-pox on the coast of Guinea, one only died, who refused to drink tar water; and the remaining 169, all recovered by drinking it, without any other medicine,

notwithstanding the heat of the climate, and the incommodities of the vessel. A fact so well vouched must, with all unbiassed men, outweigh the positive assertions of those who have declared themselves adversaries of tar water, on the score of its pretended heating or inflaming quality.

19. The skill and learning of those gentlemen in their profession I shall not dispute; but yet it seems strange that they should, without experience, pronounce at once, concerning the virtues of tar water, and ascribe to it pernicious qualities, which I, who had watched its workings and effects for years together, could never discover. These three last years I have taken it myself without one day's intermission; others in my family have taken it near the same time, and those of different ages and sexes; several in the neighbourhood have done as much, all without any injury, and with much benefit.

20. It is to be noted, the skin and the belly are antagonists; that is, the more passeth by perspiration, the less will pass another way. Medicines, therefore, which cause the patient to perspire, will be apt to make him costive. Therefore, when tar water worketh much by perspiration, the body may chance to be bound. But such symptom, though it should be attended with a little more than ordinary warmth, need not be dreaded by the patient; it being only a sign, that his cure is carried on by driving the peccant matter through the skin; which is one of the ways whereby tar water worketh its effect. And when this effect or cure is wrought, the body of itself returneth to its former natural state; and if some have been bound in their bodies, I have known others affected in a contrary manner upon drinking tar water, as it hath happened to operate, either in the shape of a diaphoretic or of a gentle opening medicine. I have even known a costive habit more than once removed by it, and that when the case was inveterate, and other methods had failed.

21. I mentioned the foregoing article, upon calling to mind, that two or three patients had, for a time, complained of a binding quality in tar water. I likewise remember, that one in a high degree of the scurvy was discouraged from the use of tar water, by its having caused an uneasy itching all over his body. But this was a good symptom, which showed the peccant humours to be put in motion, and in a fair way of being discharged through the skin.

22. A humour or flatus put in motion, and dislodged from one part, often produceth new pains in some other part; and an efficacious medicine, as it produceth a change in the economy, may be attended with some uneasiness, which yet is not to be accounted a distemper, but only an effect or symptom of the cure.

23. The salts of tar water have nothing of the fiery and corrosive nature of lixivial salts produced by the incineration of the

subject; they not being fixed salts, made by the extreme force of fire, but volatile salts, such as pre-existed in the vegetable, and would have ascended in smoke, if not prevented by the sods or covering of the billet piles. This, though already hinted in Siris, and plain from the manner of making tar, I have thought fit to repeat and inculcate, because, if duly attended to, it may obviate suspicions about tar water, proceeding only from an ignorance of its nature.

24. Every step that I advanced in discovering the virtues of tar water, my own wonder and surprise increased, as much as theirs to whom I mentioned them: nor could I, without great variety and evidence of facts, ever have been induced to suspect, that, in all sorts of ailments whatsoever, it might relieve or cure, which at first sight may seem incredible and unaccountable; but, on maturer thought, will perhaps appear to agree with, and follow from the nature of things. For it is to be noted, that the general notion of a disease seemeth to consist in this, that what is taken in, is not duly assimilated by the force of the animal economy; therefore it should seem, whatever assists the *vis vitæ* may be of general use in all diseases, enabling nature either to assimilate, or discharge all unsubdued humours and particles whatsoever. But the light or ether detained on the volatile oil, which impregnates tar water, being of the same nature with the animal spirit, is an accession of so much strength to the constitution, which it assists to assimilate or expel whatever is alien or noxious.

A LETTER TO T. P. ESQ.;

CONCERNING

THE USEFULNESS OF TAR WATER IN THE PLAGUE.

WHEREIN ALSO IT IS CONSIDERED,

WHETHER TAR WATER PREPARED WITH THE DISTILLED ACID OF TAR SHOULD BE PREFERRED TO THAT MADE IN THE COMMON WAY, BY MIXING TAR WITH WATER, AND STIRRING THEM TOGETHER.

YOU observed in a late letter of yours, that I had formerly hinted tar water might be useful in the plague, and desire to know the reasons whereon my opinion was grounded, and that I would communicate my thoughts at large on the subject; I am the more willing to satisfy you in this particular, as the plague now raging in Barbary hath in some measure alarmed the public, and I think it may not be amiss to contribute my mite of advice towards averting or lessening the present danger; and, as fear begets caution, to possess my countrymen with an apprehension of this the greatest of all temporal calamities, sufficient to put them on their guard, and prepare them against the worst that can happen.

A learned physician of our own observes, that the plague does not visit these Britannic islands oftener than once in thirty or forty years, and it is now above twice that time since we felt the hand of the destroying angel.

It is also the opinion of physicians, that the infection cannot spread, except there is a suitable disposition in the air to receive it; the signs of which are wet summers, leaves and fruits blasted, an unusual quantity of insects, epidemical distempers among the cattle, to which I presume may be added long easterly winds, all which signs seem to have discovered themselves pretty plainly in the course of this present year.

Beside these natural forerunners of a plague or pestilence in the air, it is worth observing, that a prognostic may be also made from the moral and religious disposition of the inhabitants. Certainly that the *digitus dei* (the *τὶ θεῖον* of Hippocrates) doth manifest itself in the plague, was not only the opinion of mankind in general, but also in particular of the most eminent physicians throughout all ages down to our own. How far we of these

islands have reason to expect this messenger of divine vengeance, will best appear if we take a view of the prevailing principles and practices of our times, which many think have long called aloud for punishment or amendment.

Analogy and probability prevail in medicine: these are the proper guides where experience hath not gone before. I knew that tar water was useful to prevent catching the small-pox, and consequently that its nature was contrary to the taint or venom producing that distemper, and therefore I concluded, that it might be usefully applied to cure the same, though I never heard nor knew that it had been applied to that purpose, and the success answered my hopes.

