On the occurrence and significance of intestinal haemorrhage in typhoid fever : a thesis for an act for the degree of M.B. in the University of Cambridge / by William Collingridge.

ON THE

OCCURRENCE AND SIGNIFICANCE

OF

INTESTINAL HÆMORRHAGE

IN TYPHOID FEVER.

A THESIS FOR AN ACT FOR THE DEGREE OF M.B.
IN THE UNIVERSITY OF CAMBRIDGE

BY

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ON THE OCCURRENCE AND SIGNIFICANCE OF INTESTINAL HÆMORRHAGE IN TYPHOID FEVER.

That the danger from INTESTINAL HÆMORRHAGE *in Typhoid Fever depends chiefly on the stage of the disease at which it occurs.*

THE subject of Intestinal Hæmorrhage in Typhoid Fever is equally a most important and interesting one, whether it be regarded from a preventive or curative point of view.

And this is the more true, because this symptom has been regarded by different authorities as having very varied significance, some looking upon it as an unimportant, and even in some cases as almost a desirable occurrence; while another school (and this is more in accordance with the most recent ideas) has regarded it as in all cases to be dreaded, and in many indeed as a most serious and often a fatal complication. We shall, however, find eminent authorities ranged on both sides of the question.

Thus Trousseau is of opinion that it is by no means a serious accident, and so far from possessing the character of danger imputed to it is usually of favourable augury. He says that he saw but three cases die

Trousseau, New Syd. Soc., Vol. ii. p. 327.

from it in seven years, and that only one of these died suddenly, the other two succumbing after several repeated attacks.

It is worthy of notice that in all these three cases the hæmorrhage came on after the first fortnight, viz., on the 15th, 19th, and 24th days respectively.

Kennedy, 1860, p. 226. Dr. H. Kennedy, of Dublin, believes that most cases recover, and that the patients are frequently benefited by it.

Graves, again, says that in the majority of cases the patients survive the attack, and are often even relieved by the loss of blood.

Tanner, 1869, Vol. i., p. 247. On the other side of the question we find Dr. Tanner classing it as among the most serious complications, and assigning it the second place, in order of frequency, as causing death.

Niemeyer, Clin. Med., transl. 1878, Vol. ii., p. 594. Niemeyer says hæmorrhage is one of the most important accidents in the course of Typhoid Fever. The loss of blood is often very considerable, but patients rarely die as a direct result of the hæmorrhage; the bleeding usually ceases, the typhoid pursues its course, but the strength of the patient does not carry him through, and most patients die, sooner or later, after the hæmorrhage from the exhaustion that is completed by the fever and diarrhœa.

Murchison, 1873, p. 527. Murchison also looks upon it as an occurrence which is always serious, and which often leads to a fatal issue.

Bell, 1860, viii., p. 390. Bretonneau, Chomel, Louis, Jenner, and Bell have all regarded it as most dangerous.

But whatever be the significance attached to it by different authorities, there exists no division of opinion

as to its frequency ; and hence its extreme importance to the physician.

Hæmorrhage occurred in 8 out of 134 cases recorded by Louis, and in 7 out of 21 fatal cases of Jenner's. Louis, 1841, i., pp. 433—9. Jenner, 1849 (2).

The quantity lost may vary from a few ounces to a pouring out of blood which may destroy life with fearful suddenness.

Dr. Murchison says that copious hæmorrhage (which he defines as being over six ounces) happened in 58 out of 1,564, or 3·7 per cent. of the cases under his care. Murchison, 1873, p. 525.

Fortunately it is a complication which occurs but rarely in children, in whom, if in any quantity, it must almost necessarily prove fatal.

For practical purposes cases of intestinal hæmorrhage may be roughly divided into two great classes, viz.—

I. *Those where it occurs before the end of the second week.*

II. *Those where it occurs later in the disease.*

In the first class of cases, the hæmorrhage is almost always slight, and it is probably while regarding these that many authorities have been led to speak of hæmorrhage as an altogether unimportant symptom.

Its source here may be due either to rupture of the intestinal capillaries which are engorged or congested; or, as probably more commonly is the case, from a hydræmic and abnormal state of blood.

