weakness and the great wound opened by the thermo-cautery, the closing of which would naturally require a long time. I saw the man again after he was completely healed of his wound. He felt no further effects of his illness.

CASE 2.—The patient was a man, aged 27 years, a butcher at St. Paul. On the evening of Oct. 2nd, 1903, I was called in haste by Dr. F. Buscaglia to treat with serum a serious case of malignant pustule which he was then attending. The patient presented in the middle third of the flexor surface of the right forearm a characteristic pustule of the size of a two-centime piece with vesicles and surrounded by a broad violet zone. The whole of the forearm was much swollen; the epitrochlear glands were swollen and painful and in the right axilla was a swollen gland of the size of a pigeon's egg and very painful to the touch. The patient's general condition was somewhat serious. The pulse was frequent and irregular and the temperature was 103° F. The patient was very restless and complained of a burning sensation where the pustule was and of a sharp stabbing pain in the right axilla. He had passed very little urine during the preceding 24 hours; the urine was slightly albuminous; it contained no casts. The pustule was cauterised with the thermo-cautery, after which I made an intravenous injection of 80 cubic centimetres of anti-anthrax serum and a subcutaneous injection of 30 cubic centimetres in the abdomen. Preparations made directly with material taken from the pustule showed the characteristic anthrax bacilli. In the gelatin plate cultures, made with blood, appeared typical colonies with an average of seven colonies per cubic centimetre. This bacillus was characteristically sensitised and agglutinated by anti-anthrax serum; it was virulent when injected into guinea-pigs. On the 3rd he was very restless during the first hours of the night and perspired profusely. Towards morning he fell asleep and slept soundly for nearly four hours. His general condition was good; his pulse was regular, his temperature was 98·5°, and his kidneys acted freely. There was no albumin in the urine. Examination of the blood revealed no bacteria. The œdema of the affected arm was considerably diminished and the glands were almost normal in size; the axillary gland had diminished in size and was painless to the touch. Having obtained so sudden and decisive an improvement I thought it unnecessary to continue treatment unless anything unforeseen should again render it necessary. On the 14th the condition was excellent; he slept well; the œdema had almost completely disappeared and the glands were almost normal. The rapid improvement continued and after four days the man went back to work.

Examination of these cases clearly proves that, although isolated, they give stronger support to treatment with anti-anthrax serum than is to be drawn from a long series of cases of simple external anthrax successfully treated with anti-anthrax serum at the outset under conditions which leave it doubtful whether the usual local treatment destructive of the original seat of infection might not have been of itself sufficient to arrest the progress of the disease. In both the cases described the clinical and bacteriological examination confirmed the diagnosis of exceptionally severe general anthrax. In both cases, but especially in the first, the serum was used when the signs of serious general poisoning were chiefly apparent in the œdema which had spread far from the primitive seat of infection, in grave disturbances of the circulation, and in the evident lesions of the kidneys. Moreover, in the first and without doubt the most serious of the two cases the action of the serum was rapidly decisive when free cauterisation of the primitive seat of infection had completely failed. The double action of the anti-anthrax serum, antibacterial and antitoxic, is plainly evident, its antibacterial power shown by the immediate arrest of the progressive invasion of the organism by the bacillus, and its antitoxic power by the sudden improvement in the general condition of the patients and by the complete *restitutio ad integrum* of the renal function immediately after the use of the serum. I would insist on the necessity of treating such severe cases energetically by injecting into the veins large doses of the specific serum. For while, on the one hand, no justifiable opposition can be made to the treatment when carried out with proper caution, in the practical result its antitoxic action as shown pre-eminently in the first of the above cases was so immediate as to suggest rather a rapid neutralisation of the toxins circulating in the system than a stimulating action of the specific principles contained in the serum on the natural defensive powers of the organism.

Bologna.

CASE OF REMOVAL OF THE APPENDIX ON A ROYAL MAIL STEAMER AT SEA; RECOVERY.

By T. H. MACFIE, M.B., C.M. EDIN.,
SURGEON, ORIENT PACIFIC LINE.

OUR chief engineer, aged 44 years, was taken ill on May 10th, 1904. We were then four days out from Suez and Colombo, our next port of call, was distant six days. He complained of pain in the bowels and felt sick and disinclined for food. He had a normal pulse and a temperature of 99° F. The bowels had moved during the day and he had not vomited. There was tenderness in the right iliac fossa but nothing could be felt. He had been liable to attacks of pain in this region for some years and when a junior engineer he used to seek relief by leaning against some hot pipes in the engine room. These attacks had become gradually more severe; the last one, nearly two years ago, necessitated his being in bed for over a week. There was a history of two attacks of typhoid fever. On the 11th he complained of more pain. The morning temperature was 99·5° and the pulse was 100 and of fair strength. There were more tenderness in the right iliac region and some resistance on pressure but no tumour could be felt. The percussion note was clear and a rectal examination disclosed nothing. During the day he was given two three-grain calomel powders and later two rectal injections of warm water, after which the bowels acted. Dr. Milne of Sydney, a passenger by the steamer, kindly saw him with me at night. The temperature then was 103°, the pulse was 108, and the local condition remained unchanged. We agreed as to diagnosis and decided that operation was not then indicated.