In like manner, having known the virtue of tar water in preserving from epidemical infection, I conceive in general it may be useful for the cure of distempers caused by such infection. Besides, being very well assured that tar water was sovereign in the cure of all sorts of fevers, I think it not unreasonable to infer, that it may prove a successful medicine for the plague, although I have never known it used in that distemper, forasmuch as the plague, with all its symptoms, may be considered as a species of fever, and hath been actually considered as such both by Hippocrates and Sydenham, not to mention others.

Having observed surprising effects of tar water in the most deplorable cases, for instance, pleurisies, small-pox, spotted and erysipelatous fevers, I am induced to entertain great hopes of its success in pestilential fevers or plagues; which are also confirmed by its operating as a powerful diaphoretic and sudorific, when given warm and in great quantities. Add to this, that it frequently throws out pustules and ulcers, and is apt to terminate the worst of fevers by an irruption of boils in various parts of the body; that it raises the spirits, is a great alexipharmacum and cordial, and must therefore be of the greatest use in malignant cases.

In cachexy, scurvy, gout, as well as in the close of fevers, I have often known tar water cause troublesome eruptions or boils (the very method taken by nature in casting forth the venom of the plague) to break out in the surface of the body, expelling the morbid humours, the cause and relics of the disease, to the signal benefit of the patients; except such who, being frightened at the symptoms, have supposed the tar water to produce those humours which it only drives out, and in consequence of such, their groundless suspicion, laid it aside, or perhaps took other medicines to hinder its effect, and thereby deprived themselves of the benefit they might otherwise have received.

In the plague are observed head-ache, drowsiness, anxiety, vigils, sinking of spirits, and weakness, for all which tar water hath been found an effectual remedy. Bloody urine and spitting

blood, which are also dangerous symptoms observed in the plague, have been often removed by the same medicine, which from numberless experiments I have found to be peculiarly fitted for purifying and strengthening the blood, and for giving it a due consistence, as well as a proper motion.

In the plague, pleurisies are esteemed mortal symptoms, and in the cure of these, I never knew tar water fail, if given warm in bed, a pint or more an hour, though the patient was neither bled nor blistered. The carbuncles and spots which show themselves in the plague are of a gangrenous nature, tending to mortification. And gangrenes I have known effectually cured by copious drinking of tar water.

An erysipelas, which showeth a degree of malignity nearest to the plague, is easily cured by plentiful drinking of tar water. I knew a person who had been six weeks ill of an erysipelas under the care of a celebrated physician, during which time she struggled with many dangerous symptoms, and hardly escaped with life. This person was a year after seized again in the same manner, and recovered in a week by the sole use of tar water. Costiveness is reckoned a very hopeful prognostic in the plague; and it is also a symptom which often attends the drinking of tar water, when it throws out the venom of a distemper through the skin.

Diseases of the same season generally bear some affinity to each other in their nature and their cure; and it may not be improper on this occasion to observe, that the reigning distemper of the black cattle hath been often cured by tar water, and would (I am persuaded) have done much less mischief, if the practice had been general to have given each distempered beast three gallons the first, two the second, and one the third day, in warm doses (from a pint to a quart), and at equal intervals.

Diemerbroeck recommends, in the first appearance of a plague, the use of sudorifics, putting the patient to bed, and covering him warm, till a copious sweat be raised, the very method I constantly follow in the beginning of fevers, using no other medicine than tar water, which, after numberless experiments, I take to be the best sudorific that is known, inasmuch as it throws out the morbid *miasma*, without either heating the patient or weakening him, the common effects of other sudorifics; whereas this, at the same time that it allays the feverish heat, proves a most salutary cordial, giving great and lasting spirits.

Upon the whole, I am sincerely persuaded, that for cure of the plague there cannot be a better method followed, more general for use, more easy in practice, and more sure in effect, than to cover the patient warm in bed, and to make him drink every hour one quart of warm tar water, of such strength as his stomach is able to bear; a thing not so impracticable as it may

seem at first sight, since I have known much more drank in fevers even by children, and that eagerly and by choice, the distemper calling for drink, and the ease it gave encouraging to go on. This for the cure; but I conceive that one quart *per diem* may suffice for prevention; especially if there be added an even temper of mind, and an exact regimen, which are both highly useful against the plague. For carbuncles and buboes I would recommend a liniment of the oil of tar, or a plaister of pitch mixed with tar, which last was used by the vulgar in the Dutch plague described by Diemberbroeck.

It has pleased divine providence to visit us not long since, first, with famine, then with the sword; and if it shall please the same good providence yet further to visit us for our sins, with the third and greatest of human woes, this by God's blessing, is the course I mean to take for myself and family; and if generally practised, it would, I doubt not, (under God) save the lives of many thousands; whereof being persuaded in my own mind, both from the many trials I have made of tar water, and the best judgment and reasonings I could form thereupon, I think myself obliged to declare to the world what I am convinced of myself.

And I am rather moved to this by the great uncertainty and disagreement among physicians, in their methods of treating the plague. Diemberbroeck, for instance, a physician of great experience in the Dutch plague, that raged about eighty years ago, dissuades by all means from bleeding in that distemper. On the other hand, Sydenham recommends what the other disapproves. If we believe Dr. Sydenham, the free use of wine, as a preservative, hath thrown many into the plague, who otherwise might have escaped. Dr. Willis on the contrary avers, that he knew many, who being well fortified by wine, freely entered amongst the infected, without catching the infection.

Bleeding cools, but at the same time weakens nature: wine gives spirits, but heats withal. They are both therefore to be suspected; whereas tar water cools without weakening, and gives spirits without heating, a sure indication of its sovereign virtue in all inflammatory and malignant cases, which is confirmed by such numbers of instances, that matter of fact keeps pace (at least) with reason and argument in recommending this medicine.