That this fluid and vitiated condition of the blood does exist has been proved by several eminent observers.

Lehmann, Phys. Chemistry, Vol. ii., pp. 262—266.

Lehmann says that during the first week of enteric fever the blood resembles that of plethora, the corpuscles and solids of the serum, especially the albumen, being increased, but that from about the 9th day the corpuscles and solids of the serum diminish with a rapidity proportional to the intensity of the intestinal affection.

Of course, when the blood itself is thus affected, the nutrition of the walls of the vessels must be interfered with, and thus from both these causes capillary hæmorrhage is likely to result.

This form of hæmorrhage often coexists with epistaxis, hæmaturia, hæmatemesis, and loss of blood from other parts of the body.

It is to these cases that the old name of hæmorrhagic putrid fever was first applied.

This variety of hæmorrhage may occur at any stage of the disease, and cases have been recorded as early as the 5th or 6th day, when, of course, no ulceration such as would lead to the erosion of the walls of an artery could have taken place.

At this early period hæmorrhage, unless it be due to an abnormal condition of the blood, being always slight, is not in itself directly dangerous, and may possibly in some cases benefit by relieving congestion.

But unfortunately it sometimes shows a tendency to recur, and then, although a small quantity be lost at one time, still the frequently returning loss must cause a very serious drain upon the strength of a

patient at the commencement of what is always a long and trying illness.

As an instance of hæmorrhage occurring at an early stage of typhoid, and complete recovery therefrom, I may quote a short abstract of case I had an opportunity of observing in the wards of St. Bartholomew's Hospital.

Elizabeth E——, Oct. 16th.—A rather delicate-looking girl was admitted into the hospital on Dec. 31st. She stated that she was in good health until eight days previously, when she was suddenly seized with headache, pains in the back, and vomiting. This has continued up to the present time. For the last six days she has had rather severe diarrhœa.

On admission she seems very weak and low, is rather dull and heavy. Tongue dry and furred. Heart and lungs normal. Abdomen tender generally, but especially in right iliac fossa.

Four or five distinct typhoid spots seen on chest and abdomen. T. 100. E. 104·2.

Jan. 1st.—Was delirious last night. Bowels open four times during night. About four in the afternoon she passed a small quantity of blood with motions. As the quantity was small, no special treatment was adopted. T. M. 102. E. 101·8.

Jan. 2nd.—Has had a bad night. T. 101. Was restless and muttering. Tongue very dry and furred. Pupils dilated. Bowels open four times. This morning passed more blood, not more than about 4 ounces. E. 101·4.

Jan. 3rd.—Slept well last night. Seems much better. Has passed no more blood. T. 100·2.

After this date there was no recurrence of the hæmorrhage ; the fever ran a favourable course, and the patient is now convalescent.

In this case the hæmorrhage occurred about the 10th or 11th day. It was very slight in amount, though there was a tendency to recurrence. As will be seen, on the first day on which the loss of blood happened there was a fall of temperature in the evening, being then slightly below the morning ; and that on the second day, although there was no actual fall, still the evening rise was extremely small (less than a degree), which, of course, is practically the same thing.

Trousseau, New Sydenham Society, Vol. ii., p. 328.

Trousseau quotes a still more striking case. A girl, aged 20, was admitted on the 8th day of her disease. She had been in bed for four days previously. The fever followed its normal course, without presenting any other symptoms than great weakness, accompanied by fever and diarrhœa, until the 12th day, when profuse intestinal hæmorrhage set in ; she nearly filled a chamber pot with blood, which was black, fluid, and very fœtid. The hæmorrhage recurred next day, when the discharged blood was similar to that passed on the first occasion ; and on the following day the stools were still black and fœtid. The general symptoms were not such as to occasion much alarm, and from that time they became sensibly less severe ; from day to day the fever abated, and on November 17th the patient, having entirely recovered, left the hospital a month after admission.

In this case, although the hæmorrhage was un-

usually profuse, and although there was a marked tendency to recurrence, still no evil symptoms followed. These two cases I have chosen from a large number, as examples of the first class of cases I wish to bring forward.

