successive lactations, systematic series unfortunately are by no means plentiful.

Personally, I am unable to record my results owing to errors having occurred in the duration of the period of rest prior to the withdrawal of the milk. By very many observers it has been clearly shown that great variations exist in the normal composition of milk, not only in the milk of different mothers, but also in that of the same mother at different times. Thus it is found that in the course of one lactation the milk varies in composition according to the period of the lactation, the changes consisting in a fall in the amount of the proteids and salts, and a rise in the sugar and fat (Pfeiffer). Variations in the amount of proteid and fat present are wide, but whereas the fall in the amount of proteid is very distinct, the amount of fat varies but little according to the period of lactation, while the proportion of sugar is throughout very constant (Holt). Variations in the amount of fat occur with each nursing, the later milk being constantly found richer in fat than the earlier, and the proportion sinking again during the period of rest; while it has also been found that fat is more plentiful when the infant is only partially breast-fed than when it is entirely on the breast (Reyher). Holt states that the age of the mother has no constant influence on the composition of her milk, nor has the number of previous pregnancies, except such influence as results from the effect upon her general health. In this latter connexion Sharples and Darling, as the result of 117 analyses of human milk, conclude that "During the first lactation the milk on the average is weaker in fat and proteids, but stronger in sugar than in subsequent lactations. These differences may or may not be due to age."

That the exact changes, if any, produced in the composition of milk by advancing age and successive lactations have not, so far, been determined is clear, observers, however, agreeing that an unsatisfactory condition of maternal milk does exist, that the undue prolongation of lactation and rapidly-succeeding pregnancies conduce to this condition, and that this unsatisfactory condition can lay the foundation of rickets (Hench, Holt, Thomson.) The mothers of infants in the category I am now considering may be said to fall into this class, and the conclusion is arrived at that their milk was not in every case or in all respects a satisfactory food for the children.

While the disadvantages and insufficiencies of hand-feeding are patent to the least skilled eye, the beneficent effects of maternal nursing are correspondingly striking. Every day we meet with weakly, ill-nourished women suckling a strong healthy infant, and the idea is fostered that from breast-nursing nothing but benefit to both mother and child accrues. Women of the working class who can and do nurse, very frequently nurse for a period of time altogether out of proportion to the needs of the infant. The number of such nursing mothers undoubtedly is distressingly small, but of those who do nurse the number who do so excessively long is distressingly large. No one questions that, where practicable, maternal nursing, within limits, is the one and only procedure for the good of both mother and child; but in order to secure a continuance of this invaluable supply of nourishment it is imperative that it be utilized in moderation, with due consideration and avoidance of the undoubted evils resulting from its undue prolongation or the condition of an overlapping pregnancy, such conditions foreshadowing a diminished value of the milk in future lactations, and consequently forming a serious handicap in the natural nutrition of later infants.

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THE late Mr. Hugo Harpur Crewe, of Brockenhurst, whose will has now been proved, bequeathed £100 to the Derbyshire Royal Infirmary, £50 to the Devonshire Hospital, Buxton, and £25 to the Children's Hospital, Derby.

THE MOSQUITO WAR.—A Bill has been introduced into the Senate in the State of New Jersey providing for the appropriation of £14,000 per annum for five years to be applied to the extermination of mosquitos in the marshes of the State.

PLEURITIC EFFUSION TREATED WITH ADRENALIN BY THE PRELIMINARY INTRASEROUS INJECTION METHOD.*

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THE following case was treated at first by a modification of Sir James Barr's method, which combines the evacuation of fluid with its replacement by air; but in this instance the air was not injected, but allowed to be drawn in by thoracic suction, and the subsequent injection of solution of adrenalin was not practised. The secondary effusion which ensued was treated with "preliminary intraserosus injections" of adrenalin with a view to eventual paracentesis, but the latter was not performed as the fluid underwent complete absorption.