Plagues as well as fevers are observed to be of different kinds; and it is observed of fevers, that as they change their genius in different seasons, so they must be treated differently, that very method that succeeded in one season often proving hurtful in another. Now it is very remarkable, that tar water has been known to vary its working, and wonderfully adapt itself to the particular case of the patient, a thing I frequently have experienced.

Last spring two children, a boy and a girl, the former ten years old, the latter eight years old, were seized with fevers; the boy had an inflammation in his breast. In less than two hours they drank each about five quarts of warm tar water, which wrought them very differently, the girl as an emetic, the boy as a gentle purge, but both alike immediately recovered, without the use of any other medicine: of this I was an eye witness, and I have found by frequent experience, that the best way is, to let this medicine take its own course, not hindered nor interrupted by any other medicines; and this being observed, I never knew it to fail so much as once, in above a hundred trials in all sorts of fevers.

Nevertheless there are not wanting those who would insinuate, that tar water made in the common way contains noxious oils or particles of tar, which render it dangerous to those who drink it, a thing contrary to all my experience. This was the old objection made by those who opposed it from the beginning. But I am convinced by innumerable trials, that tar water is so far from doing hurt by any caustic or fiery quality, that it is on the contrary a most potent medicine for the allaying of heat, and curing of all inflammatory distempers. The perpetual returning to the same objection makes it necessary to repeat the same answer.

And yet some who are not afraid to argue against experience, would still persuade us that the common tar water is a dangerous medicine, and that the acid freed from the volatile oil is much more safe and efficacious: but I am of opinion, that being robbed of its fine volatile oil (which neither sinks to the bottom nor floats at the top, but is throughout and intimately united with it, and appears to the eye only in the colour of tar water); being robbed, I say, of this oil, it is my opinion it can be no cordial, which opinion (not to mention the reason of the thing) I ground on my own experience, having observed that the most acid water is the least cordial, so far am I from imputing the whole virtue to the acid, as some seem to think.

It seems not very reasonable to suppose, that the caustic quality of tar water (if such there was) should be removed or lessened by distillation, or that a still should furnish a cooler and better medicine than that which is commonly prepared by the simple affusion and stirring of cold water. However the ends of chymists or distillers may be served thereby, yet it by no means seemeth calculated for the benefit of mankind in general, to attempt to make people suspect, and frighten them from the use of a medicine, so easily and so readily made, and every where at hand, of such approved and known safety, and at the same time recommended by cures the most extraordinary, on persons of all sexes and ages, in such variety of distempers, and in so many distant parts of christendom.

By most men, I believe, it will be judged at best, a needless undertaking, instead of an easy tried medicine to introduce one more operose and expensive, unsupported by experiments, and recommended by wrong suppositions, that all the virtue is in the acid, and that the tar water being impregnated with volatile oil is caustic, which are both notorious mistakes.

Though it be the character of resin not to dissolve and mix with water as salts do, yet these attract some fine particles of essential oil, which serve as a vehicle for such acid salts; and the colour of the tar water showeth the fine oil, in which the vegetable salts are lodged, to be dissolved and mixed therein. The combination of two such different substances as oil and salt, constitutes a very subtle and active medicine, fitted to mix with all humours, and resolve all obstructions, and which may properly be called an acid soap.

Tar water operates more gently and safely, as the acid salts are sheathed in oil, and thereby losing their acrimony, approach the nature of neutral salts, and so become more friendly to the animal system. By the help of a smooth insinuating oil, these acid salts are more easily and safely introduced into the fine capillaries. I may add, that the crisis of the blood is perfected by tar water, being good against too great a solution and fluidity as a balsam, and against viscosity as a soap, all which entirely depends upon the mixture of oil with the acid, without which it could neither operate as a balsam nor a soap; briefly, it was not mere acid or distilled water, or tincture of tar, but tar water as commonly made, by affusion and stirring of cold water upon tar, which hath wrought all those great cures and salutary effects, which have recommended it as a medicine to the general esteem of the world.

The mixture of volatile oil, which is or contains the spirit, is so far from noxious, that it is the very thing that makes tar water a cordial; this gives it a grateful warmth, and raiseth the spirits of the hysteric and hypochondriacal; this also rendering the blood balsamic, disposeth wounds of all sorts to an easy cure; this also it is that fortifies the vitals and invigorates nature, driving the gout to the extremities, and shortening the fits, till it entirely subdues that obstinate and cruel enemy, as it hath been often known to do; but acid alone is so far from being able to do this, that, on the contrary, the free use of acids is reckoned amongst the causes of the gout.

I never could find that the volatile oil drawn from tar by the affusion of cold water produced any inflammation, or was otherwise hurtful, not even though the water by longer stirring had imbibed far more of the oil than in the common manner, having been assured, that some of strong stomachs have drank it after twenty minutes' stirring, without any the least harm, and with very great benefit.

It hath been indeed insinuated, that the oil was ordered to be skimmed off, because it is caustic and dangerous; but this is a mistake. I myself, among many others, drank the tar water for two years together, with its oil upon it, which never proved hurtful, otherwise than as being somewhat gross, and floating on the top, it rendered the water less palatable, for which reason alone it was ordered to be skimmed.

It hath also been hinted, that making tar water the second time of the same tar was cautioned against, for that it was apprehended such water would prove too heating; which is so far from being true, that when I could not get fresh tar, I used the second water without difficulty, by means whereof it pleased God to recover from the small-pox two children in my own family, who drank it very copiously, a sufficient proof that it is not of that fiery caustic nature which some would persuade us.