We saw the patient again together on the morning of the 12th. He had passed a restless night and looked worn and anxious. The temperature was 104° and the pulse was 110 and weak. During the night he had had an attack of shivering and he had vomited twice. The local tenderness had not increased; if anything there was more resistance on pressure but still no swelling could be felt. We now advised an operation as the only means of affording relief and having obtained the patient's consent we made the necessary arrangements to have it done in the ship's dispensary at 2 P.M. We were then in latitude 10.20 N., longitude 59.30 E., distant some 1222 miles from Colombo. Excepting an atmospheric temperature of 92° the weather conditions were favourable and promised to remain so. Dr. Milne gave the anæsthetic (equal parts of chloroform and ether) and the chief steward (Mr. Rigden) assisted at the operation. The abdomen was opened by an incision four inches long, having for its centre McBurney's point. The omentum was not adherent and only a few adhesions were found round the cæcum. The appendix was found behind the cæcum with its free end pointing towards the umbilicus. It was two and a half inches long, very much inflamed, and its terminal portion was distended. About its centre there was a patch of yellow necrosed tissue of the size of a pea. It was packed round with sterilised gauze, ligatured half an inch from its seeming base, and cut off. In doing so some thick offensive material escaped on to the gauze packing. On examining the stump afterwards a portion, firmly adherent to the cæcum, was discovered. This was separated, a fresh silk ligature was applied, and this portion was then removed. The stump was touched with pure carbolic acid and the peritoneum was stitched over it with a fine silk suture. The abdominal wound was closed with three layers of sutures and a cyanide gauze dressing was applied. At night the temperature was 101° and the pulse 108 and he seemed comfortable.

The patient had severe chloroform sickness for three days after the operation; ice, hydrocyanic acid, chlorotone, and creasote were tried without any benefit resulting. Rectal feeding was resorted to and this, with hypodermic injections of morphine (one quarter of a grain) and atropine ($\frac{1}{150}$ th of a grain) kept the sickness in check. The temperature on May 13th was 98°; it reached 100° on the 15th, after which it fell to normal. The bowels acted on the 17th after the administration of three grains of calomel by the mouth and two rectal injections of warm water and turpentine. The wound was dressed on the 19th when two stitches were removed. On the 21st some discharge was coming from the

wound where a stitch had been removed. On the 23rd all the stitches were removed; the discharge was less in amount and the wound looked healthy. It was dressed daily until June 3rd when it had quite healed.

I take this opportunity of thanking Dr. Milne for his ready coöperation during the critical period of the case, for without his assistance an operation would have been impossible.

A NOTE ON HOME-MADE "HUMANISED" MILK.

By C. BEAUCHAMP HALL, F.R.C.S. ENG.,

DISTRICT SURGEON TO THE CITY OF LONDON LYING-IN HOSPITAL.

VARIOUS methods have been from time to time brought forward and advocated for the rearing of artificially fed infants with more or less success. The following method of making home-made "humanised" milk, provided the instructions are properly carried out, has proved extremely satisfactory in my hands. I think the method is worth recording not only on account of its success but because every year the number of infants who have to be reared in this way seems to be on the increase. In a very small minority of these cases the mother has no milk or a very small quantity, or else it disappears on her resuming her everyday life. In a few cases breast-feeding has to be forbidden on account of breast troubles, anæmia or debility in the mother, or an inferior quality of milk. Very frequently, however, I find that the mother will not nurse her infant for one reason or another. It is our duty to endeavour that every infant shall develop into a healthy child as the result of our advice in this direction, whatever the cause may be of its being denied its natural food. For some years I have employed one or another of the methods hereafter described with slight modifications in practice. The results have been good provided the few simple rules are carefully followed.

The following are my reasons for preferring a home-made article. 1. Dairy-made "humanised" milk may after manufacture presumably become as easily contaminated as ordinary cow's milk, whereas if we start with sterilised cow's milk and guard against contamination we are certain of a pure article at the finish. Moreover, contamination is far more probable at a dairy than at home, if for no other reason because the process must pass through several hands. 2. We cannot be certain of the composition of dairy-made "humanised" milk or of the constancy of that composition and in my opinion the latter has an important bearing in cases of failure. 3. On several occasions I have had cases of diarrhoea following the consumption of dairy-made "humanised" milk which have ceased on substitution of the home-made article. 4. Expense in some cases has to be taken into consideration. Dairy-made "humanised" milk costs 8d. a pint. The home-made variety in addition to the ordinary price of cow's milk costs about ½d. a pint and occupies about 20 minutes a day.

