Scottish Order, 1936—i.e., fewer than 200,000 viable bacteria per c.cm. and no *B. coli* in 0.01 c.cm.

3. *Methylene-blue Reductase Test*.—The modified test described Wilson (1935) was adopted. To 10 c.cm. of milk in a standard sterile test-tube, 1 c.cm. of methylene-blue solution was added. The tube was fitted with a rubber bung, placed in a water bath at 37° C., and inverted at intervals of 30 minutes.

The standard upon which the quality of the milk was judged was that demanded of "accredited milk" under the English Order, 1936—i.e., the milk must not decolorize methylene-blue within 4½ hours if the sample is taken at any time from May 31 to Oct. 31; or within 5½ hours if taken at any time from Nov. 1 to April 30.

4. *Examination for Tubercle Bacilli*.—100 c.cm. of each sample was centrifuged for 30 minutes at 3,000 r.p.m. The resulting deposit was then resuspended in 5 c.cm. of the supernatant fluid, and the entire bulk injected without further treatment into the inguinal region of a guinea-pig. Eight weeks later, if not already dead, the animal was killed. The macroscopic appearances of any tuberculous lesions present were confirmed by the examination of stained films. All animals were kept in separate cages, and in no instance were lesions of tuberculosis noted other than those resulting from the injection of the milk samples.

Results

Examination for Gross Bacterial Contamination.—The completed examinations by all three tests for cleanliness are summarized in Table I. It will be seen that, irrespective of the test

TABLE I.—Examination of 116 Samples of Retailed Raw Milk by Various Tests for Cleanliness

Test	Result	
	Passed	Failed
37° C. plate-count	61 (53%)	55 (47%)
Presumptive <i>B. coli</i>	55 (47%)	61 (53%)
Methylene-blue reductase	61 (53%)	55 (47%)

used, approximately half the specimens failed to reach the desired standard. The highest proportion of failures—namely 53%—was obtained by means of the presumptive *B. coli* test, which was included as an indication of excretal contamination. Of the 116 specimens examined, 60 were taken during the winter months and 56 in the following summer period. The influence of climatic factors on the condition of the retailed milk is indicated in Table II. Thus during the colder period the

TABLE II.—Comparative Results of Tests for Cleanliness in 60 Winter and 56 Summer Samples of Retailed Raw Milk

	Winter Samples	Summer Samples
1. Failing 37° C. plate-count test ..	12 (20%)	43 (76%)
2. " presumptive <i>B. coli</i> test ..	17 (28%)	44 (78%)
3. " methylene-blue reductase test ..	18 (30%)	37 (66%)

percentages of failures in the plate-count, presumptive *B. coli*, and reductase tests were 20, 28, and 30 respectively. In the summer period these figures rose to 76, 78, and 66. The quality of raw milk could not be correlated with the amount handled by individual retailers.

Examination for Tubercle Bacilli.—In all, 93 of the specimens of raw milk were also examined for the presence of tubercle bacilli, and 19 (20%) were found positive. For interest, it may be noted that 5 of the positive specimens passed all three tests for general cleanliness, 11 failed all three tests, while the remaining 4 failed in one or more test. During the investigation 16 retail shops were visited.

Commentary

These results serve to indicate the continued unsatisfactory condition of raw milk supplies. The proportion of retailed milk of this class varies greatly in different centres, but in the larger towns and cities the tendency is towards a gradual reduction. Nevertheless the untreated product is still widely used in rural areas and in smaller townships. As Griffith and Smith

(1935) have shown, it is in such areas that the incidence of bovine tuberculosis is highest. Little comment is necessary in regard to the demonstration of tubercle bacilli in one of every five specimens in the series examined, save to mention a popular quasi-scientific criticism that pasteurization, resulting in the destruction of any tubercle bacilli present, may remove the stimulus to an acquired immunity. Apart from the absence of any satisfactory scientific demonstration of this possibility, one may quote Bendixen *et al.* (1937), who ask, in referring to the fact that in 1931 about 2,600 persons died from tuberculosis of bovine origin in Great Britain, "What other method of vaccination would be tolerated that exacted such a sacrifice?"