The truth is, my sole reason for advising the tar not to be used a second time, was because I did not think it would sufficiently impregnate the water, or render it strong enough after so much of the fine volatile parts had been carried off by the former infusion. Truth obligeth me to affirm, that there is no danger (forasmuch as I could ever observe) to be apprehended from tar water, as commonly made; the fine volatile oil, on which I take its cordial quality to depend, is in its own nature so soft and gentle, and so tempered by the acid, and both so blended and diluted with so great a quantity of water, as to make a compound, cherishing and cordial, producing a genial, kindly warmth, without any inflaming heat, a thing I have often said, and still find it necessary to inculcate.

Some medicines indeed are so violent that the least excess is dangerous; these require an exactness in the dose, where a small error may produce a great mischief. But tar is, in truth, no such dangerous medicine, not even in substance, as I have more than once known it taken innocently, mixed with honey, for a speedy cure of a cold.

But notwithstanding all that hath been said on that subject, it is still sometimes asked, what precise quantity or degree of strength is required? To which I answer (agreeably to what hath been formerly and frequently observed) the palate, the stomach, the particular case and constitution of the patient, the very climate or season of the year, will dispose and require him to drink more or less in quantity, stronger or weaker in degree; precisely to measure its strength by a scrupulous exactness is by no means necessary. Every one may settle that matter for himself with the same safety that malt is proportioned to water in making beer, and by the same rule, to wit, the palate.

Only in general thus much may be said, that the proportions I formerly recommended will be found agreeable to most sto-

machs; and withal of sufficient strength, as many thousands have found, and daily find, by experience. I take this opportunity to observe, that I use tar water made in stone-ware or earthen, very well glazed, earthen vessels unglazed being apt to communicate a nauseous sweetness to the water.

Tar water is a diet-drink, in the making whereof there is great latitude, its perfection not consisting in a point, but varying with the constitution and palate of the patient, being nevertheless, at times, taken by the same person, weaker or stronger, with much the same effect, provided it be proportionably in greater or lesser quantity. It may indeed be so very weak as to have little or no effect; and, on the other hand, so very strong as to offend the stomach; but its degree of strength is easily discerned by the colour, smell, and taste, which alone are the natural and proper guides whereby to judge thereof; which strength may be easily varied, in any proportion, by changing the quantity either of tar or water, or the time of stirring. As for setting tar water to stand, this is not to make it stronger, but more clear and palatable.

I found myself obliged to assert the innocence and safety, as well as usefulness, of the tar water, as it is commonly made, by the methods laid down in my former writings on this subject; and this not only in regard to truth, but much more in charity to a multitude, which may otherwise perhaps be influenced by the authority of some, who endeavoured to put them out of conceit with a medicine so cheap, so efficacious, and so universal, by suggesting and propagating scruples about a caustic quality arising from the volatile, oily particles of tar or resin, imbibed together with the acid in making tar water; an apprehension so vain, that the reverse thereof is true, for which I appeal to the experience of many thousands, who can answer for the innocence and safety, as well as efficacy of this medicine, of which there are such ample and numerous certificates published to the world.

I shall finish my essay on the plague and its cure with observing, that in case God should withhold his hand for the present, yet these reflections will not be altogether fruitless, if they dispose men to a proper temper of mind, and a cautious regimen, avoiding all extremes, which things are justly reckoned among the chief preservatives against infection; but especially if the apprehension of this destroyer shall beget serious thoughts on the frailty of human life, and, in consequence thereof, a reformation of manners; advantages that would sufficiently repay the trouble of writing and reading this letter, even though the trial of tar water, as a remedy for the plague, should be postponed (as God grant it may) to some future and distant opportunity.

FARTHER THOUGHTS,

ETC.

As the many experiments that are daily made of the virtues of tar water, furnish new discoveries and reflections, some of these I have thrown together, and offer to the public, in hopes they may prove useful.

It is a frequent complaint, that tar water is made of bad tar, being of a reddish colour, sweetish, or disagreeably insipid. But though the dregs of tar are often foul, and make foul tar water; and though tar already used is often made use of by unfair dealers a second, if not a third time, which produceth a vile potion, void of the genuine flavour and virtue of tar water: yet I apprehend these defects may sometimes be ascribed, rather to the vessel wherein the tar water is made, than to the tar itself.

Tar water being made in an earthen vessel unglazed, or that hath lost part of its glazing, may extract (as it is a strong menstruum) from the clay, a fade sweetishness, offensive to the palate. It should seem, therefore, that the best way of making tar water is in a stone jug or earthen vessel, throughout well glazed, and, as it will not fail to extract a tincture from any metallic vessel, it should be warmed in a well glazed pipkin, rather than a saucepan.

By increasing the proportion of tar to the water, and by stirring it longer, tar water may be made strong enough for a spoonful to impregnate a large glass, a thing very useful on a road.

Those who in chronical disorders, or as a preservative, have for a long time drank tar water, must, in acute cases, drink the more.

Tar water must be drank warm in agues, small-pox, measles, and fevers, in colics and disorders of the bowels, in gout also, and rheumatism, in most other ailments cold or warm, at the choice of the patient.

In fevers the patient cannot begin too soon, or drink too much. By undoubted experience it is found to cool the hot, and warm the cold, and to be a most successful medicine in fevers, notwithstanding its great virtue in palsies and dropsies.

When not long since an inflammation attacked the throat, breast, and lungs of children, and became general in my neighbourhood, numbers were recovered by the use of tar water, nor

did I hear that any miscarried who used it, though many perished who did not.

Nor is it a medicine less proper and efficacious in old age. At the same time that this inflammatory distemper raged among the children, a woman, in her sixty-eighth year, from violent cold, was seized at once with ague, colic, and jaundice, of all which maladies she was cured in a fortnight, by drinking three pints of warm tar water every day. Numberless such instances daily occur, which show it to be a safe and efficacious medicine, both for old and young.

