DIAGNOSIS OF CHRONIC DYSENTERY IN SERVICE PERSONNEL

ANALYSIS OF 1,000 SIGMOIDOSCOPIES

BY

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The conclusion of hostilities has led to the demobilization of large numbers of Service personnel, many of whom have served in the Tropics, and an aftermath of recurrent dysenteries and chronic diarrhoeas will be inevitable in a small minority on their return to civil life. It is felt that an analysis of 1,000 diagnostic sigmoidoscopies carried out in the last two years will be of interest. The cases under review were either invalided home with a diagnosis of chronic amoebic or bacillary dysentery or returned to the United Kingdom at the expiration of their tour overseas, and were referred by their station medical officers in England for a sigmoidoscopy in view of their symptoms. In addition, a small group of men who had been invalided from overseas for surgical or other reasons were found to be *Entamoeba histolytica* cyst carriers on routine stool examinations and were sigmoidoscoped. A small series of sprue cases are included, as early in the course of these investigations we were surprised at the number of undetected cases of dysentery among them.

Method

Sigmoidoscopies were carried out in the knee-elbow position without an anaesthetic. The new type plastic sigmoidoscopes were used; these take a 6-volt car bulb light and give an excellent illumination, and a magnifying eyepiece of 4 diameters was invariably used. The question of preparation is a most important one, as any preliminary bowel washout within six hours of sigmoidoscopy, even with normal saline or tap water, produces a hyperaemia that renders extremely difficult, if not impossible, the identification of the "raised crateriform pits" pathognomonic of chronic quiescent amoebiasis; this is the reason why this characteristic pitting is so often missed.

The following preparation was eventually adopted. On the previous day a light lunch and tea are followed by a bowel washout with ordinary tap water at 8 p.m.; no supper is given that night. No breakfast or early cup of tea is allowed on the morning of the examination. A natural call to stool must be obeyed, but the patient should make no attempts at voluntary straining; the bladder should be emptied immediately before examination. A scraping and swab from any suspicious area should be mounted and examined without delay for *E. histolytica*, and a warmed plate of Hynes's modification of Leifson's desoxycholate citrate medium inoculated and cultured. If there is no obvious lesion a culture should be made from a direct swabbing of the bowel wall, and any faeces adherent to the bowel wall examined for *E. histolytica*.

Out of 1,000 cases sigmoidoscoped at this institute only 513 gave positive findings; in the remaining 487 both sigmoidoscopy and laboratory investigations were negative (see Table I). The positive laboratory findings were as follows: Amoebiasis, 215 (mixed amoebic and bacillary dysentery—11); bacillary dysentery, 52 (Shiga 2, Schmitz 3, Sonne 4, Flexner 43); lamblia, 40. In approximately 20% of the 215 amoebic cases the sigmoidoscopic appearances were normal. In bacillary dysentery, out of 52 positive laboratory findings the appearances were normal in 9 cases. (Two cases were not sigmoidoscoped before treatment.)

Amoebiasis

The amoebic ulcers found conformed to the textbook descriptions, but 5 cases of amoeboma were encountered in cases of amoebiasis which had remained unrecognized for long periods. Dyak hair sloughs were present in only 4 cases, and all these were extremely refractory to treatment.

Raised crateriform pits, in my opinion, are pathognomonic of quiescent amoebiasis. They were present in 169 patients, in 78 of whom *E. histolytica* were found in the stools. The crateriform pits are circular in shape, from 1 to 2 mm. in

