

Here then we find the disease appearing in the usual time of inoculation. Was this in consequence of the poison being applied by the atmosphere to an actively absorbing surface—the fore in the throat? Or had the child received the infection before entering the house where the disease was? Certain it is, however, the healing of the sore on the tonsil was arrested, became more inflamed and larger during the disease, which, upon the whole, was mild. I consider the difference of the violence of small-pox to arise chiefly from the quantity of the poison thrown into the system: perhaps too its being involved in that bland matter, pus, its virulence may in some measure be diminished, and why inoculation should sometimes produce a violent disease, may arise from peculiarity of constitution, heat of the air, and other circumstances. I cannot suppose the variolous matter can be at all compared to a ferment, for then inoculation should, in every instance, be attended with as violent a disease as that arising in the common way. The original quantity alone introduced into the system, appears to be evolved and set into activity by the heat in the fluids of our body, and the poison may not have the power of generating more, until pus begin to be formed in the pustules;—analogous in some way, perhaps, to what we observe in various substances, particularly in manganese, which, when exposed to considerable heat, gives out great quantities of oxygen gas, and after being entirely robbed of it, will again, on exposure to the air, charge itself with the same matter. In some parts of Scotland they have a custom of taking the variolous matter from the pustule when beginning to form, and they think this in general produces a milder disease.

(To be continued in our next Number.)

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*To the Editors of the Medical and Physical Journal.*

GENTLEMEN,

IF the following communication accords with the plan of "*The Medical and Physical Journal*," and you think it worth inserting, your notice of it will much oblige

Yours,

JOHN PROCTOR, Jun.

THE *unguentum hydrargyri* being a medicine much used, and the preparation of it rather troublesome, several expedients have been tried to facilitate the process; most of which are, however, more or less exceptionable, either on account of injuring the colour of the ointment, giving it a bad smell, or of being productive of disagreeable effects in the using of it:

such



such are the ol. sulphurat. the turpentine, &c. An improvement is noticed in No. 6, of the "*Phil. Mag.*" which is, the addition of a very minute portion of flor. sulph. (sulph. sublimat.) which I find, upon trial, extinguishes the quicksilver very readily, but the ointment was of a bad colour; and a larger quantity of sulphur would probably make it almost black. I was led to try a little empyreumatic or rancid fat, from the hint given in the following note in "*Fourcroy's Chemistry*," vol. ii. p. 248, first edition, and found it answer beyond any thing I had ever used before for this purpose. It not only combines in a very short time with the quicksilver, but the colour of the ointment is equal, if not superior, to any that can be made with the purest fat without this addition. "In this ointment, the particles of the mercury do not merely seem to be distributed and interspersed among the particles of the fat, without any adherence or chemical union: on the contrary, the oily matter of mercurial ointment very quickly becomes rancid; and we know that rancidity, or incipient acidification, is always the consequence of the combination of oil with some other substance (now known to be oxygen, which it seems disposed to absorb more quickly by being united with a metallic substance). When the ointment is old, if we rub a portion of it between two bits of paper, the whole of the oil is absorbed, without leaving any globules of mercury visible behind it: but when we treat mercurial ointment, recently prepared, in the same manner, we can very readily perceive a great number of metallic particles quite distinct. M. Beaumé took equal quantities of mercurial ointment; one of which was newly made, and the other become slightly rancid by keeping. He kept both of them in a state of liquifaction during eight days, in a degree of heat much below what could possibly decompose the fat. The newly-made ointment allowed three drachms of mercury to separate; the other, which was rancid, only one drachm and a half. All these observations do not allow us to doubt of the reality of the combination; they pointedly prove, that what we call the extinction of mercury in fat, is not purely the effect of mechanical division, since those two substances exert a slow spontaneous action upon one another, from which a more intimate union at length results. This is much confirmed, by observing the difference in colour and consistence between old and new ointment. New made ointment is of a very light colour, and extremely soft; while what has been kept for some time is much darker in colour, and much firmer in consistence: a sufficient proof of some change in the intimacy of their union. We are in the next place to enquire in what state the mercury unites with the fat, whether in form of a metal, or in form of a calx (oxyd).

"When old mercurial ointment is converted into a saponaceous compound by the addition of caustic alkali, there is always a quantity of fluid mercury



mercury separated from the mixture, the fat forsaking the mercury to unite with the alkali. Mercurial ointment is also decomposed by the action of ether upon it. When a small quantity of good mercurial ointment is put into a flask, which is two thirds full of ether and distilled water, and the mixture frequently shaken, the mercury soon begins to precipitate, carrying a small portion of fat along with it, which gives the mercury the appearance of a calx; but this fat soon disappears, and the mercury unites in the form of metallic globules, by simply drying it upon bibulous paper. By this analysis, we collect almost the whole of the mercury in a fluid state. In reviewing all these facts carefully, it seems probable, that the mode in which mercury combines with fat, more resembles the amalgamation of the metals with mercury, than their dissolution in acids, as the mercury is taken up in a metallic state, and not calcined (oxydated); the fatty matter serving the purpose of a solvent to the mercury in the preparation of mercurial ointment, in the same way that mercury itself serves the purpose of a solvent to the other metals, in the combination of the different amalgams."