Evacuations by sweat, which usually render patients very weak and dispirited, have not the same bad effects when produced by tar water, which I have frequently known to give high spirits in all the stages of a fever, and under the lowest regimen, therefore old people and weak persons, who cannot well bear common evacuations, are best cured by tar water, which, in some sort, seemeth to renew those who are worn out with age and infirmities.

Tar water is of singular use in strengthening the stomach and bowels, and agrees particularly well with infants, taken either by themselves or by the nurse, and best by both. Though as it throws the ill humours out into the surface of the skin, it may render them for a time, perhaps, unseemly with eruptions, but withal healthy and lively. And I will venture to say, that it lays in them the principles of a good constitution for the rest of their lives.

Nor is it only useful to the bodies of infants, it hath also a good effect on their minds, as those who drink it are observed to be remarkably forward and sprightly. Even the most heavy, lumpish, and unpromising infants, appear to be much improved by it. A child there is in my neighbourhood, of fine parts, who at first seemed stupid and an idiot, but, by constant use of tar water, grew lively and observing, and is now noted for understanding beyond others of the same age.

Infants are easily brought to take it by spoon, and even grow to a liking of it, and as their disorders arise chiefly from indigestion, they receive the greatest benefit from a medicine so well calculated to strengthen the intestines, and preserve them from fits. In a word, if it were the common practice to accustom infants from the beginning to take tar water, this would greatly conduce to the health both of their minds and bodies. There is, I am verily persuaded, no one thing in the power of art or nature, that would so generally and effectually contribute to repair the constitutions of our gentry and nobility, by strengthening the children, and casting off, in their infancy, those impurities and taints which they often bring into the world.

An infant may take one quarter of a pint in the day, warm,

by spoonfuls, less may do good, and there is no fear of excess. When I consider the private woe of families, as well as the public loss, occasioned by the death of such an incredible number of infants under two years of age, I cannot but insist on recommending tar water, both as a remedy and preservative in that tender age, which cannot bear the common treatment and methods of physic, or with safety take those drugs which are fitter for grown persons.

Another reason which recommends tar water, particularly to infants and children, is the great security it brings against the small-pox, to those that drink it, who are observed, either never to take that distemper, or to have it in the gentlest manner.

There is no distemper more contagious and destructive than the small-pox, or more generally dreaded, attended with worse symptoms, or that leaves behind it worse effects; I observe, at the same time, that tar water is in no other case a more safe and sure remedy than in this; of which captain Drape's certificate, sworn to before the mayor of Liverpool, in the presence of several principal persons of that town, is a most evident proof.

That one hundred and seventy persons, seized at once with the small-pox, deprived of all conveniencies, and in the worst circumstances of a narrow ship and hot climate, should all recover by the single medicine of tar water, except one, who would not drink it, is a matter of fact, so plain and convincing, and so well attested, as to leave no doubt in minds free from prepossession, about the usefulness and efficacy of tar water in the small-pox; a point I had been before sufficiently convinced of, by many instances in my own neighbourhood.

It hath been surmised by some celebrated physicians, that one day a specific may be discovered for the peculiar venom of the small-pox. There seems to be some reason for thinking, that tar water is such a specific. I say this on good grounds, having by many experiments observed its virtue in curing, as well as in preventing, that cruel distemper; during the whole course of which, it is to be drank warm; a moderate glass (about half a pint) every hour, in common cases, may suffice, in bad cases more may be given; there is no fear of excess.

Those who endeavour to discredit this cooling, cordial, and salutary medicine, as an inflamer of the blood, do very consistently decry its use in the small-pox; but there can be nothing more clear, full, and satisfactory than captain Drape's affidavit, to convince reasonable people of the great and surprising efficacy of tar water, in the cure of the small-pox; and consequently of the groundlessness of that report, which ascribes a heating or inflaming quality to it. And yet that groundless report hath hindered many from reaping the benefit they might otherwise have done, from the use of this water, which is of excellent virtue

in all kinds of inflammatory disorders, fevers, quinsies, pleurisies, and such like of the hot and inflamed kind, whereof the public as well as myself have known a multitude of examples.

I ask whether the fact sworn before the magistrates of Liverpool be not a sufficient answer to all that is objected, from an inflaming quality to tar water. Can any instance be produced in the whole *materia medica*, or history of physic, of the virtue of a medicine tried on greater numbers, or under greater disadvantages, or with greater success, or more credibly attested. I wish for the common good of mankind, that the same experiment was tried in our hospitals. Probably the world would soon be relieved from that great and general terror of the small-pox.

When I hear of the devastations made by this distemper in great cities and populous towns, how many lives are lost, or (as may be said) thrown away, which might have been in all likelihood easily preserved, by the use of a medicine so cheap and obvious, and in every one's power, it seems matter of great concern and astonishment, and leaves one at a loss to guess at the motives that govern human actions in affairs of the greatest moment. The experiment may be easily made, if an equal number of poor patients in the small-pox, were put into two hospitals at the same time of the year, and provided with the same necessaries of diet and lodging, and for further care, let the one have a tub of tar water and an old woman, the other hospital what attendance and drugs you please.

In all obstinate sores and ulcers I very much recommend the drinking of tar water, and washing them with a strong lotion of it will hasten the cure.

One of the most painful and dangerous cases is that of a woman's sore breast. How many poor creatures after long languishing in misery, are obliged to suffer the most severe chyrurgical operations, often the cutting off the entire breast? The use of tar water in those cases hath been attended with such success, that I do earnestly recommend the drinking thereof, both as a cure and preservative, as a most effectual medicine to remove the shooting pains that precede a cancer, and also to cure the cancer itself, without amputation. Cancerous and sore breasts are such cruel cases, occasioned by so many internal causes, as well as outward accidents, that it is a necessary piece of humanity, to contribute all we can to the prevention and cure thereof.