diameter, and are raised about a millimetre above the surrounding mucosa. In order to recognize them it is essential that no bowel washout be administered for at least six hours before the examination, as the resultant hyperaemia caused by even so bland a fluid as normal saline will completely obscure them. A good description of these pits has recently been published by Cropper (1945). My only criticism of his excellent article is that I consider a half-strength soap-and-water enema given six hours before a sigmoidoscopy absolutely contraindicated by the resultant hyperaemia. It is usually impossible to find *E. histolytica* in scrapings taken directly from the pits, owing to the amoebae lying dormant deep in the submucosa, but their presence calls for repeated and persistent search in the stools for cysts. I do not hesitate to treat cases showing this characteristic pitting even if the stools are negative, as I look upon the condition as positive evidence of quiescent amoebiasis; in the majority these pits completely disappear after specific anti-amoebic treatment, or are replaced by circular depressions in the mucosa. In a small number of cases where these pits have still been present after specific treatment and the stools were negative I have allowed the patients to leave hospital under surveillance, only to find that sooner or later they have had a clinical relapse with positive stool findings. These raised crateriform pits must not be confused with the pseudo-cystic "sago grain" follicles occasionally following bacillary dysentery (Manson-Bahr, 1943). The essential points of the amoebic pits are their regularity, concentric appearance, and the presence of the circular lip of the volcano surrounding a slightly depressed crater. Raised lymphoid follicles must also be distinguished from these crateriform pits; they are evidence of a lymphoid hyperplasia, and again the distinguishing feature is the absence of the central pit. It is difficult at times to be certain whether the pits are still active at the conclusion of treatment; a gentle swabbing giving rise to petechial bleeding at the site of the pits is always suggestive, and a further test is to provoke an artificial diarrhoea by giving the patient salts thrice daily for three days and examining fresh stools passed in the laboratory annexe.

Depressed pits were present in 126 cases. *E. histolytica* was found in 20 of these, and the explanation is that active lesions were probably present higher up in the colon. Pitting is frequently seen in healed bacillary dysentery cases (Hamilton Fairley and Boyd, 1942); but here it is more irregular in shape and size, is tessellated, and lacks the circular uniformity of the pitting in amoebiasis, which has been aptly described as "pig-skin pitting," and is, in my opinion, evidence of healed amoebiasis.

Symptomless Cyst Carriers.—It is the practice in R.A.F. hospitals for all patients who have been invalided home from overseas to have a complete blood count and three stool examinations; as a result of this 58 symptomless cyst carriers were detected. A sigmoidoscopy was carried out before starting treatment, and in 16 cases typical crateriform pits were seen. In one case, in addition to active pitting, a small superficial ulcer some 2 mm. in diameter was present on the anterior wall of the rectum, although the patient categorically denied any symptoms referable to the intestinal tract. It is assumed, in the 42 cases in which the sigmoidoscopic appearances were normal, that lesions were present out of range of the sigmoidoscopy.

Complications of Amoebiasis

Amoebic Abscess.—Ten cases occurred in this series, of which 8 developed overseas. In 2 of the latter a spontaneous rupture of the abscess into the general peritoneal cavity was diagnosed only at operation, and in both the abscess was in the left lobe of the liver.

Amoebic Hepatitis.—In a total of 60 cases only 4 developed in England. A moderate leucocytosis was found to be of great value in the differential diagnosis, and a routine screening of the diaphragm was carried out in every case of amoebiasis. The lowest total white cell count recorded before treatment was begun was 14,200 per c.mm., the highest 27,500; the average for the series was 15,800 with 75% polymorphonuclears. It is recommended that, as this finding is so constant, a total white and differential count should be carried out in every case of amoebiasis to exclude amoebic hepatitis. The

value of this constant leucocytosis was first stressed by Manson-Bahr (1943). Paradoxically the total white cell count may not be raised in a small proportion of cases of amoebic abscess of the liver.

Amoeboma or Amoebic Granuloma.—This may be defined as a hyperplastic localized tissue reaction of the colon, the hypertrophy chiefly affecting the submucosa, which is infiltrated with lymphocytes, histiocytes, and plasma cells, together with *E. histolytica* in localized clusters. The condition is relatively rare, but occurs in a chronic unrecognized amoebic infection and is liable to be mistaken for a neoplasm. The symptoms are usually atypical, and it is felt that, unless surgeons are warned of the possibility of its occurrence, many cases may be operated upon unnecessarily, with disastrous results. Five cases were detected—4 at home, and 1 overseas in an expatriate; in 4 out of the 5 the growth was within the range of the sigmoidoscope. It is in these cases that the protean manifestations of amoebiasis lead the clinician astray, the usual symptoms being a history of intermittent attacks of alternating diarrhoea and constipation associated with the occasional passage of blood, which is as a rule attributed to the concomitant haemorrhoids so often present. On physical examination the finding of a palpable abdominal swelling or a fungating cauliflower mass in the rectum naturally suggests malignancy. In one case, which had remained unrecognized for many months in various hospitals, it was only on taking scrapings from the

reports an incidence of 1% of rectal stricture in chronic amoebic dysentery; possibly a similar aetiology is responsible.