The second class of cases, which is by far the larger (out of 60 cases of hæmorrhage 50 belonged to this division), is altogether a more formidable one. Here the cause is usually to be found in an actual erosion of some vessel in the intestinal walls by the process of ulceration, or it may be to a fungating condition of some undetached sloughs.

In either case the loss of blood is mostly profuse, and may occasionally, though happily not often, prove immediately fatal. More frequently, however, the hæmorrhage either ceases by itself or is arrested by suitable treatment, leaving the patient much lowered by the loss, or it may recur from time to time, and so exhaust his already overtaxed resources that he finally succumbs to asthenia, or to some intercurrent disease.

Such are the chief dangers of hæmorrhage if it be profuse, but unfortunately it has another evil significance. Whenever it occurs it may almost certainly be taken as an indication of the extent to which the ulceration has proceeded. For in order to involve a vessel the morbid process must have obtained a considerable depth, and must, therefore, leave the patient in imminent danger of perforation, or, as may happen, of peritonitis by extension of inflammation from the intestinal walls.

In illustration of this I shall quote a typical case below.

Murchison states that out of 60 cases of hæmorrhage occurring in his practice 32 proved fatal ; that of these 32 the cause of death was peritonitis in 11 ; of the 21 remaining cases 14 died within three days of the bleeding, and 8 out of these 14 within a few hours.

Again, in 60 deaths from perforation, in no less than 11 cases there had been previous hæmorrhage. As a general rule hæmorrhage, more especially when profuse, only occurs in those cases in which there has been severe antecedent diarrhœa ; but to this rule there are many exceptions.

In 18 out of 60 cases of hæmorrhage (Murchison) the symptoms had been mild, while in 8 (6 of which were fatal) there had been constipation. Jenner and Hudson also both mention cases in which fatal hæmorrhage occurred after constipation.

Jenner, 1849 (2).

Hudson, 1867, p. 290.

Hæmorrhage very often occurs quite suddenly and unexpectedly, and apparently without having given any warning of its approach.

As a rule, however, if the temperature be carefully and constantly taken, it will generally be found to present a sudden fall previously. If coincidently with this fall there be increased frequency of pulse, hæmorrhage may often be strongly suspected when as yet there is no other indication of the coming danger, and the patient seems to be rapidly progressing to convalescence.

When the blood escapes externally, of course the diagnosis presents no difficulty, but unfortunately

this does not invariably occur; there may be an enormous amount of blood lost, without one drop being visible to the eye. In some cases even the cause of death has only been made out at the autopsy.

If the patient be found to become rapidly pale, if the pulse be increased in frequency and easily compressible, or even irregular, if the temperature fall rapidly, if the patient become restless and uneasy, yawning and complaining of dimness of vision and coldness of the extremities, and if at the same time the ordinary symptoms of perforation be absent, then internal hæmorrhage is certainly to be feared. The blood as it escapes externally, is frequently of a bright red colour, owing to the alkalinity of the intestinal contents.

It sometimes occurs that after a profuse hæmorrhage has ceased, and the patient apparently is slowly recovering from its effects, that on some slight movement, such as sitting up in bed, he may suddenly fall back, and expire from syncope. Hence it is a very important practical point in the management of these cases, to insist on perfect rest in the horizontal position, until such time as the loss of blood shall have been made good.

I shall now give a short abstract of a few cases of hæmorrhage taking place after the second week of the fever. All these cases were observed in the wards of St. Bartholomew's Hospital.

Alice S——, aged 16, housemaid, was admitted

September 28th. Had alway been fairly healthy girl, was quite well until about a fortnight ago, when she suddenly felt giddy, had pains in her head and back, and vomited. Has been in bed for four days. Says that several others living in the same house have had typhoid.

On admission, complains of weakness and faintness. Has severe headache and nausea. No appetite. Complains of thirst, tongue dry, covered with white felty fur. Bowels open twice yesterday, but not relaxed. On her abdomen there are several rose-coloured lenticular spots, which disappear on pressure. Heart sounds normal. Some slight amount of bronchitis. P. 108. T. 101·2. E. 104·4.

