

become accidentally mixed with it; but it was found to be pure.

It is not improbable, from the symptoms and the inflamed state of the stomach, that the salt acted here as an irritant poison; and the fact of its being an innocent medicine in small doses appears to be no sound objection to this view; for the same circumstance is observed with respect to many substances, the poisonous properties of which cannot admit of dispute. Some have ascribed the irritant properties of this and other saline medicines—such as cream of tartar, in large doses—to their insolubility, and to the fine spicula of the powdered salt acting mechanically upon the mucous membrane of the stomach. This explanation does not appear sufficient: 1st, because some of these saline medicines, when taken dissolved—such as alum and nitre—have had a similar action; and, 2d, the effects are very different, and far more rapidly fatal than in those cases where mechanical irritants—such as fine sand or iron filings—have been taken. In short, there is no doubt that if the same quantity of the salt were taken perfectly dissolved in water, it would have an equally irritant effect; and sulphate of potash has been known to act in this way, when taken in divided and therefore very soluble doses. A case in which it thus proved fatal in *two hours*, is reported in the *Annae d'Hygiène*, April, 1842. According to Mr. Mowbray, *Medical Gazette*, v. 3, p. 54, sulphate of potash is a salt much employed in France as a popular abortive. He quotes several instances in which, in large doses, it produced severe symptoms, resembling those of irritant poisoning, and even death. In one case, two drachms acted powerfully; and in another, that fell under his own observation, four drachms of the salt, administered to a lady after her confinement, had all the effects of an irritant poison. The case of Haynes is the first instance in which, I believe, it is publicly known to have proved fatal in England; and it shows that substances, commonly regarded as innocent, may give rise to important questions in toxicology.

NARCOTIC POISONS.

Opium.—It has been frequently observed, in cases of poisoning by this drug, that the individual has recovered from the first symptoms, and has then had a relapse and died. There is some medico-legal interest connected with this state, which has been called secondary asphyxia from opium, although there appears to be no good reason for giving to it this name. In December, 1843, a gentleman swallowed a quantity of Laudanum, and was found labouring under the usual symptoms. The greater part of the poison was removed from the stomach by the pump; and he so far recovered from his insensibility, as to be able to enter into conversation with the surgeon; but a relapse took place, and he died the following night. It is not improbable that, in these cases, death may be occasioned by a portion of the poison which has been carried by the absorbents into the system.

Recovery from a large dose without vomiting.—A case occurred at the Westminster Hospital, in December, 1843, (*Lancet*, Dec. 1843,) in which a woman, æt. 25, was brought into that institution while labouring under the symptoms of poisoning by opium. She was perfectly comatose, the features devoid of expression, the lips purple, and the pupils contracted to the size of a pin's head. The eyes were everted and fixed. Sulphate of zinc and tartar emetic were given without effect, and the stomach-pump was not brought into use until about an hour after her admission. The contents of the stomach were entirely free from the smell of opium. The woman was kept roused, coffee was administered, and she recovered. It appears she had swallowed *one ounce of laudanum*, but at what time before her admission is not stated.

It is difficult to say on what the recovery of this woman depended, for a very long time had elapsed before the contents were removed from the stomach, and then there was no trace of opium to be perceived by the smell. A better plan for determining the presence of opium in the discharged liquid is to dilute it sufficiently, and observe whether it acquires a red colour with the sesquichloride of iron. This change is always produced where opium is present even in very small proportion, owing to the meconic acid which it contains. The test will act where no odour is perceptible, either from the quantity of the drug being too small, or its being concealed by other odours. It is certainly remarkable that this woman recovered, considering the largeness of the dose, and the time which had elapsed before the stomach was evacuated.

Dover's Powder.—The following case of poisoning by Dover's

powder has been reported by Mr. Griffiths, (*Medical Gazette*, March, 1844.) About ten grains of Dover's powder were given by mistake to an infant seven weeks old, and it died in twenty-four hours afterwards. The following is an account of the post-mortem appearances. The countenance was placid, and the fingers of both hands were firmly contracted. On opening the abdomen, the colon was seen to be distended with flatus; the spleen, kidneys, and intestines were healthy; the liver gorged with blood; the stomach contained a very small quantity of colourless viscid matter. The inner coat was vascular; and at the great curvature, as well as in other parts, were small patches of highly injected vessels. The lungs were gorged with blood; the upper lobes being infiltrated with a greenish serum. The pericardium was vascular, and contained about a drachm of fluid. The right auricle was empty; the left ventricle contained some thin fluid blood, and a small coagulum. The sinuses of the dura mater were filled with dark coagula; the surface of the brain appeared covered by a complete network of vessels, distended with light coloured blood. On the surface of each posterior lobe of the cerebrum, slight extravasation had taken place. The brain was soft, and the difference of colour between the gray and white matter barely discernible. The vessels in the substance of the brain were gorged with blood, presenting, on section, a thickly-studded appearance—the spots of a deep dull red, and in many places coalescing. There was a small quantity of fluid in each lateral ventricle, and on the floor of each were large distended blood-vessels. There was serous effusion on the surface and at the base of the brain, to the amount of about half an ounce. The contents of the stomach were carefully analysed, but neither morphia nor meconic acid could be detected.

This case is interesting in several particulars. In the first place it is surprising that so young an infant should have lived so long after taking a dose equivalent to one grain of opium. Making every allowance for the great vascularity of the brain in young subjects, it appears from the inspection, that the opium had here affected that organ, and caused a general congestion as well as effusion and slight extravasation, which last condition is somewhat rare in poisoning by opium. The non-detection of the poison in the contents of the stomach was sufficiently accounted for by the small quantity of opium in the Dover's powder, and by the length of time which the child survived. The opium contained in ten grains of Dover's powder is equivalent only to about the twentieth of a grain of morphia, and probably about the same proportion of meconic acid. It is extremely rare that opium is found in the stomachs of young children poisoned by small doses.

Dr. J. B. Beck has lately published, in the *New York Journal of Medicine*, some excellent remarks upon the effects of opium on the infant subject. He shows that while this drug has a much greater effect on an infant in consequence of the greater impressibility of the nervous system, than on an adult, it is at the same time much more uncertain in its operation, and thus is liable to prove fatal in very small doses. Among the instances which he has accumulated, illustrative of the powerful action of the drug, he mentions one where a young child was narcotized by fifteen drops of paregoric elixir. This essay has been re-published in the *Medical Gazette* for March, 1844, (vol. xxxiii., p. 767.)

Quantity of opium required to destroy life.—The smallest quantity of opium in the solid state which has been known to destroy the life of an adult was four and a half grains mixed with camphor. This case is quoted by Dr. Christison. In September, 1843, an instance occurred in this metropolis of a woman, aged 38, being killed by eight grains of the drug given in two doses. These facts are interesting in a medico-legal point of view, by showing how small a quantity of this substance may, in some instances, destroy life.

Solubility of opium in water.—So far as I am aware no experiments have been performed to determine the quantity of this drug taken up by water in the form of infusion. In November, 1843, a case of poisoning by opium was referred to me by Mr. T. O. Duke, of Kennington, in which the question arose. An ignorant nurse made an infusion by pouring hot water on powdered opium in a bottle, and gave, at short intervals, three teaspoonfuls of this infusion to a child aged about fourteen months, and it died poisoned by the drug in about eighteen hours. It was found that the infusion contained only 1.6 per cent. of solid matter, i.e., of the soluble part of the opium; and that the principal part of the meconate of morphia had been taken up, was proved by an infusion subsequently made, retaining only faint traces of that salt.