Amoebiasis Simulating Appendicitis.—Four cases of this occurred, where, following an appendicectomy in India, acute amoebic dysentery ensued within 48 hours of the operation, and it is probable that the symptoms were due to an amoebic involvement of the caecum. Perforation of an amoebic ulcer of the caecum occurred in one case which was operated on successfully in India.

Malignant Disease.—Six cases of adenocarcinoma of the rectum or sigmoid were seen. In only one patient had this diagnosis been made overseas, and ironically he developed amoebic hepatitis while convalescing from his colostomy in the United Kingdom. The ages of the patients were 31, 37, 38, 39, 43, 43 years, which is considerably higher than the mean age group of this series—namely, 26 years. In only two cases had *E. histolytica* been found, and all the cases had received repeated courses of treatment for amoebiasis or bacillary dysentery with no effect, in spite of negative laboratory findings. In three cases the growth was within reach of the examining finger, and the pronounced induration present suggested malignancy rather than amoeboma.

Lambliasis

Cysts or free forms were found in only 40 cases, in 18 of which infestation appeared to be giving rise to a chronic

TABLE 1.—Sigmoidoscopic Appearances in 513 Cases with Positive Findings

	<i>E. hist.</i> Positive	Mixed Amoebic and Bacillary Dysentery.	Bacillary Dysentery	Negative Laboratory Findings in England	Remarks
Ulcers (56)	42	1	4	9	Ulcers with Dyak hair sloughs, 4; typical button-hole ulcer, 1; amoeboma, 5
Raised crateriform pits (169) ..	77	1	2	No <i>E. hist.</i> found in 91	Positive <i>E. hist.</i> , 46% " " " " 15%
Depressed pits (126)	17	3	5	101	
Hyperaemia only (78)	25	5	20	28	
Normal sigmoidoscopy with positive laboratory findings (70)	43	1	8		Lamblia in 20. Some of these were cases of double infection with either amoebic or bacillary dysentery. Two bacillary dysentery cases not sigmoidoscoped before treatment

Miscellaneous Findings:

Adenocarcinoma	6
Multiple polyposis	1
Ulcerative colitis (idiopathic)	7
(6 completely negative laboratory findings at home or overseas. Sigmoidoscopy typical.)	

ulcerated growth in the rectum that the diagnosis was made and *E. histolytica* was demonstrated for the first time; six previous examinations of the stools had been completely negative. Stenosis of the lumen of the bowel is often present, but after a course of emetine and penicillin the growth simply melts away and fibrosis and stricture rarely develop. If the response to specific treatment does not lead to the complete disappearance of the growth a dual pathology must be considered and laparotomy is necessary, as in a case recently reported by Naunton Morgan (1944).

Stricture of the Rectum.—This, as a remote complication of amoebic dysentery *per se*, probably rarely occurs. However, one case was seen in this series in which the diagnosis was fully substantiated, though the actual pathology is open to conjecture. The patient, a proved case of acute amoebic dysentery, while undergoing routine specific treatment developed an acute exacerbation followed by the passage of a large slough *per anum*, which on section was shown to be a separation *en masse* of the inner bowel wall; attempts to isolate bacillary dysentery organisms were unsuccessful. Stenosis followed this sloughing, and a colostomy was carried out in India. On his return to the United Kingdom an attempt was made to close the colostomy, but the wound broke down and active *E. histolytica* were found in the discharge and also in a biopsy from the site of the stricture; this in spite of the fact that all stool examinations had been negative for the last three months and he had received intensive anti-amoebic treatment in the interim between the first and second operations. The aetiology here is obscure, but it is possible that the sloughing of the bowel wall was due to a massive secondary bacterial invasion in a mucosa that was the site of extensive amoebic ulceration. Hargreaves (1946)

diarrhoea for which no other cause could be found, and the symptoms disappeared after mepacrine therapy. This surprisingly low incidence (4%) of lambliasis is probably due to the fact that the majority of these patients had received repeated therapeutic courses of mepacrine for malaria. In three instances *Lamblia intestinalis* was found in patients who had been taking suppressive mepacrine in the normal dosage over long periods. Whittingham (1923) in a similar series of 716 cases found 8% of cases of lambliasis, so one can presume that suppressive mepacrine has cut down the incidence.