Sept. 29th.—Was very restless last night, and scarcely slept at all. Pupils dilated. Tongue drier and browner. Abdomen tender. Bowels not open. T. 102. P. 132. E. T. 104·8. P. 130.

Sept. 30th.—Slept fairly well. Tongue very dry and furred. Lips cracked and covered with sordes. Much tenderness over abdomen, but especially in right iliac fossa. Bowels have not been opened since 27th. Ordered enema simplex. P. 126. T. 103. E. T. 104·2. P. 136.

Oct. 1st.—Did not sleep at all, was slightly delirious, last night. Some fresh spots on abdomen; those marked on 28th have all disappeared. Bowels open twice after enema. Motion semi solid, light coloured. Vomited yesterday evening. Tongue foul. Lips

dry and cracked. Pain in left hypochondrim. Spleen palpable below ribs.

8 a.m. T. 103·4. P. 120.
12 a.m. T. 102·8. P. 132.
6.30 p.m. T. 102·2. P. 140.

About 4 p.m. a sudden and profuse attack of hæmorrhage occurred. In a few minutes the bed was saturated with blood. She at once had cold compresses and an ice bladder applied to the abdomen. She was ordered—

Plumbi acet. grs. ij
Acidi acet. dil. ♏v.
Hst. ft. Aq. ad. ℥i
2 dis horis sumat,

and was given 15 min. of Liq. Opii Sed. (Battley).

The hæmorrhage, however, had been so profuse that she never rallied, and, sinking gradually, died about 7 p.m.

In this case the hæmorrhage took place about the 16th day of the disease.

At the post-mortem there was found extensive ulceration of Peyer's patches, though only in one or two cases had the sloughs suppurated. A large amount of blood was seen in the intestine, and the hæmorrhage appeared to have come from the lowest of the diseased patches, though no actual opening could be found in any vessel, although carefully looked for.

In this case the hæmorrhage seemed to follow, as

not unfrequently happens, upon the administration of an enema.

It has been objected by some that the exhibition of an enema can do no harm in these cases, inasmuch as it cannot possibly reach the seat of ulceration. But I maintain that it is not necessary that it should go so far in order to produce the symptom so much to be dreaded. For the mere introduction and presence of the injection in the bowel is in itself quite sufficient to cause such an amount of peristaltic action as might bring about rupture of a vessel, and thus cause hæmorrhage.

The temperature taken at 8 a.m. on the 16th was 103·4, at 12 a.m. it was 102·8, the pulse at the same time having risen to 132. At 4 o'clock the hæmorrhage set in.

This also was a case in which there had been previous constipation.

Louisa F——, aet. 21, a cigar-box maker, admitted Sept. 16th, says she was taken ill on Sept. 6th (two days before her menstrual period) with nausea and pains in her back and limbs; catamenia commenced two days after the attack, and have continued ever since.

On admittance strong healthy-looking girl. Tongue furred. P. 100. T. 104. Bowels open regularly. No diarrhœa. Some slight tenderness of abdomen. Gurgling in right iliac fossa. No eruption visible. Heart and lungs normal.

Sept. 14th to 19th.—But little change in her condition. No excessive febrile disturbance.

Sleeps fairly well. No diarrhœa. No eruption visible.

Sept. 19th.—Catamenia still continue. Tongue dry and furred. T. 101·8. E. 102·4. P. 112. She complains of great pain over sacral region, increased by pressure. Nothing abnormal visible.

Sept. 20th.—Catamenia ceased, having lasted twelve days. An examination made per vaginam, under influence of an anæsthetic, on account of great sensibility of parts. Hymen intact. Uterus and its appendages normal. Exploration per rectum likewise yielded negative result. Has diarrhœa. T. 101·6. E. 102·8. P. 112.

Sept. 24th.—Still has diarrhœa; seems to be getting weaker. Pain over sacrum continues. A few rose-coloured spots seen on abdomen. Spleen not enlarged. Pupils not dilated. Tongue dry and furred. T. 100. E. 102·6. P. 104.

