Clinical Notes :

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON DECOMPOSITION OF CHLOROFORM, AND SICKNESS.

BY DAVID NEWMAN, M.D.,
SURGEON TO THE GLASGOW ROYAL INFIRMARY;

AND
WILLIAM RAMSAY, PH. D., F.R.S.

EARLY in the history of chloroform it was noticed that the agent had a tendency to undergo spontaneous decomposition on exposure to air and light, and although within recent years great care has been taken by manufacturers of the drug to produce as pure an article as possible, nevertheless, the fact remains that chloroform is not stable and rapidly deteriorates as an anæsthetic. When freshly distilled chloroform is administered, the vapour is easily inhaled, having a sweetish and not unpleasant taste and odour. It produces little or no irritation in the air passages, little excitement of the patient is observed, and if the agent is carefully given sickness, fainting, and irregularity of the pulse and respiration seldom occur during its administration. But if chloroform is kept in a bottle containing air, exposed even to feeble light, changes are produced in the drug which render it less suitable as an anæsthetic. The change is due to the formation of carbonyl chloride and hydrogen chloride, according to the equation $\text{CHCl}_3 + \text{O} = \text{HCl} + \text{COCl}_2$. These substances render the vapour slightly pungent in odour, and on inhalation it produces irritation in the air passages. The period of excitement of the patient is more marked and the liability to sickness during and after anæsthesia is greater.

During the last six months the effects of freshly distilled chloroform and of chloroform supplied in the ordinary way have been contrasted, greatly to the advantage of the former. It has been found, however, that distillation is not necessary, as by shaking the chloroform with slaked lime and filtering the irritating products of decomposition are eliminated, as, indeed, theory would predict; for the hydrochloric acid is, of course, at once acted on by the lime, giving calcium chloride and water, and the carbonyl chloride, to the presence of which the sickness is probably to be ascribed, is resolved into carbonate and chloride of calcium, thus— $\text{COCl}_2 + \text{Ca(OH)}_2 = \text{CaCO}_3 + \text{CaCl}_2$. In illustration the three following cases may be mentioned:—

CASE 1.—A man was operated on three occasions. For the two first the chloroform given had been in the wards for not more than ten days, and was kept in a well-stoppered bottle away from direct light; but the bottle contained some air. Each operation lasted fully an hour, and on both occasions the pulse became very irregular and feeble so as to necessitate artificial respiration. While recovering from the effect of the chloroform he was very sick, and the sickness continued for two days after the first operation, and for three days after the second. The third operation lasted for one and a half hours. Chloroform which had been kept with slaked lime in it and filtered before use was employed. The patient, although much feebler through disease, remained well during the operation, and there was no sickness for twelve hours, when he suddenly became sick, but this passed off in a short time.

CASE 2.—A woman had been under chloroform four times and she was invariably very sick while coming out and afterwards, the sickness lasting for twenty-four hours or more. When chloroform treated with lime was used, on coming out of the anæsthetic sickness occurred for a few minutes only.

CASE 3.—A man was under chloroform four times. On the first and third chloroform as supplied by the druggist was used, and it was not more than twelve days old. After both operations there was severe sickness, lasting for thirty-six hours. On the second and fourth administrations freshly distilled chloroform was employed with no sickness resulting.

As a matter of experience it was found that freshly prepared chloroform is more reliable as an anæsthetic, and is less likely to produce sickness during or after administration, and the risks of anæsthesia are probably increased by the decomposition of chloroform when kept for any considerable time exposed to air and light. Even with fresh, chloroform sickness may occur if the patient is allowed to come out during the operation, but the quantity of acrid mucus is very small in amount as compared with what is seen when older chloroform is given. Perfectly pure chloroform is said to be a much less stable body than chloroform containing alcohol. As an instance of the instability of pure chloroform it may be mentioned that a sample left in a half-full stoppered bottle from July till October, 1896, smelt as pungent as hydrochloric acid, gave with baryta water a copious precipitate of carbonate, and was absolutely irrespirable.

Glasgow.

UNUSUAL CASE OF CARCINOMA OF THE BREAST.

BY W. S. CRAWFORD, B.A. CANTAB., F.R.C.S. EDIN.,
SENIOR ASSISTANT SURGEON, LIVERPOOL CANCER AND SKIN HOSPITAL.