Bacillary Dysentery

The large number of cases in which the causative organism of bacillary dysentery was cultured from sigmoidoscopic swabbings and from fresh stools in these chronic cases is surprising, especially in view of the disappointing results obtained in the past (Martin and Williams, 1918). These results must be due to the extreme selectivity of the modern media, as in 31 of the 52 cases the diagnosis had never been made overseas. The majority of the cases had been treated for amoebiasis with little benefit. Table II gives the various strains isolated together with the geographical distribution.

The sigmoidoscopic appearances in the bacillary dysentery cases under review were:

- (1) A generalized hyperaemia with excess of mucus.
- (2) A general hyperaemia with a tubular stenosed lumen, the mucosa having a granular appearance and bleeding readily on instrumentation, which is painful. The patient passes some six to eight stools a day. The prognosis is poor in this type of case.
- (3) Superficial oval or circular ulcers up to 1 cm. in diameter; the bowel wall distends readily, and there may be no inflammation

of the intervening mucosa. These lesions are particularly liable to be mistaken for those found in amoebic dysentery. One such case was encountered recently in which the appearance mimicked an amoebic ulcer so closely that it was only after two scrapings from the ulcer had been fruitlessly examined for *E. histolytica* that a third scraping was cultured and *B. flexneri* VI isolated. Hamilton Fairley and Boyd (1942) report similar cases.

TABLE II.—Geographical Distribution of Bacillary Dysentery

India or Burma		Egypt		Italy	
Type	No. of Cases	Type	No. of Cases	Type	No. of Cases
Shiga ..	1	Shiga ..	1	Schmitz ..	1
Schmitz ..	2	Flexner I ..	1	Flexner III ..	1
Flexner I ..	7	(Iraq)		Untyped ..	1
Flexner II ..	10	Flexner II ..	2		
Flexner III ..	2	Flexner III ..	1		
Flexner IV ..	2	Flexner VI ..	1		
Flexner V ..	3	Flexner untyped	1		
Flexner VI ..	3				
Flexner untyped	8				
Sonne ..	4				

(4) A puzzling appearance which is, however, characteristic of chronic bacillary dysentery and was first reported by Manson-Bahr is a pseudo-cystic condition arising from the occlusion of the crypts of Lieberkühn. The appearance suggests "sago grain" elevations varying in size from 1 to 3 mm. scattered over the mucosa; sometimes the entire mucosa is studded in this way. These "cysts" on rupture are found to contain clear or blood-stained mucus, from which the causative organism can frequently be isolated by culturing direct swabbings obtained at sigmoidoscopy. One such case was invalidated from Italy with a diagnosis of multiple polyposis, but on rupture of these cysts *B. flexneri* III was isolated on culture.

Hamilton Fairley and Boyd (1942) in an admirable review of the sigmoidoscopic findings in bacillary dysentery state: "(1) In our opinion all bacillary dysentery carriers have lesions of this or a similar type somewhere in the colonic mucosa. (2) The bacilli are derived from the ulcers. (3) Once the ulcers have completely healed dysentery bacilli disappear from the stools."

Complications of Bacillary Dysentery

Complications were relatively infrequent, this undoubtedly being due to the introduction and extensive use of sulphaguanidine in all cases of severe diarrhoea overseas. Two cases showed a general narrowing of the rectum, associated with a granular, hyperaemic, easily traumatized mucosa. The prognosis in this type of case is poor, the patient being condemned to a life of semi-invalidism for many years, if not indefinitely. Two cases of arthritis of the ankle-joint developed during the course of an attack of acute bacillary dysentery overseas, complete recovery following in both cases with no residual arthritis.