Ordered— Tinct. Aconiti ♏v.
Aq. ad ℥j.
Hst. ft. ter in die sumat.

Sept. 26th.—P. 126. T. 103·8. E. 104. Skin hot and dry. Tongue furred. Bowels open three or four times during night; has vomited. Some fresh spots on abdomen.

Sept. 27th.—About twenty fresh spots have appeared. Spleen distinctly enlarged. T. 103·8. E. 104·8. P. 112.

Sept. 28th.—Diarrhœa increasing. Was delirious last night. Ordered chalk mixture after each loose stool. T. 102·8. E. 104·8. P. 118.

Sept. 30th.—Condition decidedly worse; seems scarcely conscious. Tongue covered with blackish fur. Did not sleep at all last night. Yesterday managed to get some apples and grapes from her friends. Bowels have been open about ten times during the night, containing a very large amount of blood, the later stools, indeed, being almost pure blood. Grape skins and apple pips were found in the evacuations. Great tenderness in right iliac fossa. Pulse feeble, and very rapid, 130-140. Temperature has fallen to 103·8. Ordered ice bladder to right iliac fossa. Acetate of lead in 1 grain doses every two hours, and 15 minims of Battley's Liq. Opii every six hours.

Oct. 1st., 8 a.m.—Tongue furred. Lips covered with sordes. Skin hot and dry. Bowels open four times during night, with large quantity of blood. Pulse 130, very feeble and irregular. Temperature has fallen to 102·6. Had very bad night. Abdomen swollen and generally tender.

12 a.m.—Pulse not to be felt in radial. Wandering. Countenance pale. Tongue and lips very pallid. Breath fœtid. Though quite unconscious, she flinches on touching abdomen. Has had some slight convulsions, and has vomited several times.

3.30 p.m.—Has just passed a large quantity of pure blood; is extremely restless. Bowels have been open ten times during last 24 hours. Died 11.45 p.m.

In this case the hæmorrhage occurred for the first time on the 25th, and continued, death occurring on the following day.

For some time the diagnosis was very uncertain, the chief symptoms being the pain in the sacral region, and regularly continued fever.

The prolongation of the menstrual period is by no means an uncommon occurrence in cases of typhoid.

The hæmorrhage followed, and doubtless was caused by the irritation of indigestible foreign matter, viz., the fruit.

The fall of temperature and rise of pulse were very noticeable at the time of the hæmorrhage, but were not observed previous to its appearance.

Unfortunately, owing to the ignorant prejudice of the friends, permission for a post-mortem could not be obtained in this case.

Phœbe Jane S——, aet. 16, was admitted on January 14. She was taken ill on the 6th with headache, sickness, and feeling of drowsiness. Has had diarrhœa for three days. On admittance cheeks flushed. Tongue dry and furred. Diarrhœa. Typhoid eruption on chest and abdomen. Heart normal. Has slight mucous râles over front of chest. Bronchitic sputa. T. 103, 8. P. 112.

Jan. 17th.—Much in same condition as on admission. Bronchitis rather increased. The diarrhœa continued rather severe, but otherwise the symptoms were moderate. The stools were characteristically typhoid in appearance.

Jan. 20th.—In one of the evacuations a small piece of shreddy membrane-like substance was found, which was believed to be a slough which had suppurated. This was followed a few hours after by hæmorrhage

from the bowels, which was, however, but slight, only about ʒvj. of blood being lost. Ice was applied to the abdomen, and acetate of lead given in one-grain doses every second hour. This was followed by a cessation of the hæmorrhage and great diminution in the diarrhœa. T. 102. E. 102·4. P. 120.

Jan. 22nd.—Had some slight epistaxis last night, which recurred this morning, and was easily checked by cold affusion. T. 102·6. E. 104. P. 126.

Jan. 23rd.—Slept well. Bowels open, semi-solid motion. One fresh spot observed. No sickness. Cough better. T. 102·8. E. 104·6 P. 134.

Jan 24th.—Tongue cleaning. Pulse rapid. Seems rather sleepy. T. 102·8. E. 104·6. P. 130.