A boy, aged 10½, was admitted to the Belgrave Hospital on June 7th, 1905, the eighth day of his illness. He was known to have been suffering from left pleuritic effusion for the last five days, and to have been quite well previously. He had some dyspnoea, and was slightly cyanosed; the temperature was 102°, the respiratory rate 48 per minute, and the pulse accelerated.

Fig. 1.—Physical signs on June 7th:—Anteriorly: Prominence of the left side of the thorax, with dullness from apex to base, and displacement of the heart. Posteriorly: Dullness except at the extreme apex, which presented a few slight crepitations, and in the right side of the chest Grocco's triangular paravertebral dullness (indicated in black).

Physical Signs.—There was considerable cardiac displacement, and a ventricular beat could be felt in the second right intercostal space, in the nipple line. At the left apex the resonance was diminished and some crepitations were heard. The whole of the rest of the left chest was dull, with absence of breath sounds. The convexity of Damoiseau's line rose to the level of the second dorsal spine, and a "Grococo's triangle" of paravertebral dullness could be mapped out from that level downwards to the right base.

Paracentesis by Siphonage with Admission of Air.—As the patient was orthopnoeic and slightly cyanosed, paracentesis was performed without further delay on June 8th, under a light anaesthesia, by siphonage, with all due precautions. An ordinary trocar and cannula with a draw-off tube attached were introduced at the seventh interspace in the anterior axillary line for the escape of the fluid, whilst a second trocar and cannula introduced at the third interspace permitted the entry of aseptic air. This air was derived from a Wolff's bottle, and was filtered by passing through a glass tube containing cotton-wool, which was included with this object in the india-rubber tubing connecting the bottle and the chest. The Wolff's bottle was connected on the other side with a supply of water to replace by siphonage and without any driving pressure the air which escaped into the chest. The volume of air admitted into the chest was determined by the difference in the levels of the water in the bottle before and after the operation. In this way it was ascertained that there was less air introduced than fluid removed, 54 oz. of fluid having been withdrawn and only 477 c.cm. of air admitted into the pleura.

After the Operation.—Grococo's triangle had disappeared, but the heart had not moved appreciably back from its abnormal position. The patient felt relieved, and breathed more easily after he recovered from the brief anaesthesia. There was no rise in temperature, and the temperature curve, which was already subsiding, soon reached the normal level.

Relapse of the Effusion.—The patient was none the worse for his pneumothorax, and from day to day he made satisfactory progress. But it soon became evident that the fluid was reaccumulating instead of disappearing. Thus four days after the operation splashing could be heard, and Grocco's triangle was again present, its summit being now on a level with the eighth dorsal spine.

* Read before the Society for the Study of Disease in Children, on December 15th, 1905.

Fig. 2.—Physical signs on June 12th:—Anteriorly: Impaired resonance below the fifth rib; bulging and hyper-resonance above. Posteriorly: Dullness and splashing below the level of the seventh spine; "Grocco's triangle" at the right base. The heart was still displaced.

Intravenous Injections of Adrenalin.—On June 17th, as the level of the fluid continued to rise, Dr. Ewart introduced into the chest an intravenous injection of 10 minims of solution of adrenalin (1 in 1,000). On this date the heart had not returned to its normal position. The impairment of note and splashing were still present, and the convexity of Damoiseau's line and the apex of Grocco's triangle were on a level with the sixth dorsal spine. But the air entry was better, and the vesicular murmur was more distinct.

Fig. 3.—Physical signs on June 17th:—Anteriorly: Dullness at the left base. Posteriorly: Dullness, splashing, and "Grocco's triangle" extend upwards to the level of the sixth dorsal spine. The heart still displaced.

On June 20th a second injection was given. The heart had not returned to its normal position, and the fluid had continued to rise.

On June 22nd a third injection was given. The apex of Grocco's triangle and the convexity of Damoiseau's line were as high as the fourth dorsal spine. The heart had partially returned to the left side of the sternum.

Fig. 4.—Physical signs on June 22nd: The heart had begun to move leftwards. Some dullness at the left base rising posteriorly together with "Grocco's triangle," to the level of the fourth dorsal spine. Some splashing was still audible.