Ulcerative Colitis (Idiopathic).—Seven cases were diagnosed, in six of which laboratory investigations were completely negative for bacillary dysentery and agglutinations carried out against bacillary dysentery were inconclusive. In one case both bacillary and amoebic dysentery were confirmed by laboratory findings overseas, but investigations here were fruitless. The association between bacillary dysentery and ulcerative colitis, so strongly stressed by Felsen (1945), has therefore not been found except in one case, and temperamentally this patient showed no evidence of the typical ulcerative colitis diathesis.

Hyperplastic Colitis.—Four cases were seen. The sigmoidoscopic appearances were identical, consisting of deep greyish depressions, the site of healed ulcers, surrounded by overhanging hypertrophied bridges of red mucosa giving one the impression of a rabbit warren. The mucosa bridged the depressions, and in one instance divided the lumen of the bowel into two; the remaining mucosa was unaffected and of a much paler colour than the affected part. The only symptoms were pain and bleeding following constipation, and in one case it was found necessary to divide a band of mucosa bridging the lumen of the bowel; this was carried out by Mr. Lloyd Davies, to whom I am indebted for the biopsy. The sections showed a rather hyperplastic mucosa with no evidence of inflammatory change. No pathogens were discovered in any of these cases on their return to England, but two of them were said to have had amoebiasis overseas. Three of them have been kept under observation for over a year, and, provided the bowels are

regulated, they suffer no ill effects and are in perfect health. Sir Philip Manson-Bahr kindly examined one case and considered it was a sequel to bacillary dysentery. Agglutinations were carried out for bacillary dysentery, and one case agglutinated *B. flexneri* I in 1/50; the other three were completely negative. It is probable that this condition is an excessive healing response to extensive ulceration—a mucosal hyperplasia analogous to keloid.

Post-dysenteric Colitis.—In 16 cases a residual colitis persisted after treatment; in only one case was it necessary to invalid the patient out of the Service. The other 15 have been kept under observation, and there has been a slow but gradual improvement in their condition; check-up sigmoidoscopies reveal a definite improvement. It is difficult, however, to convince a colon-conscious patient that improvement has occurred, despite the objective evidence of gain of weight, when the flatulent properties of a post-war carbohydrate diet produce cogent but fallacious evidence to the contrary.

Sprue Syndrome

Numerous cases have been invalidated from India with a diagnosis of sprue or para-sprue. In some cases the syndrome has developed within four months of the man's arrival in India. The usual history is of an attack of non-specific enteritis shortly after disembarkation, followed by recurrent attacks of diarrhoea, bacillary or amoebic dysentery. The response to specific treatment is at first good, but the tendency to recurrent attacks of diarrhoea persists, and finally the patient notices that his stools are copious and pale and complains of a flatulent dyspepsia and intolerance to fatty foods. There is rapid loss of weight, and in many cases a soreness of the tongue develops, with or without an anaemia. A flattened low blood-sugar curve is commonly present and persists for some time after specific sprue treatment, and its return to a normal curve is a useful index of recovery.

Eighty cases invalidated from India with a diagnosis of sprue or para-sprue were sigmoidoscoped and investigated on the same lines as the dysentery cases. It was found that 46% of them were harbouring pathogenic intestinal protozoa or bacteria, and that after eradication of this concomitant infection the sprue symptoms responded more readily to the routine orthodox treatment for sprue. A detailed analysis of the findings is given in Table III. It was possible to compare this

TABLE III.—Analysis of Findings in 80 Cases with Sprue Syndrome

Laboratory Investigations Negative	Laboratory Investigations Positive			
	<i>E. hist.</i> Positive	Lamblia	Mixed Bacillary and Amoebic	Bacillary Dysentery
43	21	7 (<i>E. hist.</i> + lamblia, 2; Flexner IV + lamblia, 1)	3 (<i>E. hist.</i> + Sonne, 1; <i>E. hist.</i> + Flexner I, 1; <i>E. hist.</i> + Flexner II, 1)	6 (Flexner untyped, 1; Flexner I, 2; II, 2; V, 1)

series with a larger series of 152 similar cases investigated in other R.A.F. hospitals in England; these patients had three specimens of stools examined but were not sigmoidoscoped. The incidence of pathogenic protozoa or bacteria in the larger series was 4.5%. This marked difference in positive findings provides convincing proof of the value of sigmoidoscopy in sprue.