Jan. 25th to 28th.—Condition gradually became worse. Was delirious at night. Has rather severe diarrhœa.

Jan. 29th.—This morning she passed a large clot of blood. Pulse very feeble. Skin hot and dry. Bowels only open twice. T. 102. E. 102. P. 140.

Jan. 30th.—No more blood. Diarrhœa still continues. T. 99·8. E. 100·6. P. 132. Ordered enema of starch and opium, which had the effect of checking it. From this time the patient slowly but steadily improved, and was convalescent about the fifth week.

This case I have quoted because it affords an example of hæmorrhage occurring early in the disease, and recurring at a later stage. On the first occasion, as might have been expected, the hæmorrhage produced very slight symptoms, and, indeed, gave no

cause for immediate alarm, though the fact of its occurrence might have created anxiety lest it should subsequently return. The second attack of hæmorrhage, being preceded by the passage of a slough, was probably caused by ulceration involving some vessel.

In the first attack the evening temperature was but very slightly higher than the morning, and on the second the morning and evening were the same, while at the same time the frequency of the pulse was much increased. On the second appearance of hæmorrhage, although the loss of blood was scarcely so great as before, still its concomitant symptoms were very much more severe. The fact must of course be recognized that hæmorrhage occurring in the latter stage of the disease would necessarily produce graver symptoms than a similar hæmorrhage occurring in the earlier stage ; for in the latter case we have to deal with a system but comparatively little removed from its normal state, while in the former it has already been exhausted by weeks of a debilitating fever.

Thus, in this case, although the hæmorrhage happening in a late stage of the disease did not prove fatal, still it produced very serious symptoms.

Here I may quote two cases recorded in the London Fever Hospital reports.

James L——, aged 19, admitted on Aug. 19th, having been ill eight days. Bowels had been much relaxed, and for two days he had been very delirious.

Aug. 20th (10th day.)—P. 120; full but compressible; slight headache; rather confused. Was very delirious in night, and attempted to leave his bed. Several rose-spots on chest and abdomen. Tongue moist and furred, red at edges; intense thirst; great tympanitis and tenderness in right iliac fossa; two light watery stools.

Aug. 21 (11th day).—P. 132. More prostrate, and was again restless and delirious in night. Skin hot and dry; temperature, 104 deg.; spots more numerous; tongue dry along centre, red at edges; abdominal tenderness increased; five watery motions. Ordered turpentine stupe to abdomen; acetate of lead (gr. iij.) every 4 hours; starch and opium enema at night, and 4 oz. brandy.

Aug. 24th (14th day).—P. 144. Weak; unable to get out of bed, but still tries to do so. When delirious at night is confused, but understands what is said to him; pupils natural; circumscribed flush on both cheeks; numerous rose spots; fresh ones appear daily. Tongue red and moist; great tympanitis; two watery stools.

Since Aug. 22nd patient has been taking ammonia and Sp. chloroform instead of Plumb. acet. and has had morphia draught at night. Brandy increased to 8 ozs.

Aug. 26th (16th day).—P. 136. Scarcely knows friends; moans and sighs very much; but always calls for bed-pan when he requires it. Spots continue; skin is moist, and has perspired every night since admission, after which he has been very faint. Two stools.

Aug. 27th (17th day.)—Had no motions since day, till this afternoon, when he passed a large quantity of fœtid liquid red blood. No vomiting, and tenderness of abdomen seems less than before; but patient is scarcely conscious; ordered enema of starch with 20 minims of tinct. opii, and draught with xv minims of turpentine every 3 hours.

Aug. 28th (18th day).—No motion for some hours after enema, but since then has had five of pure blood; tongue dry and brown; sordes on teeth; slight tenderness of abdomen; pulse 136, small and weak; very noisy in night, and scarcely knows his friends, but got up to stool himself when nurse was absent.

Aug. 29th (19th day, died 7.30 a.m.).—Was very restless and delirious until half-an-hour before death. One bloody motion in bed during night.