On June 26th a fourth injection was given. Meanwhile his general condition had improved greatly. The heart had returned to its normal position, and the area of dullness did not extend higher than the ninth dorsal spine. There was no splashing to be heard, the last remnant of air having apparently been absorbed. He was gaining flesh rapidly.

Fig. 5.—Physical signs on June 26th: The heart had returned to its normal position. No splashing could be heard; but dullness and a "Grocco's triangle" were made out below the level of the ninth dorsal spine.

A fifth and final injection was given on June 28th. The child was then convalescent. There was only a slight impair-

ment of the percussion note remaining at the left base, and Grocco's triangle of dullness had disappeared. He made an uninterrupted recovery, and went to a convalescent home on July 8th in a satisfactory state of health; and he has since done well.

REMARKS.

The interest of the case lies in the results of the two separate methods of treatment employed. As regards the first method, it should be mentioned that special care was taken to evacuate the fluid completely, by altering the patient's posture during the operation, a result probably not attainable by the airless methods. The chief facts which stand out are (1) that as previously well known, the introduction of filtered air is harmless when this is practised without any pressure; (2) that it is possible for the lung to re-expand perceptibly in these circumstances before the mediastinal displacement undergoes any correction; (3) that therefore, in spite of the persistent cardiac displacement, the substitution of pneumothorax for hydrothorax confers a respiratory advantage and an appreciable measure of comfort; (4) that at a relatively early stage of the effusion (fifth day in this instance) the artificial pneumothorax does not prevent a reaccumulation of fluid, although it is probable that it may delay the secondary effusion.

The results of the "preliminary intravenous method" are equally instructive. (1) It is a harmless way of administering suitable doses of adrenalin; but attention must be drawn to a precaution which is part of this method, namely, that the injection should only be practised when, after inserting the hypodermic syringe (or in the adult the exploring syringe) containing the adrenalin, some of the effusion can be drawn into it by further drawing out the piston. This gives us the assurance that the adrenalin will to a certainty be injected, not directly into the highly-absorbing tissues of the lung or pleura, but into a fluid collection, where it will be further diluted. (2) An injection of 10 minims only, and its repetition did not succeed in immediately stopping the progress of the secondary effusion. (3) It is noteworthy, however, that after the second injection the rise in the level of dullness in the back was a local sign and did not correspond to any proportionate increase in effusion, for the improved breath sounds indicated progressive pulmonary re-expansion in front, and the heart was beginning to return to its normal position. (4) The reabsorption of the fluid proceeded rapidly under a continuance of the same treatment, which was originally undertaken as merely "preparatory" to paracentesis. (5) Assuming—and in the absence of demonstrable evidence we can only assume—that the adrenalin, which was certainly absorbed with the fluid, had any share in promoting its absorption, it would appear that the preliminary injection of adrenalin advocated in this modification of Sir James Barr's method would favour the more complete success of an ordinary paracentesis to be performed a day or two later. (6) That most probably in the more favourable set of cases the same result might be achieved as in this case—namely, by one or two repetitions of a somewhat more liberal "preliminary intravenous injection" the performance of paracentesis might be entirely avoided.

THE TREATMENT OF BRONCHIAL FISTULA.

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On March 16th, 1905, I was consulted by a young lady suffering from bronchial fistula. She was barely 22 years of age, and contemplating marriage. The fissure was always discharging, damaging her dress, and debarring her from wearing evening dress. I had to tell her that an operation would probably be necessary, might not be successful, and would in any event leave a scar to a greater or less extent. It however occurred to me to try the constant current, and I named it as a possible way out of the difficulty, but gave her and her parents clearly to understand that I had never heard of a case being cured by it.

The fistula extended from the origin of the sterno-mastoid into the clavicle, at which point it was discharging, and ended at or about the level of the upper border of the hyoid bone. There was no tumour in connexion with the fistula or anywhere in the neck.