Summary and Conclusions

The sigmoidoscope is as necessary in the diagnosis of chronic dysentery as the microscope is in the diagnosis of chronic malaria.

The examination of three fresh stools passed in the laboratory annexe after the administration of salts appreciably increases the number of positive findings in amoebiasis.

The sigmoidoscopic appearances were normal in 20% of positive cases of amoebiasis and in 9 out of 52 cases of chronic bacillary dysentery (2 cases of the total 52 were not sigmoidoscoped before treatment).

In 16 out of 58 symptomless cyst carriers of *E. histolytica* typical lesions were seen in the rectum.

In 46% of Service personnel invalidated from the Tropics with a diagnosis of sprue or para-sprue pathogenic intestinal protozoa or bacteria were isolated from sigmoidoscopic swabs.

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PREVENTION OF INFANT DEATHS

LIAISON BETWEEN HOSPITALS AND HOME SERVICES

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The need for ensuring the suitability of the home to which it may be necessary to discharge a premature baby has been stressed by many authorities (Hess and Lundeen, 1941; Potter, 1944; Tyson, 1944; Crosse, 1945; Ministry of Health Circular No. 20/44). To what extent disregard of this precaution (which is as important for full-term babies and those convalescing from acute illnesses as for prematures) contributes to the number of preventable infant deaths is unknown, for while investigations into the ultimate fate of prematures are not uncommon (e.g., Brockington, 1944; Asher, 1946), the follow-up of babies, full-term as well as premature, in the first year after discharge from maternity unit or hospital seems to have been neglected. A hint of what an extensive survey might show is given, however, by Collis and Majekodunmi (1943), who traced 45 premature infants that had passed through their department: 7 had died—two of these within the first month of discharge and four during the first year.

Attention was directed to this question while attempting to evaluate the efficiency of the infant health services in this area (Lewis and Blackwood, 1946). Of 31 infant deaths which were probably preventable, 7 might have been caused by discharging a baby (premature or full-term) to a household where conditions were prejudicial to the successful rearing of an infant. It has become a commonplace to speak of the importance of liaison between the hospital and the home. Like all platitudes its truth is obvious, but it happens that the attainment of really effective liaison is not as simple as would at first appear, for it raises clinical, sociological, and administrative problems that themselves have yet to be solved.

The purpose of this paper is: (i) to emphasize the need for effective liaison by describing case histories where its absence probably contributed to an infant's death; (ii) to discuss the respective points of view of the hospital and field worker and the principles underlying liaison; (iii) to suggest means by which liaison may be attained.

The Need for Liaison

The following cases illustrate the need for liaison and co-ordination of services, for in each instance death might have been attributable to lack of co-ordination.

Case Histories

Case 1.—Male, born Dec. 13, 1944, in maternity unit. One of triplets. Birth weight, 4 lb. 2 oz. (1.87 kg.). One baby died in hospital. Mother aged 26. One other child born, 1943. Normal pregnancy; W.R. negative. Hb, 66%; R.B.C., 3,700,000. Spontaneous delivery. Two surviving triplets discharged home on Jan. 10, 1945. Father (29 years old) in Forces. Home clean but overcrowded. Babies fed on breast complemented by half-cream dried milk. Lactation failed after about six weeks. The child seemed to be making good progress up to Jan. 29, 1945, but died on Feb. 8 of pulmonary congestion and bronchitis, being moribund when the doctor was called in. He thought that these babies would have been better for being retained a little longer in hospital than was the case.

Comment.—This mother had suffered from anaemia during pregnancy and had given birth to triplets. Although the home conditions were reasonably good the house was overcrowded and the mother had to cope with the two surviving triplets and the elder child of 18 months without the support of her husband, who was in the Forces. These babies should preferably have been retained in hospital until they were more firmly established.