The gross bacterial contamination found in so many of the specimens beyond the limits recognized for the lowest grade of milk under the Milk Orders, 1936, also requires serious consideration. The question at once arises, To what extent has legislation influenced methods of production and distribution? No doubt much has been accomplished by these means, but there is still room for vast improvement. In fact, it must be considered whether the situation can be met only by the immediate institution of compulsory pasteurization. For a reasoned summary of the possible effect of the adoption of this measure the report by Bendixen *et al.* should be consulted. In this report the advantages of efficient pasteurization are adjudged to outweigh any possible disadvantages. A further criticism has been that pasteurization may result in the loss of certain growth-promoting properties of raw milk. Wilson, Minett, and Carling (1937) in a controlled experimental study found nothing to suggest that, for calves, the nutritive value of holder-pasteurized milk was in any way inferior to that of the raw product.

Conclusions

Of 116 specimens of retailed raw milk, the percentage failing the standard plate-count, presumptive *B. coli*, and methylene-blue reductase tests were 47, 53, and 47 respectively; during the summer months the corresponding percentages rose to 76, 78, and 66, respectively.

20% of these specimens contained virulent tubercle bacilli.

Compulsory pasteurization of milk is considered an essential measure.

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Medical Memoranda

Obstructed Labour due to Conjoined Twins

The following case report may be considered interesting enough to warrant publication.

CASE HISTORY

A primigravida aged 25 was admitted to hospital at 5.15 a.m. on Sept. 8, 1941, as an emergency case. The history was that of a normal pregnancy, with an estimated duration of approximately 38 to 39 weeks. Her general health was good. Onset of labour occurred at 2 p.m. on Sept. 6 with slight pains; spontaneous rupture of the membranes took place at 6 p.m. on the 7th. Two vaginal examinations were made at the patient's home by the midwife, the second one at time of rupture of the membranes. The doctor called in on account of delay in the second stage ordered the patient into hospital with a provisional diagnosis of persistent occipito-posterior position.

On admission to hospital her general condition was good, and the blood pressure 128/84. She was a healthy-looking woman of rather robust build. The uterus corresponded in size to that of a normal full-term single pregnancy. Pains were strong and very frequent, and the caput was well visible during pains. The foetal heart was regular: rate 132 per minute.

Progress after Admission and Manner of Delivery.—In view of the normal size of the uterus and also (apparently) of the head distending the perineum, the possibility of twins was not at first considered. Preparations were immediately made for conducting delivery, which seemed to be about to occur forthwith. One hour after admission, however, the woman was still undelivered, in spite of the fact that the head appeared almost

"crowned" during pains. The pains were now very strong, and came on in rapid succession. The foetal heart could be auscultated only with difficulty, but was evidently becoming slower. At this stage the perineum was infiltrated with local anaesthetic and an episiotomy was performed. No further advance resulting from this, Wrigley's short forceps were slipped on and the head delivered (in the occipito-anterior position). The head did not, however, come down fully, and the chin was freed with difficulty. The appearance was as if something were pulling the head back again into the vagina. There was no sign of respiration. By employing head-traction and pressure on the fundus the arms were eventually and with great difficulty delivered. The trunk had not advanced during this manoeuvre, and, the head and shoulders being born, it was clear that some uncommon cause of obstruction must be present. The uterine contractions by this time were becoming dangerously tetanic, so that a speedy delivery was imperative.

General anaesthesia having been started, a hand was passed into the vagina to determine the cause of the obstruction. Foetal limbs were felt in the region of the pelvic brim, tightly gripped by the lower uterine segment. Amyl nitrate was administered—effecting a slight degree of relaxation—but attempts to deliver the trunk again proved unsuccessful. The thorax was now opened and eviscerated. Exploration being thus rendered less difficult, the presence of twins was established by the discovery of a third arm. A little later it was realized that some kind of double monster must be present, as foetal parts could be palpated without a break in continuity from the arm of the second twin on to the trunk of the first. After this, delivery of what proved to be a double monster of the thoracopagus type was effected in a few seconds. The third arm, mentioned above, was pulled down, and after it the fourth, then all four legs in succession. Traction on the legs brought out the buttocks, and lastly came the trunk, shoulders, and head of the second half of the monster.

The third stage was completed in a normal manner. The uterus was well contracted afterwards, and the general condition of the mother was good. The puerperium was quite normal, and the patient was discharged home on the 12th day.

