



grains both heighten and hasten the corruption of the flesh. (a) The result of this experiment is so curious and unexpected, that I wished to ascertain the cause of it.

### EXPERIMENT I.

May 15th, 1772. EQUAL parts, viz. two drachms of the lean of mutton, chopped very small, were separately put into five wide mouthed phials, and to each were added two ounces of pump water. Ten grains of sea salt were dissolved in the first; the same quantity of brown bay salt in the second; of *sal catharticus amarus* in the third; and of true glauber's salt in the fourth. The fifth contained only flesh and water, and was intended for a standard. The bottles were slightly corked, and after a gentle agitation placed in a window, exposed to the western sun. The mercury in Fahrenheit's thermometer then stood in the shade at 65 degrees. IN

(a) Pringle's Diseases of the Army, Appendix, p. 38.

IN twenty-nine hours the mixture which contained the *sal catharticus amarus* had acquired somewhat of a putrid taint.

IN forty hours the standard was slightly offensive. The mixture with sea salt was putrid, and that with the cathartic salt was yet more putrid.

IN fifty hours the standard and the two mixtures above-mentioned were equally putrid. The two others were sweet.

IN sixty-two hours the standard was become much more offensively putrid than the two mixtures with sea salt, and cathartic salt, in which the putrefactive process appeared not to have advanced any further. The flesh with the brown bay salt was now slightly tainted; but that with the true glauber's salt was still sweet.

IN seventy-five hours the mixture with brown bay salt was become putrid, and  
I 2 that

that with the true glauher's salt a little offensive. And in twelve hours longer the latter mixture was also putrid.

FROM this experiment it appears that common salt, in the quantity of ten grains promotes putrefaction, and that the *sal catharticus amarus* in the same proportion is yet more septic; but that bay salt in this quantity resists putrefaction, and that true glauher's salt exceeds in this respect even bay salt. The septic and antiseptic qualities of these salts, when used in so minute a quantity, are therefore evidently dependent on, and proportioned to their degrees of purity. Alimentary salt, it is well known, contains in its crystals an earthy salt, similar to that of Epsom; which is a powerful ferment, almost equally capable in a small as in a large quantity, of exciting the putrefactive process in substances disposed to it. Whereas the pure neutral itself, which consists of the muriatic acid and the fossil alkali, can only exert its antiseptic powers when used in a proportion adequate

adequate to the action of the bitter salt with which it is combined, and superiour to the putrid tendency of the animal flesh, which it is employed to preserve. (*b*)

#### EXPERIMENT II.

May 21. SIX days from the commencement of the experiment, the pieces of flesh in the solutions of common salt, and of *sal catharticus amarus*, were not more offensive than on the third day; and the mixtures emitted no air bubbles. But the standard at this time was intolerably putrid, very frothy, and the bits of mutton had risen to the surface of the water.

THIS experiment shews that both sea salt and the bitter purging salt, though they quicken putrefaction, prevent the progress of it beyond a certain degree. A quality which

(*b*) SIR John Pringle informs me, he has long suspected, but never ascertained the fact by experiment, that the septic quality of sea salt is owing to some heterogeneous substance joined to it.

which must increase the usefulness of the former; as a seasoning to our food.

A LATE eminent and learned writer has related the history of a violent scurvy, produced by drinking sea water. A young lady, aged 16, tall, thin, and of a delicate constitution, though in tolerable good health, was advised to use sea water on account of a strumous swelling and inflammation of her upper lip. She drank a pint of it every morning for ten days successively; which did not pass off freely by the usual evacuations. At the end of this period she was suddenly seized with a profuse discharge of the *catamenia*, was perpetually spitting blood from the gums, and had innumerable petechial spots on different parts of her body. Her pulse was quick, though full; her face pale and somewhat bloated; and her flesh soft and tender. She was often faint, but soon recovered her spirits. The flux from the *uterus* at length abated; but that from the gums increased to such a degree, that

her

her Apothecary took a little blood from her arm. From the orifice blood continually oozed for several days. At last an hæmorrhage from the nose came on, attended with frequent faintings, in which she at length expired, choaked as it were with her own blood. Before she died, her right arm was mortified from the elbow to the wrist. And it is further to be remarked, that though blood let from her some weeks before she began the use of sea water, was sufficiently dense; yet that drawn in her last sickness was mere putrid, and dissolved gore. (*a*)

DOCTOR HUXHAM explains the dissolvent action of sea water in this instance, by supposing an accumulation of the marine salt in the mass of blood, which running into *moleculæ*, too large to pass the minutest vessels, occasioned stagnations; and by irritating the capillaries, produced ruptures of them, extravasations, blotches, and livid spots. But do not the preceding ex-

I 4                      periments

(*a*) Vid. Philos. Transact. Vol. 53, p. 6.

periments suggest a better solution of the fact? Sea water abounds with the cathartic salt, which constitutes the bitterness of it; and this has been proved to be a powerful septic.

A PHYSICIAN who often takes magnesia, to correct an acidity in his stomach, arising from indigestion, invariably observes that the discharges which it produces are peculiarly putrid and offensive. Hence it is probable that this earth combined with an acid of the vegetable as well as of the mineral class, promotes putrefaction. Should we not therefore employ the *sal catharticus amarus* and *magnesia alba* with caution, in diseases of a putrid tendency?

I CANNOT omit this opportunity of recommending the calcination of magnesia, as a great improvement of that medicine. The loss of its fixed air, which by this process appears to constitute seven twelfths  
of

of its weight, obviates the flatulence which it produces in the *primæ viæ*, without diminishing its purgative or absorbent qualities. Care however should be taken that the magnesia be free from any calcareous earth, otherwise the action of the fire will render this mild powder offensively caustic to the stomach, as I have more than once experienced. Magnesia may be calcined with very little trouble, in a common crucible placed in a glowing fire, and kept red hot during the space of two hours. This improvement was suggested to me by a Physician in London, distinguished for his knowledge of chemistry.