Autopsy.—Abdominal cavity contained about a pint of dirty yellow fœcal liquid. Peritoneal surface of small intestine very vascular, and coated with loosely adherent flakes of lymph. Twelve inches above ileo colic valve was a semi-lunar perforation, measuring 2 lines in long diameter, and formed in this way: An oval patch of peritoneum $4\frac{1}{2}$ by 2 lines had sloughed, its smooth pale yellow surface contrasting strongly with the surrounding bright red membrane roughened by deposit of lymph. This slough still adhered by its edges except at one extremity, where it was detached, forming the semi-lunar perforation. The little opening was plugged by a fragment of slough from interior of bowel. On slitting open intestine, lower four inches of ileum were

found to be one mass of ulceration, which terminated abruptly at valve. This ulcerated surface was covered with loosely attached yellowish sloughs and masses of coagulated blood. Six of Peyer's patches, and many of solitary glands above this, were ulcerated, yellowish sloughs being still loosely attached to most of ulcers. In one of Peyer's patches was the perforation already described. Some of solitary glands were enlarged from morbid deposit up to size of split pea, but none were ulcerated. Many of solitary glands in cœrum and ascending colon were either ulcerated or contained morbid deposit. Large intestines contained few ounces of blood. Mesenteric glands enlarged. Spleen and kidneys large and congested. Other organs fairly healthy.

In this case the hæmorrhage occurred first on 17th day, and continued till death, on 19th day, being very profuse. As described above, peritonitis was present, caused by perforation being associated with the hæmorrhage. Unfortunately, the temperature was not recorded.

Mary Ann B——, aet. 13, admitted into L.F.H. Sept. 11th. She was confused, and could not say how long she had been ill. Had several typical rose spots on abdomen; pulse 120, small and feeble; tongue moist, and brown in centre; bowels loose; abdomen tender and tympanitic. Until Sept. 16th fresh spots were noted daily; but from that date they faded. For five days after Sept. 14th she obstinately refused to take drinks, and was supported by injections of beef tea and brandy. The tongue became

dry and rough; the pulse ranged from 120 to 144; cough set in on Sept. 16th, and moist râles were heard over lungs; the abdomen continued tense and tender, and the diarrhœa persisted. The motions were ochrey and free from blood; but in the night of Sept. 16th there were four very copious motions consisting almost entirely of pure blood. The hæmorrhage was checked by large doses of gallic acid and opium; but although for four days her general condition had improved, and hopes had been held of her recovery, she rapidly sank after bleeding, and died on Sept. 25th.

Post-mortem.—Patches of recent lymph over surface of intestines, especially in vicinity of cœcum. Inside vermiform appendix were four ulcers, in one of which, about $\frac{3}{4}$ inch from distal end, were two small perforations; the contents of the bowels had not escaped into the peritoneal cavity. Extensive ulcers in the ileum, and a few in the cœcum, near the valve. The sloughs had suppurated from most of the ulcers, which were beginning to heal. The source of hæmorrhage was not determined. Recent pneumonal consolidation in lower lobe of both lungs.

Here the hæmorrhage occurred about the end of 4th week. Death was clearly from exhaustion, caused by hæmorrhage and peritonitis. Although carefully looked for, no eroded vessel could be found.

Dr. Peacock mentions four fatal cases of typhoid in which there was hæmorrhage, which occurred in the summer and autumn of 1864.

In two cases the hæmorrhage occurred early in the attack, and the patient recovered from the effects, dying from independent complications ; in one from arachnitis, originating in otitis, and the other after eight weeks of pleuritic effusion.

Both these patients had been discharged as cured after the fever.

In the remaining cases the hæmorrhage occurred, respectively on the 18th and 24th day, and both patients died within a week of its occurrence.

From these considerations and careful observations of these cases, I think, then, that we are justified in arriving at the following conclusions :—

I. That hæmorrhage in the first 14 days of typhoid fever is a comparatively unimportant symptom, and should cause but little anxiety, except from its tendency to occur.

II. That when it occurs later it is always dangerous, both from the actual loss of blood, and also on account of its frequent association with peritonitis.

III. That the occurrence of hæmorrhage is almost invariably accompanied and often preceded by a fall of temperature and increased frequency of pulse.