nexion two mistakes would be avoided. On the one hand the opinion of the expert in the subjects generally classed as preliminary medical studies must not be allowed to override that of the leaders of the profession. The physician and surgeon knew best how far the study of ancillary subjects might be pushed with benefit to students whose lives would chiefly be occupied with the direct practical applications of their profession. But on the other hand the students as long as they were studying these subjects must be brought into contact with men who were themselves advancing knowledge. The scientific spirit was best appreciated by those who had seen masters of scientific method at work. The whole tone of a laboratory was different if the students felt that they were in the full stream of the advance of thought; if they knew that they would in after-life be proud to have been under the influence of their teachers as of men who had left their mark on the pages of the history of science. The average medical student ought not to be deprived of this advantage in the first stages of his career, but he could obtain it only if his studies were carried on under conditions which would tempt teachers of eminence to superintend his work. For this reason, if for no other, he hoped that if a policy of concentration of teaching was adopted, the research laboratories would be associated with those in which the more elementary sections of the subject were pursued.

He suggested that it would be a happy coincidence if this year, which had been made remarkable by the fact that His Majesty had placed himself at the head of a great movement for relieving London hospitals from the financial embarrassments which had checked or injured them, should also be remembered as that in which an advance was made in the provision of teaching for medical students, in which the great forces available for medical education in London drew closer together, in which private benefactions were given on a large scale not only to sooth suffering directly in the hospitals but indirectly in the medical schools by increasing the knowledge and training the abilities of those on whose knowledge and abilities the efficiency of the hospitals would in the next generation depend.

DEATH FROM CHLOROFORM POISONING.

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ON account of the few cases published, and the somewhat incomplete record of the symptoms and *post-mortem* appearances in death from the ingestion of chloroform, the following case which lately came under my care may be of interest.

A woman, aged 39, who had been drinking heavily for some days previously, was found in bed in an unconscious condition between 1 and 2 p.m. Her night-dress and the bed-clothes were saturated with exceedingly offensive blood-stained vomit and faeculent matter, and an empty bottle which had contained 2 ozs. of pure chloroform was found by the side of the bed. A fellow-servant had seen her in bed and apparently sleeping naturally at 11 a.m. When seen by me at 2.30 p.m. she was in a deeply comatose state—the face blanched, lips and fingers livid, and the trunk and extremities cold; the pulse imperceptible at the wrist, heart sounds very feeble, breathing shallow but regular, and air entering the lungs. The corneae were insensitive, the pupils equal, semidilated, and feebly acting to light. The breath smelt of alcohol, with a suspicion of chloroform, and there was no staining or whitening of the lips or mucous membrane of the mouth.

Having no apparatus at hand, I directed that the bed should be raised, and warm bottles and friction applied to the trunk and limbs, while I left to fetch a stomach tube and hypodermic syringe. On my return, after twenty minutes, I found that the patient had partially recovered consciousness, and had vomited a quantity of dark, chocolate-coloured fluid, and passed a few ounces of brighter blood per rectum. The pulse was still imperceptible, but the corneal reflex had returned, and the limbs responded to stimulation, while she occasionally muttered a few incoherent words. As she appeared to be recovering consciousness and had vomited freely, it was thought better not to wash out the stomach, which might have entailed risk from heart failure, and the possible chance of fluid entering the lungs. A hypodermic

injection of $\frac{1}{10}$ gr. strychnine was given, the foot of the bed raised still higher, and warmth and friction to the extremities continued. As the breathing was stronger and quite regular, it was not considered necessary to employ artificial respiration. The general condition continued to improve, though the heart's action remained excessively feeble. At 4.30 p.m., after she had so far recovered consciousness as to complain of pain in the abdomen, a violent attack of retching occurred; the patient collapsed over the side of the bed, the pupils became widely dilated, the heart ceased beating, and death ensued almost suddenly, the respiration continuing for a few gasps after the heart sounds had ceased to be heard.

A necropsy was made 24 hours after death. Rigor mortis well marked. Thorax: The right side of the heart contained dark cherry-coloured blood and no clots; the left side empty, valves normal, walls firm, bright red in colour; weight 13 ounces. Lungs natural on both sides, resonant, and not oedematous. Abdomen: The peritoneal cavity contained several ounces of dark blood-stained fluid, no lymph on walls of intestines; the small intestine intensely congested and dark red in colour, the large intestine congested to a lesser degree. The stomach contained about one ounce of dark chocolate-coloured fluid smelling of chloroform, the walls slightly congested with a few scattered ecchymoses and patches of *post-mortem* digestion. The interior of the small intestine was intensely congested throughout, the mucous membrane swollen, velvety, and of a dark cherry colour with numerous ecchymoses, and contained a quantity of dark-red fluid smelling strongly of chloroform. These appearances were much less marked in the interior of the large intestine which contained no solid matter. The liver was large, weighing $3\frac{1}{2}$ pounds, pale in colour, somewhat friable. Spleen, kidneys, and pelvic organs normal. The mucous membrane of the oesophagus was very slightly congested and showed no ecchymoses on its walls. Brain firm, normal, the cranial sinuses contained dark fluid blood and no clots. The presence of chloroform in the intestines was confirmed by distillation of the fluid contents. On heating the glass tube leading from the retort, evidence of chlorine gas was obtained by its action on iodized starch paper, and on litmus. The general result of the examination pointed to intense irritation and congestion of the alimentary tract, most marked in the duodenum and small intestine, and to a lesser degree in the stomach and large intestine. The condition of the liver may have been due to fatty change, the result of long-standing alcoholism; the cherry-red colour and fluid condition of the blood in the heart and cranial sinuses are also noteworthy.

REMARKS.—While on the one hand the smallest dose leading to a fatal result in a child is only one drachm of pure chloroform, recovery after the ingestion of four ounces is noted in a case published in the *Medical Gazette* (vol. xlvii, p. 675). Falck, quoted by Wynter Blyth, records 10 deaths out of 18 cases, and from an analysis of these the latter considers two ounces as a certainly lethal dose. Death presumably from heart failure after recovery of consciousness, and while the patient appears to be making satisfactory progress is not uncommon, and in one case took place 67 hours after the poison was swallowed. Jaundice has been noticed in a few instances. I have only been able to find one record of a complete necropsy (*JOURNAL*, vol. i, 1886, p. 541), and the result closely corresponds with that above described, except that no free fluid was found in the peritoneal cavity.

Chloroform is stated to form a definite combination with the blood from which it is not easily recovered, and to act when swallowed as a direct poison to the muscular and other tissues; certainly in the case recorded its action on the heart, whether direct or remote, was most marked, and since death ensued after the toxic effect on the cerebral centres appeared to be passing away, it appears most probable that the fatal result was due to its direct action on the heart itself. Treatment in the above case was directed to sustaining the action of the heart, but after a three hours' interval from the swallowing of the poison, and its extensive action on the whole of the alimentary tract, was not very hopeful. Under appropriate circumstances, and when seen sufficiently early, washing out the stomach followed by artificial respiration and hypodermic injections of strychnine and ether, would appear to give the best results.