In the king's evil, leprosy, and foulest cases, tar water cannot be too much recommended. The poor vagabonds of Ireland are many of them infected and eaten up with the foul disease, which with them passeth for a canker (as they call it). Several instances of extraordinary cures have been performed on such persons, by drinking tar water copiously, for some weeks or

months together, without confinement or other restraint than that of a regular cool diet. It is indeed a specific, both for this and all other taints and impurities of the blood.

An extract of Siris was made, and accounts of the effects of tar water were reprinted in America, in which continent, as well as in the islands, much use hath been made thereof, particularly by those who possess great numbers of slaves; of this I have been informed by letters, and by word of mouth, from persons belonging to those parts, who have assured me of the extensive and successful use of this medicine in many cases, and more especially in the most inveterate kinds of the foul disease.

I need not say how dearly they purchase health who obtain it by salivation, and yet long and severe as the course is, it is often unsuccessful. There are instances of such as having passed through it with much misery and patience, have been afterwards cured by the simple use of tar water.

The king's evil, so loathsome in its symptoms and effects, and withal so difficult, if at all possible to cure by any other method, is most surely and easily cured by the tar water, even when the patient is far gone, even when he derives it from his ancestors. A quart *per diem* for a few months I have known to cure the most deplorable and abandoned cases.

How many wealthy families, otherwise at their ease, are corrupted with this taint in their blood? How many want heirs and husbands through this odious malady? A specific for this disease alone would be justly esteemed a most valuable secret, and the plenty and cheapness of the medicine ought not in reason to make it less esteemed.

Salivating, bleeding, and purging, are attended with great hardships and inconveniencies (even where the patient recovers), reducing the strength and spirits of those who use them, whereas tar water greatly adds to both.

In fractures and wounds, a quart drank daily, while the patient is under cure, doth very much assuage the pain and promote his recovery, both as by its balsamic nature it disposeth the parts to heal, and also as it lessens if not totally prevents the fever.

A poor boy in Cloyne, having fallen from a tree, broke both arm and wrist. This accident was concealed or neglected for two or three weeks, he was then put under the care of a skilful bone setter, who finding the bones knit and grown crooked, and that it would be necessary to break them again, in order to set them right, and withal considering the hot season of the year (in July) he apprehended his patient's being thrown into a fever that might prove fatal. But the boy being made to drink copiously of tar water, this prevented or lessened the fever in such sort, that the bones were broke and set again, and the cure proceeded as easily and speedily as could be wished.

I have known several instances of bruises and wounds cured by tar water. A person in my neighbourhood ran over by a horse was much bruised, and cured only by drinking tar water. Another knocked down by a mallet, thereupon thrown into a violent fever, and given for dead; another wounded with an axe, so that his life was thought in danger, were both recovered by the use of tar water; which, as it is sovereign against gangrenes and fevers, hath great success in all sorts of wounds, contusions, and fractures, being taken throughout the whole chirurgical process, alone with whatever other methods or remedies are applied.

Tar water operates variously. In dropsies and bruises it hath been known to work by purging. The stronger kind, being used as a wash, is good against ulcerous eruptions. But in all cases where the lotion is used, I believe the drinking of tar water might alone suffice, albeit the sores may be longer withering and drying away.

There is a certain age or time of life when the female sex runs no small risk from the ceasing of their natural evacuations. In this case tar water is a good preservative, purifying the blood, and clearing it from that cancerous tendency which it is sometimes subject to about that time. I take it to be a specific in all cancerous cases; even the bleeding cancer, esteemed incurable by physicians, hath been cured by tar water.

In diseases peculiar to women it is of no small use. Several who had suffered much by accidents in child-bearing, have found themselves relieved by tar water. In all sorts of tumours, wens, and preternatural excrecences, it hath been found an excellent remedy.

Many dangerous symptoms, and even sudden death, are often owing to a polypus in some or other of the vessels through which the blood circulates, than which it seems there is no inward cause of death or disease more to be dreaded and guarded against. How many drop down dead in our streets, or at table, or in the midst of business or diversions! How many are found dead in their beds!

Tremors, palpitations of the heart, irregular pulses, apoplexies, sudden deaths, often proceed from a slow, stagnating, interrupted motion, or stoppage of the blood, in its circulation through the body; and there seemeth to be no cause so certainly productive of obstructed circulation as the polypus, a case, perhaps, much more frequent than is commonly imagined. Morgagni, the celebrated professor at Padua, and most eminent anatomist, who was supposed to have dissected more human bodies than any man living, assured me, above thirty years ago, that in the far greater part of such bodies he found polypuses, if not in the ventricles of the heart or larger vessels, yet in some other vessel or cavity; to which he attributes many disorders, and which he supposed to

be formed by the obstructed motion of the blood. To prevent this, he dissuaded from all tight ligatures, especially in sleep, unbuttoning the neck and wrist bands of his shirt every night, a practice he had learned, as he said, from his master, the famous Malpighi.

When the circulation is once quite stopped nothing can restore it, which would be the same thing as restoring a dead man to life, and in proportion as the circulation of the blood is obstructed, the body is disordered. Total obstruction is death; partial obstruction is disease. The polypus, therefore, is always hurtful, if not mortal. It is, indeed, matter of serious reflection, that we may probably carry about with us a principle of death, always at work within, and of a nature so violent and sudden in its effects, so hard to come at, and so difficult to subdue.

It may well be thought at first view, a vain undertaking to attempt to dissolve a fleshy or membranous substance, so latent and inaccessible, by common means or medicines. But, as tar water hath been undoubtedly known to dissolve and disperse wens, and other fleshy or membranous tumours, in the outward parts of the body,* having been drank and circulated with the blood, it should seem by a parity of reason, that it may also dissolve and put an end to those concretions that are formed in the ventricles of the heart or blood vessels, and so remove one great cause of apoplexies and sudden death; and what cures may prevent. I have been the longer on this subject, for the sake of many who lead sickly lives, as well as several who are snatched away by untimely death.