As I have said before, mother's milk is the natural food of infants and it follows that as close an imitation of this natural food as we can produce is the most rational substitute for it. Synthetically it is perfectly easy to mix caseinogen, fat, sugar, and the other constituents of milk, together with water, and imagine that milk is thus obtained; but—and this is one of the greatest faults of patent foods—there is an indescribable element lacking which no chemist or physician can manufacture. I refer to the natural element of freshness which gives to breast milk in a healthy mother preventive power with regard to rickets and infantile scurvy. Cow's milk, along with other natural foods, contains this fresh element and therefore every food for the artificially reared infant must have cow's milk as its basis. The artificially reared infant starts at a disadvantage compared with the breast-fed infant and the substitution of any other basis and absence of this fresh element mean sooner or later the production of anæmia, rickets, or scurvy. A bad start during infancy will always leave a lasting mark in the after race for life.

Until three years ago I was in the habit of prescribing dairy-made "humanised" milk, but as I have stated above cases of diarrhoea distinctly traceable to this food occurred,

and as a few of the babies were of the flabby, anæmic type, without definite rickets, I sought out some different process of manufacture. Being convinced absolutely that in theory "humanised" milk was far and away the best food, it was in the practice—i.e., the manufacture of it—that I surmised the fault lay. My first object was to obtain a pure and trustworthy preparation of rennet and having succeeded in doing so to standardise it. My object in standardisation was to save unnecessary expense, owing to the difficulty in obtaining an absolutely pure article. The rennets on the market are mostly extremely variable preparations and this applies especially to the liquid preparations. Of these, sometimes as much as three or four times the amount is required to curdle a certain quantity of milk as is required at other times. Also, the glycerine with which they are made may not always be pure. Undoubtedly, therefore, a powdered form of rennet is the best. This is purified and standardised. Formerly I used a powder mixed with two grains of bicarbonate of sodium, but now I believe the method is still further improved by making the powder into a compressed tablet, thus insuring accuracy. Each tablet, besides containing sufficient rennet to curdle half a pint of milk, contains one and a half grains of bicarbonate of sodium, half a grain of calcium phosphate, and five grains of lactose. The sodium bicarbonate is added to neutralise any lactic acid formation and consequent fermentation that might result in the hot weather. The calcium phosphate is added because rennet, like other ferments, acts better in the presence of a calcium salt, also because of its remarkable action in helping tissue formation in growing children. A certain quantity is present in normal milk and this extra quantity, although small, is beneficial. The lactose is added to make up the deficiency of this substance in cow's milk as compared with human milk. Hofmann advised the addition of 110 grains of lactose to each pint. The necessity of this large quantity is not apparent. When milk is curdled by rennet 75 per cent. by volume consists of whey, the rest being curds. Now whey contains every substance in the milk except fat and caseinogen and therefore it contains lactose. Human milk contains 5 per cent. of lactose and cow's milk 3·8 per cent. (Halliburton). From half a pint of cow's milk we obtain seven and a half ounces of whey, which necessarily contains 3·8 per cent. of lactose. By adding five grains of lactose to seven and a half ounces of whey and 10 ounces of milk a mixture is obtained containing the same quantity of lactose as that quantity of human milk would contain. The deficiency of fat which this mixture would contain (0·3 per cent., Halliburton) by admixture is made up for by skimming the half pint of milk that is to be curdled. These tablets then make a mixture almost identical with human milk and the instructions for their use I have ordered to be inclosed with the tablets.

The directions are as follows:—Boil or sterilise half a pint of cow's milk. Take another half a pint and skim it and add the skim to the first half pint. Crush a tablet and when the skimmed half pint has been heated to 100° F. add the crushed tablet, stir, and keep at about the same temperature for 20 minutes, separate the curd thus produced, and then boil the whey for two minutes. Add this whey to the first half pint and to this mixture add three ounces (six tablespoonfuls) of boiled or sterilised cow's milk. Soak all vessels used in boiling water before and after use. The quantities given in these directions make one pint. Mr. Felthouse of Highbury Park has manufactured the tablets according to my directions.

Compton-terrace, N.

EXTRA-UTERINE GESTATION: A FULL-TERM CHILD REMOVED BY OPERATION FOUR MONTHS AFTER FETAL DEATH.

By GEORGE E. WHERRY, M.C. CANTAB., F.R.C.S. ENG.,
SURGEON TO ADDENBROOKE'S HOSPITAL, CAMBRIDGE.

A HEALTHY woman, aged 38 years, came under my care in Addenbrooke's Hospital with an abdominal swelling of about the size of a pregnant uterus at nine months. The swelling felt firm in some parts and in others cystic or elastic. There was resonance in the flanks. On vaginal examination the os was soft and slightly patulous; there was no firm swelling