IN the beginning of September, 1892, a fresh-complexioned, thin woman, aged thirty-one years, came under my care at the Liverpool Cancer and Skin Hospital. She was unmarried. Some months before admission the patient had received a blow on the right breast which caused her a good deal of pain for some time. She did not notice any swelling. Three months after receiving the blow she found a lump in her right breast about the size of a marble, situated above and to the outer side of the nipple; it was freely moveable and quite free from pain. On the patient's admission to hospital, some four months later, the lump had attained the size of a tennis ball. It was very hard and adherent to the skin. The nipple was retracted. The axillary glands were hard and enlarged. It was a well-marked scirrhus of the breast. The breast was removed and the axilla cleared. The sections were found to be hard, spheroidal-celled carcinoma. On Nov. 25th, 1896 (four years later), the patient again presented herself at the hospital. Her general appearance was but little changed. She gave a history of having wrenched her right arm and hurt her right breast eight months before. There was no lump of any kind then. The present local condition is as follows. There is a large oval-shaped tumour distending the skin, which is ulcerated in a circular patch two inches in diameter over the most prominent part of the growth. The ulcerated area is concave; it bleeds readily on the slightest interference. Towards the axilla a flattened portion of growth is felt extending from the main mass and firmly adherent to the pectoral muscles, but not certainly to the bony wall of the chest. About two inches lower down than the main mass there is a small area somewhat discoloured about the size of a penny, intensely hard, and two or three small nodules in the immediate neighbourhood, evidently recurrences in the superficial lymphatics. The right armpit is clear, but the left contains a mass of enlarged and undoubtedly cancerous glands. The main recurrence commenced, according to the patient's description, immediately above the old cicatrix. It now involves the scar and the tissues on each side.

Remarks.—Her father's sister died from carcinoma of the breast which followed an injury. The patient's primary growth, as well as recurrence, followed definite injuries. In so young a patient it was pleasing to find so long an immunity period—three and a half years.

Liverpool.

NOTE ON A CASE OF RUPTURE OF THE HEART.

BY CECIL ROBERTSON, M.B., C.M. ABERD.

CASES of rupture of the heart from external violence without penetration of the chest are by no means of frequent occurrence. Erichsen, in the last edition of his "Science and Art of Surgery," says that Gamgee was only able to collect twenty-two published cases. In the majority of these cases the blow was directly over the cardiac region. For two reasons I think the following case is not unworthy of being recorded—(1) the small number of recorded cases; and (2) that the heart in this case was ruptured by indirect violence.

An apparently healthy man aged forty-nine years opened the door of a railway carriage just as the train commenced to move and fell somewhat heavily on his left shoulder. On being asked by the officials if he had hurt himself he replied "No" and proceeded some two or three hundred yards from the station to his work, where he died within three-quarters of an hour of his falling from the train. On post-mortem examination I found the pericardium intact but distended with a mass of blood-clot and fluid blood. In front of the left auricle was a laceration one and a quarter inches long through which a piece of clot protruded. The wall at the seat of the laceration was considerably thinned; both ventricles were very much hypertrophied, the whole organ weighing 22 ozs. Beyond a slight abrasion over the right knee there was no external evidence of any injury, and there is little doubt that the cause of the rupture was the violent impact of the left shoulder on the platform.

Southfields, S.W.

A Mirror

OF

HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

RADCLIFFE INFIRMARY, OXFORD.

A CASE OF SUPPOSED PASSAGE OF THE STOMACH THROUGH A RENT IN THE DIAPHRAGM INTO THE PLEURAL CAVITY, THE RESULT OF AN INJURY; RECOVERY.

(Under the care of Mr. A. WINKFIELD.)

ESCAPE of the contents of the abdomen into the pleural cavity in consequence of injury of the diaphragm is a very rare condition, the symptoms produced by such escape being well exemplified by the careful report of this case. Such hernia (as it is, perhaps, wrongly called) is usually without any proper sac, although it may push some partially-ruptured pleura in front of it, and is nearly always on the left side. The injury to the diaphragm may be caused by a stab which has penetrated the chest wall, as in cases recorded by von Horock¹ and Pestemski,² the latter of whom successfully sutured the opening in the diaphragm after returning the protrusion, the wound of the chest wall having been enlarged; or more commonly a rupture of the muscular tissue is caused by a buffer accident, and the protrusion into the chest follows immediately. That such injury is not by any means immediately fatal, though producing profound disturbance at the time and troublesome symptoms later, is shown by the cases of Jacobsen³ and Farwell.⁴ Both patients ultimately died from intestinal obstruction the direct result of strangulation, but this did not take place until eighteen and sixteen years afterwards. Both Nauman⁵ and O'Dwyer⁶ have operated unsuccessfully for diaphragmatic hernia; the former was unable to replace the escaped contents of the abdomen after operation from the abdomen in consequence of adhesions; the latter, who opened the chest expecting to find an empyema, resected parts of the ninth and tenth ribs, reduced the hernia, and sutured the opening, but the boy, aged three and a half years, died six hours later.