I have copied the whole of this note, for the purpose of introducing some remarks upon it, which may perhaps explain more clearly the nature of this combination. I consider mercury to be simply mechanically divided by being triturated (till totally extinguished) in *pure sweet* fat; for upon rubbing the mixture upon the surface of any body which will either absorb the fat, or allow it space to be diffused upon, the mercury presently re-unites into small globules, as in its original state; and this happens from the connection between it and the dividing matter (fat) being destroyed. But when the ointment has been kept some time, no such effect takes place, because the union becomes more intimate in consequence of the fat undergoing a change, by which it really does dissolve part, and in time, the whole of the mercury; and this change is no other than a gradual acidification, which it seems more readily to undergo from its combination with the mercury, by the absorption of oxygen from the atmosphere. The smell, which would betray its rancidity, or acidification, cannot be perceived till all the mercury is combined with the sebatic acid, when the superabundant quantity of fat, having no metal to neutralize, or rather to saturate its acid, will of course become sensible to the smell. As a proof of this, old mercurial ointment will readily take a considerable addition of fresh mercury, and in this way I at once prepare the ung. hydrarg. fort. by adding a proportionable quantity of mercury to a weaker ointment, consisting of one part of the metal to four of fat.

Led by this consideration of the nature of mercurial ointment, I found, upon trial, that a small portion of rancid fat extinguished a large one of quicksilver,



quicksilver, without communicating any disagreeable smell to the ointment when made. Should the fat be any way stiff or hard, it may be softened with a little oil of the same nature. Train-oil answers very well; as it spontaneously melts from the blubber, before it has undergone any change from heat, it is quite sweet, and free from smell: perhaps the large quantity of animal mucilage that is combined with it, may hasten its change in the ordinary temperature of our climate in summer; but, as in the case of other animal fats, its smell is quite destroyed, when combined with a metal. The cause of the rancidity of oil, may furnish some hints for their edulcoration; but, besides neutralizing and wasting their disengaged acid, it is necessary to separate the mucilage which is combined with them, either by pressure, or in the process of obtaining them by boiling, and which is deposited from several in considerable quantity, on standing at rest for some time. What is the precise difference between the mucilage of animal and vegetable oils; and in what degree do they contribute to accelerate the rancidity or putrescency of these oils?—The first of these states I consider to be owing to the absorption of oxygen, and the other to the disengagement of volatile alkali.

On the principles of the foregoing theory, I have tried with equal success, the effects of rancid vegetable oil, in making the emplastr. litharg. and have found the process much shortened when I have used this kind of oil, and the plaister, when made, equally good, if not better, than that made with sweet oil. Upon the whole, I consider the mercurial ointment to be a true sebat of mercury, combined with a more or less considerable portion of *uncombined* fat, according to the length of time it has been kept. The experiment with ether is nearly similar to the mixture of any other metal dissolved in an acid with this liquor. The solution of gold in aqua regia, and the tinct. ferri. mur. when mixed with ether, exhibit nearly the same phenomenon, viz. the reduction of the oxyd, by the abstraction of its oxygen.

It is far from being consistent with a true knowledge of chemistry, to compare the combination of mercury with fat to an amalgam; there is not the most distant analogy between these two compounds. Were I to draw a comparison between a mixture of mercury with other metals, and any other mixture resembling it, I would beg leave to mention that of wax, resin, and oil, which agrees exactly with it, as to its state, though it differs materially from it in the nature of its component parts. Mercury is in the one compound exactly what the oil is in the other; with respect to solidity, they differ in nothing from the other ingredients of their respective combinations, but in being fluid at a lower temperature, or containing a greater quantity of



of latent heat, a portion of which they yield to the other parts of the composition, and so form a mass of an homogeneous consistence and appearance. The similarity is rendered still more conformable, if we suddenly cool a mixture of the unctuous substances, when each of them will be distinctly perceptible, by the difference of consistence.

Other chemical substances are capable of producing their effects in the system by absorption, when externally applied, as well as mercury: arsenic and tartarized antimony have furnished several instances of this mode of action.

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*A Comparative View of the Modern Medical Theories, and their Agreement with Practical Facts and Observations.—*

By N. P. GILBERT.

[A Memoir read at the Meeting of the Medical Society of Paris, Dec. 12, 1793.]

IF it be true that health is the first of blessings, the art of preserving it, and restoring it when impaired by disease, is undoubtedly the most useful of arts. This may be defined the science of observation, and that of availing ourselves of favourable opportunities in regulating the functions of the human body. Since the progress of the *curative art* is directed by this double guide; since the knowledge of past ages is not lost to the present; its laws are clear, its precepts easy to be comprehended, and their application often successful. If we consult the annals of the infancy of science, we shall find, that the first physician was instinct, and the first elements of medicine were the lessons of nature, gradually strengthened by those of experience. It is impossible to reflect, without being sensibly struck, on the early history of medicine. The sick were exposed in the temples, or other public places; the citizens began the work of the day, by hospitable visits to these retreats of distress. Persons who had been afflicted with maladies similar to those of the objects of their visit, administered the remedies which they had found of advantage in their own cases. Thus did men profit by the experience of each other. This general and lively sympathy, these affecting fraternal attentions, this religious anxiety to relieve our fellow-creatures, had an inexpressible attraction, which cannot but excite our regret for the disuse of this ancient custom. Happy golden age! in which the delightful union of physical frugality, and moral purity of life, extended a healthy and tranquil state of man to the period assigned by nature; and left to that provident and wise mother all the energy which she required to counteract