Case 2.—Male, born Feb. 10, 1945, in maternity unit. Birth weight, 8 lb. 2 oz. (3.68 kg.). Mother aged 24; high-grade mental defective. One other female child, aged 2 years 9 months. Normal pregnancy; W.R. negative. Hb, 70%; R.B.C., 3,500,000. Spontaneous delivery. Discharged in satisfactory condition to very unsuitable home on Feb. 20, 1945. Father (31 years old) in Forces. Four people living in one small room not very clean and unfit for young baby. Breast-fed. In spite of these poor conditions the baby did well at first, but in a month or so began to deteriorate. When he was four months old he was admitted to hospital with pneumonia, and there remained for three weeks. He was discharged home, but was readmitted in a few days with an abscess of the back. He was subsequently transferred to another hospital, where he died, aged 6 months, of an abscess of the back and consolidation of the left base. He was also found to have an enlarged congenital heart.

Comment.—This baby was healthy at birth and thrived for the first few months in spite of a grossly unsatisfactory home environment. He should preferably not have been discharged to such home conditions, although it is difficult to see what the alternative could be. On discharge from hospital after pneumonia he should not immediately have been returned to the home conditions that probably had occasioned his admission.

Case 3.—Female, born July 24, 1945, in maternity unit. Birth weight, 7½ lb. (3.4 kg.). Mother aged 30. Two other children aged 10 and 3 years. Normal pregnancy. Hb, 60%; R.B.C., 3,700,000. Spontaneous delivery. Father aged 30. Family living with grandmother in council house. Home reasonably good. Mother developed breast abscess and baby then fed on one breast and complementary feeds. Discharged on 15th day and gradually went downhill. Baby readmitted to hospital on Aug. 13, 1945, where it died of marasmus on Sept. 4.

Comment.—This baby was healthy at birth and should have done well. On discharge from hospital the mother was not really fit. She had been anaemic during pregnancy and had had a breast abscess. Although the home conditions were reasonably satisfactory she had to handle two other children and a husband in someone else's home, and her mothercraft consequently was inefficient. It would have been advisable for this baby (and mother) to be retained in hospital a little longer until the mother was fit and the baby firmly established.

Case 4.—Female, born Aug. 8, 1945, in maternity unit. Illegitimate. Birth weight, 5 lb. (2.27 kg.). Mother 29 years old; works in chemical factory. Pregnancy normal, but she defaulted from the antenatal clinic from April to July. Spontaneous delivery. Discharged on 10th day. Mother and baby lived at two different addresses in the five-day interval between discharge from hospital and the death of the baby on the 15th day from bronchopneumonia. The first address was in an old, overcrowded house not very clean.

Comment.—A 5-lb. baby should with experienced care have survived, but should not have been discharged on the 10th day to unknown home conditions in the care of an inexperienced mother with no resources.

Case 5.—Male, born Aug. 8, 1945, in maternity unit. Birth weight, 5 lb. (2.27 kg.). Mother aged 26 years; first baby. Normal pregnancy; W.R. negative. Hb, 50%; R.B.C., 2,700,000. Spontaneous delivery. Discharged on 10th day. Father (aged 35) a miner. Clean home. Seen at infant welfare centre five days after discharge. General condition not good; frequent stools. On half-cream dried milk three-hourly. Readmitted to hospital on Aug. 27, 1945, where it died on Sept. 11. The family doctor stated that the mother was quite incapable of looking after the child, which was frail and difficult, and she had had no opportunity of learning to handle it.

Comment.—A baby of 5 lb. should survive with experienced care. The mother had been very anaemic during pregnancy, and on the 10th day was probably not feeling fit. She had had no experience of babies previously, and clearly the care demanded by a 5-lb. infant was beyond her capacity. The mothering it received during the first critical days after discharge from hospital was inadequate, and it never recovered from the setback it then received.

Case 6.—Female, born Aug. 18, 1945, in maternity unit. Birth weight, 5 lb. (2.27 kg.). Mother aged 35. One other boy, aged 10 years. Mother rather highly strung. Normal pregnancy, but with excessive sickness and general health not very good. Spontaneous delivery. Father (aged 36) a colliery deputy. Baby on breast and complementary feeds two-hourly. Died suddenly on day after discharge—aged 10 days. Necropsy: capillary bronchitis.