have, on the contrary, always seen aggravation of the affection from it, not unreasonably to be explained, on the principle that such practice is really training the bladder to empty itself at stated periods, when the object is that it should be trained to retain its contents.

ART. IX.—*Death from Inhalation of Chlorine Gas.* By CHARLES A. CAMERON, M.D., Professor of Hygiene in the Royal College of Surgeons in Ireland; Analyst to the City of Dublin, &c.

IN Taylor's comprehensive work on "Medical Jurisprudence," no cases of death from the inhalation of chlorine gas are given. It is, indeed, stated that the French chemist, Pelletier, died from the effects of chlorine gas taken into his body—whether in the gaseous condition or dissolved in water I know not. The following particulars relative to a fatal case of poisoning—if I may use the term—from chlorine may not prove uninteresting, and perhaps it may prove to be the first case of the kind on record.

A small ship, lying in the river Liffey, took in a cargo composed partly of salt cake (sulphate of soda), partly of chloride of lime. The former was stowed away in bulk in the hold; the latter was stored in casks, which were placed on the salt cake. On the morning of the 18th January, 1870, one of three sailors who had passed the previous night in the fore-castle, was found dead on the floor of that cabin. His companions were comatose; but under treatment on board the vessel, and subsequently at Sir Patrick Dun's Hospital, they recovered.

On the evening of the 18th January I was requested by the coroner, Dr. Nicholas C. Whyte, to assist his medical adviser, Dr. R. W. Egan, in investigating the cause of the death of this sailor. We ascertained that two of the casks of chloride of lime had burst and their contents had been scattered, and several of the staves were charred. This accident might have occurred either from the chloride of lime having been over-heated by the salt cake—which is often shipped in so hot a state that it can hardly be handled—or from water having got into the casks.

The fore-castle was rather a large one for a small schooner—its space being 940 cubic feet. During the night there was fuel consumed in a small stove, but the products of combustion must have readily escaped through the opening—which was four square feet—in the roof. Those facts disprove the statements which were

made, to the effect that the sailors were poisoned by the gases generated in the stove.

The body of the deceased was conveyed to the place where Dr. Egan performs his autopsies. The surface of the corpse was well washed (ammonia being added to the water), so as to remove from it every trace of chlorine, and the *post mortem* examination was then commenced. The following were the principal morbid appearances.

Face.—Pale, not livid, pupils dilated; white froth oozing from the mouth and nostrils; the lips blanched and somewhat swollen; the tongue and gums blanched, the latter appearing as if they had been completely bleached. The epithelium was soft, and in some spots gone in the case of the lips, tongue, gums, and palate.

Neck.—Deep veins very full.

Lungs.—Congested, not very dark; the bronchial tubes full of frothy sanguineous matter; the trachea inflamed. The lungs otherwise normal. All the internal venous system full.

Heart.—Remarkably fine and healthy; left side quite empty; right side full of dark blood.

Stomach.—Healthy, as are all the other abdominal viscera. This organ was perfectly empty.

Head.—Veins of scalp full; scalp and dura mater uncommonly adherent; surface of the brain and its membrane only slightly congested; sinuses full; substance of brain very firm, and in all respects healthy.

During the examination a tube was introduced into the trachea, and pressure having been applied to the chest, a bloody and very frothy liquid, possessing a slight odour of chlorine, was evolved through the tube. On cutting into the ventricles of the brain a very strong and unmistakable odour of chlorine was evolved. No odour of the gas was perceived in the abdominal cavity.

Here is what probably occurred on the morning of the 18th January:—The deceased was awakened from his sleep by the irritative action of the chlorine on his respiratory organs; he struggled out of his berth, became sick (vomit was found on the floor, and not a particle of food in the stomach), got a spasm of the glottis and died from apnea. Perhaps violent and rapid inflammation of the larynx might have occurred. Ammoniacal gas has been known to produce death by the intense inflammatory action set up immediately after its inhalation.

The autopsy was made thirty hours after the body was discovered; and it is not a little remarkable that after so long a period the chlorine should be so easily recognized in the brain.