Universally, in all cases where other methods fail, I could wish this of tar water was tried. It hath been sometimes known, that the most inveterate head-aches, and other nervous disorders, that would yield to no other medicine, have been cured by a course of tar water, regularly and constantly pursued.

Wheresoever pure blood or plenty of spirits are wanting, it may be concluded from manifold experience, that tar water is of singular benefit. Several persons have acknowledged themselves to be much fitter to go through business or study from the use of it.

Nor is it only medicinal to human kind; it is also of no small use in the curing of brute animals. It hath been tried on several kinds, particularly with great success in the late epidemical distemper of our horses. And I have been credibly informed, that being drank in plenty, it hath recovered even a glandered horse that was thought incurable.

And as it is of such extensive use, both to man and beast, it should seem that a tub of tar water constantly supplied in a market town, would serve in some sort for an hospital. Many

* See the effects of tar water, sect. 228, 229.

other drugs are not easily got, this is every where plentiful and cheap; many are of a doubtful nature, this of known innocence; others soon perish, this lasts for years, and is not the worse for keeping. This, in short, is a medicine for the common people, being a safe and cheap remedy for such as cannot afford to be long sick, or to make use of costly medicines.

A patient who drinks tar water must not be alarmed at pustules or eruptions in the skin; these are good symptoms, and show the impurities of the blood to be cast out. It is also not amiss to observe, that, as tar water, by its active qualities, doth stir the humours, entering the minutest capillaries, and dislodging obstructions, it may happen that this working shall sometimes be felt in the limbs, or discharge itself in a fit of the gout, which, however disagreeable, proves salutary.

I am credibly informed of several strange conveyances which tar water hath found out, whereby to discharge impurities from the human constitution. A person who had been in a bad state of health above twenty years, upon a course of tar water was thrown into a most extraordinary fit of an ague, and from that time recovered a good state of health. An old gentleman in the county of Cork, who for a long time had been a valetudinarian, afflicted with many infirmities, being advised to drink tar water, found himself relieved; but it produced and soon cured a pthiriasis, or lousy distemper, in which the putrid humours having discharged themselves, left him quite sound and healthy.

In a course of tar water, if any disorder happens from some other cause, as from cold, from the use of strong liquors, from a surfeit, or such like accident, it would not be fair to impute it to tar water; and yet this hath been sometimes done.

The effects of vomiting occasioned by tar water are not to be apprehended. Some are discouraged from drinking because their stomachs cannot bear it. But when it takes a turn towards working upwards, nature, by that very way, hath been often known to carry on the cure. A worthy gentleman, member of parliament, came into my neighbourhood in the autumn of the year 1750; he was cachectic and extremely reduced, so that his friends thought him near his end. Upon his entering into a course of tar water, it produced a prodigious vomiting, which weakened him much for the present; but persisting to continue the use thereof for about two months, he was restored to his health, strength, and spirits.

Tar water is very diuretic, thereby preventing stone and gravel, and carrying off by urine, those salts that might otherwise occasion fevers, rheumatisms, dropsies, head-aches, and many other disorders, if retained in the blood. Hence, some have apprehended a diabetes, from the continued use thereof, but it is so far from causing a diabetes, that it hath been known to cure that disorder.

The constitution of a patient sometimes requireth during a course of tar water, that he take water and honey, also roasted apples, stewed prunes, and other diet of an opening kind. A hint of this is sufficient. If the reader now and then meets with some remarks, contained in my former writings on this subject, he may be pleased to consider, I had rather repeat than forget what I think useful to be known.

Some, endeavouring to discourage the use of tar water in England, hath given out that it may indeed be serviceable in Ireland, where people live on such low diet as sour milk and potatoes, but it cannot be of the same service in England, where men are accustomed to a more liberal and hearty food; and indeed it must be owned, that the peasants in this island live but poorly, but no people in Europe live better (in the sense of eating and drinking) than our gentry and citizens; and from these the instances of cures by tar water have been chiefly taken. Those who would confine its use to the moist air and poor diet of Ireland, may be assured that all over Europe, in France, and Germany, Italy, Portugal and Holland, tar water works the same effects. In both North and South, in West and East Indies, it hath been used, and continues to be used with great success. It hath reached all our colonies both on the continent and the islands, and many barrels of tar water have been sent from Amsterdam to Batavia; of all which I have had authentic accounts. But its use is no where more conspicuous than at sea, in curing that plague of seafaring persons, the scurvy, as was found in the late attempt to discover a north-west passage; and (as I doubt not) will be found as oft as it is tried. Every ship in his majesty's navy should always have a vessel of tar water upon deck, for the use of the sailors, both in the scurvy and other maladies.

It is indeed a medicine equally calculated for all climates, for sea and land, for rich and poor, high and low livers; being, as hath been elsewhere mentioned, a cordial which doth not heat; a peculiar privilege this, and of excellent use. That it is a cordial, is manifest from its cheering and enlivening quality, and that it is not heating, is as manifest, from its singular use in all cases where the blood is inflamed. As this medicine imparts a genial friendly warmth, suited to the human constitution, those who pass through a course of tar water, would do well not to increase such friendly warmth to an inflaming heat, by a wrong regimen of high seasoned food and strong liquors, which are not wanted by the drinkers of tar water. There is a certain degree of heat necessary to the well-being and life of man. More than this will be uneasy, and this uneasiness indicates a proper choice of diet.

I have myself drank above a gallon of tar water in a few

hours, and been cooled and recovered from a fever by it. So many instances of the same nature I have known, as would make it evident to any unprejudiced person, that tar water is a cooling medicine; of which truth I am as thoroughly convinced, as it is possible to be of any theorem in physic or natural science.