A boy, aged five years, was admitted into the Radcliffe Infirmary under the care of Mr. Winkfield with the history that he had fallen with a heavy iron gate upon him. He was collapsed and cyanotic, and some brandy-and-water was administered by the mouth. The left side of the chest was almost motionless and was tympanitic in resonance; it was at first supposed to be pneumothorax, but an exploring

needle passed in the fifth left interspace posteriorly drew off brandy-and-water instead of air, as was expected. There were some bruising and tenderness on the lower part of the right side of the thorax; the breathing on that side was loud and exaggerated; the left side moved but little in respiration. At the apex there were dulness and tubular breathing; below the left apex there were tympanitic resonance and distant metallic tinkling. Posteriorly there was some slight dulness with distant breath sounds. The heart dulness was obliterated; its sounds were most distinct above the sixth interspace on the right of the sternum, where its beat could be felt. Upon giving him liquids to swallow distant metallic sounds could be heard in the left half of the chest. For some three days after admission he was in a state of collapse, he could not sit up, there was marked dyspnoea, and upon any slight exertion he became cyanotic. After a few days he began to improve generally, but the condition of the chest remained the same; he complained of severe pain in his left leg and at the back of the knee, but no injury could be felt in that region, and the hip upon examination was evidently free from injury or disease. He had lost flesh a good deal, but was now (Oct. 6th) able to get about without much dyspnoea, and he took food without pain; the physical signs of the condition of the chest remained much as before. There has been no material rise of temperature throughout the case.

Remarks by Mr. WINKFIELD.—The patient was lately shown before the Oxford Medical Society, when several gentlemen present examined him and agreed that the above diagnosis was probably the correct one. I mentioned two cases which I had previously met with. One was that of a blacksmith who over-reached himself when striking a blow with a heavy hammer, and was brought to the infirmary suffering from severe pain in the upper part of the abdomen. After lying quietly in bed for a few days he was suddenly seized with vomiting and became collapsed and died. Upon post-mortem examination there was found a rent in the left side of the diaphragm; the stomach, spleen, and portion of the large intestine had passed through the rent into the pleural cavity. The second case was that of a boy who had been squeezed between the buffers of railway waggons. He was admitted soon after the last case. His aspect and condition were so like those of the last patient that attention was called to them. Upon examination a very similar condition to that of the boy whose case is related above was found. The patient remained in the infirmary for some weeks and then, leaving the hospital, he was lost sight of.

NORFOLK AND NORWICH HOSPITAL.

A CASE OF DEATH FROM HÆMORRHAGE FOLLOWING OPERATION FOR TONGUE-TIE; NECROPSY.

(Under the care of Mr. S. H. BURTON.)

FOR the notes of the case we are indebted to Mr. Hamilton A. Ballance, house surgeon.

A male child was born after a natural delivery at 5 P.M. on Dec. 21st, 1896. The mother was attended by a midwife temporarily employed by the Lying-in Charity of Norwich, though she had not obtained its certificate. About an hour after the birth the midwife said that the child was tonguetied, and using a sharp-pointed pair of scissors she proceeded to liberate it. She did not notice bleeding at the time of the operation, but on the evening of the same day blood was observed by the friends to be issuing from the child's mouth. At noon the next day (the 22nd) as the bleeding continued the father went to the midwife's house and fetched her to the case. The woman told the parents that the child was all right and that there was no need to be frightened. On this day the child passed dark blood by the bowel. The hæmorrhage did not cease and the midwife was, therefore, again fetched on the evening of the following day. She then washed the mouth and the face of the child with warm water. The father requested that a medical man should be called in, but the midwife said that it was unnecessary and that if she was to blame she would take the responsibility. Eventually, however, she took the child herself to a medical man, who, after examining him and giving directions to the friends as to treatment, recommended that he should be taken to Mr. Burton. Mr. Burton found arterial bleeding going on in the anterior part

¹ Sajous: *Annual of the Universal Medical Sciences*, 1888, vol. ii., 135.

² *Ibid.*, 1890, vol. iii., C. 50.

³ *Ibid.*, 1894, vol. iii., C. 58.

⁴ THE LANCET, June 30th, 1888, p. 1294.

⁵ Sajous, *loc. cit.*, 1889, vol. iii., B. 62.

⁶ *Ibid.*, 1894, vol. iii., C. 59.