The Specimen.—The two halves of the thoracopagus were approximately equal in size, each having a normally developed head and limbs (see accompanying photographs). They were joined face to face, by soft tissues only, down the front of chest

FIG. 1

FIG. 2

and upper abdomen. The placenta was single, and there was a large common exomphalos, into which ran the single umbilical cord and inside which coils of intestine were visible. The monster weighed 8 lb. 7 oz., and the length of each half was approximately 19 in.

COMMENTARY

Delivery was not difficult after crushing of the thorax of the first twin had allowed adequate access for exploration and diagnosis. Had the monster been larger it would doubtless have needed dividing into its two halves to make delivery possible. The ventral connecting portion, being of soft tissues only, was lax enough to permit some movement of one twin relative to the other. At one point during the manipulations the two heads were stretched out so as to constitute the opposite extremities of the monster, with the two trunks and all the limbs between them.

In this connexion the following description from Whitridge Williams's *Obstetrics* may be quoted: "Thoracopagi are frequently so loosely connected with one another that considerable motility is possible. Indeed, it is not unusual for the two children to present in a different manner. When possible, it is advisable to bring down all four feet at the same time and to effect extraction in such a way that the posterior head is first delivered. In cephalic presentations the head and body of the first child is expelled and the second child is then born very much as in an ordinary twin pregnancy. If, however, the latter presents transversely, its delivery can be effected only by version and extraction."

I am indebted to Dr. James Clark, medical superintendent, and Dr. W. J. Clancy, senior obstetrician, for permission to publish this case.

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A Case of Polyradiculoneuritis

The following case seems to be interesting enough to merit publication.

CASE REPORT

The patient, a ham-curer aged 50, was admitted to the Victoria Infirmary, Glasgow, on Sept. 1, 1941, suffering from symptoms of polyneuritis which conformed very closely to the syndrome first described by Guillain, Barré, and Strohl (1916). The symptoms also closely resembled those described by H. Stuart Barber (1940).

For some weeks before the onset of paralysis he had felt pain in the lumbar region. This was not very severe but was constant, and his doctor had given him some medicine for it. For a few days previous to the paralysis his urine was highly coloured; he described it as being "red." On Aug. 25 he had gone to work and had done his job as usual. The next morning he could not stand. He had no other complaints, apart from the slight pain in his back. He became very restless during that day, and did not sleep on the following night, an irritation of the skin causing him to scratch himself to the point of drawing blood. On Aug. 27 he had palsy of the left side of the face and some twitching of the muscles of the right side of the face.

On admission there was double facial palsy, with inability to close his eyes, definite muscular weakness of both arms, and complete paralysis of both legs. The biceps and triceps reflexes were weak. Abdominal reflexes, knee-jerks, and ankle-jerks were absent. There was no loss of sensation either to superficial or deep tactile stimuli or to pain. Pronounced nuchal rigidity and Kernig's sign were present. Sleeplessness was a marked feature of the acute stage of his illness, but headache was not complained of. The temperature was normal; there was some tachycardia, the pulse rate being about 100 during his first week in hospital, later falling to 80. The urine was normal and contained no blood. Lumbar puncture revealed a normal fluid pressure. The cell count was 4 per c.mm.; protein, 122 mg. per 100 ml.; chlorides, 733 mg. NaCl per 100 ml.; sugar, 84 mg. per 100 ml. The blood leucocyte count was 19,300 per c.mm.; the sedimentation rate was not estimated; the Wassermann reaction was negative.

Dr. Conway, ophthalmic surgeon to the hospital, reported on Sept. 4 that the edges of the left optic disk were blurred, but that the condition was short of true swelling of the disk. The right optic disk was well defined but showed definite nasal pallor. There was no paralysis of the external muscles of the eye.

The patient's condition became worse for a few days after admission, and he was incontinent of urine on several occasions. After a week improvement was noticed and he was able to move the legs slightly. The improvement continued without interruption, and eight weeks after the onset recovery was almost complete, except for slight paresis on the left side of the face, and he was able to walk with assistance. The knee-jerks and ankle-jerks were still absent.

Comment.—The features of this case are: the sudden onset of paralysis affecting the legs, arms, and facial muscles, distribution being symmetrical; the comparatively rapid, and complete recovery; the normal temperature throughout; the tachycardia; and the cerebrospinal fluid under normal pressure, with normal cell count but high protein content. These features are so similar to those described by H. Stuart Barber and others as to suggest that a specific virus might be the cause of this condition.

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