The unsuccessfulness of other methods should rather be an encouragement than a bar to the trial of tar water. A young lady, daughter to a worthy gentleman near Cork, had been long afflicted with a grievous pain in her side, and having had the best advice that could be got, was not relieved until she drank tar water, which quite removed her pain. Some time after she was again seized with the same disorder, but returning to the use of tar water, she grew well, and still continues so.

A woman turned out of the infirmary at Cork, as incurable, because she would not submit to the cutting off her leg, came to Cloyne, where she continued half a year drinking tar water, and living upon bread and milk, by which course she recovered, and went to service.

There is at present, while I am writing, a most remarkable case here at Cloyne, of a poor solder in a dropsy, whose belly was swollen to a most immoderate size. He said he had been five months in an hospital at Dublin, and having tried other methods in vain, left it to avoid being tapped. It is a fortnight since he came to Cloyne, during which time he hath drank two quarts of tar water every day. His belly is now quite reduced: his appetite and sleep which were gone are restored: he gathers strength every moment: and he who was despaired of seems to be quite out of danger, both to himself, and to all who see him. It is remarkable, that upon drinking the tar water, he voided several worms of a very extraordinary size. This medicine, which is observed to make some persons costive, is to hydropic patients a strong purge. The present is but one of several instances, wherein the dropsy hath been cured by tar water; which I never knew to fail in any species of that malady.

I am very credibly informed, that an aged clergyman of Maidstone in Kent, being reduced to the last extremity by the gout in his stomach, after having tried strong liquors, and the methods usual in that case without success, betook himself to drink a vast quantity of warm tar water, still replenishing and letting it take its course; by which it pleased God to deliver him from the jaws of death.

A gentleman in the county of Clare, near Ennis, had a fever and pleurisy, and inflammation of the lungs, being at the last extremity, and given over by two physicians, he was advised to drink tar water, which he did eight quarts. Next morning one of the doctors asking at what hour his patient died? to his great surprise found he was recovered. This I had from a parliament man his neighbour.

When the yellow fever (as it was called) raged in the West Indies, the negroes, with a tub of tar water in their quarters, did well: but some of the better sort miscarried, among whom the physician himself lay at the point of death; but his brother recovered him by pouring down his throat in spoonfuls, some of the same liquor that recovered the negroes. The fact was related to me by a gentleman who was then in the island of St. Christopher's, and knew it to be true.

A physician himself, not long since assured me, he had cured an ulcer in the bladder, by ordering his patient to drink tar water, when he had tried all other methods in vain, and thought the case incurable.

But it would be endless to relate the effects of tar water in desperate cases. The recovery of Mrs. Wilson, daughter to the late bishop of London, from a lingering hopeless disorder, was a noted case, and attested to by his lordship. I have even been informed upon good authority, of two or three instances, wherein persons have been recovered by tar water, after they had rattles in the throat.

In certain cases, a smaller quantity of tar water hath proved ineffectual, when a larger hath perfected the cure. A woman of Cloyne got cold after child-bearing, which occasioned a great pain in her thigh, swelling also, and redness; she continued in great torment above three weeks. She then began to drink tar water, but not drinking much she did not perceive much good; and when there was not any hopes of her life, she was persuaded to try what a gallon a day might do, upon this she grew better, the swelling broke and ran; no dressing was used but tar, and no washing but tar water, until she was quite recovered.

In ailments of an odd and untried nature, it may be worth while to try tar water. In proof of this many instances might be given. A gentleman with a withered arm had it restored by drinking tar water. Another who, by running his head against a post, had a concussion of the brain attended with very bad symptoms, recovered by drinking tar water after other medicines had failed. In my own neighbourhood, one had lost the use of his limbs by poison, another had been bitten by a mad ass; these persons drank tar water, and their cure was attributed to it.

When tar water is copiously drank in fevers, the great danger to be guarded against, is an excessive flow of spirits, which excites the patient to talk and divert himself with company, which may produce a relapse; of this I have known fatal effects.

If in a course of tar water, the patient should find himself heated, let him abstain from, or lessen his dose of, spirituous and fermented liquors; for tar water alone never heats.

In chronic disorders it is not advisable to break off a course of tar water at once, but rather to diminish the quantity by degrees.

The acid alone hath not the medicinal virtues of tar water. This is agreeable to reason and experience, as well as the opinion of the ablest judges. Doctor Linden justly observes, "that when the empyreumatic oil is entirely separated from the acid, it is not in any shape superior to any other distilled acids or vinegars whatsoever."—*Treatise on Selter Water*, p. 307.

* That extraordinary virtues should be contained in tar water, will not seem strange, if we consider that pitch is nothing else but hardened tar, or tar drained of its moisture; and that an extraordinary quantity of light is retained in the substance of pitch, as appears from certain electrical experiments, which, having been made since, seem not a little to confirm what had before been suggested in *Siris*.

* Something of this nature hath been long expected and hoped for, if we may credit that learned chymist Doctor Linden, "at last (saith he) the long delayed wishes of the most eminent men of the faculty are fulfilled, in the Bishop of Cloyne's discovery."—See *Treatise on Selter Water*, p. 303. Again (speaking of empyreumatic oils of plants) he hath these words, "There has always prevailed a notion among the chymists, and particularly with Paracelsus and his followers, that in those oils there lay a great secret undiscovered. This notion was occasioned by the strange effects which a small quantity thereof hath upon the human machine. Several have been very diligent to discover this secret, and to find out a method to administer these oils with safety; yet nothing was performed salutary, until the Bishop of Cloyne discovered to us the tar water, to him alone we are indebted for rendering the empyreumatic oils a safe medicine in every respect."—*Ibid.* p. 302.

THE END OF VOL. II.