It will be seen that none of the four specimens of sputum exposed to fresh air and light on a dry soil conveyed the disease, but one of the three portions exposed under similar conditions in darkness produced tubercle. Of the two exposed in the cottage in Ancoats in the light, one produced tubercle and the other was doubtful; and of the two specimens exposed in the same place in comparative darkness, one caused tubercle, the other did not. Lastly, the specimen placed in the ventilating shaft from a ward in the consumption hospital, Bowdon, on a dry soil, conveyed the disease; but the portion removed from it after ten days, and exposed to the action of ozonised oxygen, did not produce tubercle.

These experiments are too few in number to justify the statement of positive conclusions; but, so far as they extend, they go to prove that fresh air and light and a dry sandy soil have a distinct influence in arresting the virulence of the tubercle bacillus; that darkness somewhat interferes with this disinfectant action; but that the mere exposure to light in otherwise bad sanitary conditions does not destroy the virus. There are also some indications that the presence of a cotton-wool envelope may interfere somewhat with the action of both good and bad air respectively.

GASTRO-ENTEROSTOMY.

By T. KILNER CLARKE, F.R.C.S.ENG.,
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THE following case of gastro-enterostomy, though unsuccessful, is more illustrative of the difficulties of the operation and its after-dangers than the successful one I published in the BRITISH MEDICAL JOURNAL, November 16th, 1889, p. 1089, the subject of which is still, ten months after the operation, in the enjoyment of good health.

Mrs. S., aged 36, a spare, dark-eyed woman, had been suffering from gastric troubles for a year, when in consultation with Mr. Haigh, of Meltham, I first saw her on May 6th, 1890. She had suffered much from vomiting, and had had several attacks of hæmatemesis. For the few days previous to my visit everything she had taken was rejected. There was a tumour the size of an orange in the situation of the pylorus, that is, on the right edge of the mesial line, and extending down to the level of the navel. The stomach was small, all the other organs of the body appeared healthy. The case seemed to us to be a very suitable one for either pylorotomy or gastro-enterostomy.

On May 13th, 1890, an anæsthetic consisting of chloroform one part and ether two parts was administered by Dr. Scougal; and, assisted by Mr. Haigh and Mr. Marshall, I operated as follows.

Making a median incision, 3 inches long, reaching as far as the lower border of the navel, I exposed the lower border of the stomach and the great omentum. The tumour, which was found to be the enlarged and thickened pylorus, was firmly adherent to everything in its immediate neighbourhood. Its size and adhesions, and the contracted state of the stomach rendering pylorotomy impossible, I proceeded to the alternative operation of gastro-enterostomy. The jejunum not being visible I pushed aside the great omentum, and, turning up the lower border of the stomach, saw it lying beneath the transverse mesocolon, rising from the spine on a level with the navel. Making a rent in the mesocolon, I brought up the intestine, emptied some six inches of it, and isolated the emptied portion from the rest of the gut. Then, dropping the jejunum back into the abdomen, I made one incision into the anterior wall of the stomach, an inch in length, parallel to and about $1\frac{1}{2}$ inch above the greater curvature, and inserted the decalcified bone plate. The second plate was then fixed into the jejunum. On attempting to bring the two plates into apposition so as to tie the corresponding threads I found it could not be done, as the contracted size of the stomach and the pyloric adhesions prevented my bringing the stomach wall sufficiently outside the abdomen. I therefore took out the stomach plate, sewed up the incision with a double row of Lembert sutures of fine silk, made a new incision in the posterior wall of the stomach, introduced the plate afresh, and readily brought it into close apposition with the jejunum

plate. The corresponding threads were then tied and the abdominal wound closed. A towel folded to form a pad was bound firmly over the dressings, and removed after forty-eight hours.

For three weeks after the operation the pulse kept under 100, and 99.6° was the highest temperature, everything going on favourably. On the twelfth day slight vomiting occurred at 8 A.M., but afterwards she was very well until the afternoon, when the artificial opening between the stomach and intestine seemed to close suddenly. While being fed, the trickling sound of fluid passing through the opening was distinctly audible to anyone standing by the bedside whenever the patient took any fluid food, and the patient's sensations of it abruptly ceased. At 10 P.M. she vomited some 20 ounces of fluids, and from this time till her death on the thirtieth day after the operation, all food taken was rejected. No necropsy was permitted, and the cause of the sudden closure of the artificial opening must remain uncertain.

In two at least of the failures of this operation closure of the opening has occurred. To prevent this it would be well to sew together by a continuous fine silk suture the cut edges of the serous and mucous coats of the incised viscera, and to make larger incisions into the viscera. Operators by the old method made incisions two inches in length.

ON THE DIAGNOSTIC VALUE OF VENOUS HUMMING MURMURS IN THE NECK.

Being an Abstract of a Paper read before the Royal Academy of Medicine in Ireland.

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VERY different opinions are at present entertained, even by the highest authorities, on the subject of the importance of a venous hum in the neck as a means of diagnosing anæmic conditions. Some believe it to be of considerable value. Thus Dr. Bristowe¹ writes of anæmia: "The development of abnormal sounds (among which he mentions various humming murmurs) in the heart and blood vessels is of common occurrence and highly characteristic." Gerhardt² considers that a venous hum is a sign of anæmia, if it can be heard when the head is held quite straight and not turned towards either side. On the other hand, Drs. Hilton Fagge, F. Taylor, and many others do not consider these murmurs to have any significance whatever from a diagnostic point of view. One of the most complete articles on this question is that by Dr. R. Apetz.³ He examined as to the presence or absence of a venous hum in over 600 persons, and came to the conclusion that, while it is more frequently found in anæmic individuals than in others, it is not of the slightest importance in individual cases.

I have during the past two years investigated this question in a large number of young persons, between the ages of 16 and 26. They were all presumably healthy. I examined them either sitting or standing, and with the head directed straight forwards. I placed the stethoscope—an ordinary straight wooden one—as lightly as possible on the side of the neck.

I divided my cases into three classes, namely: (1) anæmic; (2) slightly anæmic; (3) not anæmic. By "slightly anæmic" I mean cases that show some of the symptoms, but none of the signs of anæmia, or *vice versa*, that is, cases about which one cannot at once say whether they are anæmic or not. I should say that in estimating anæmia I could only use the ordinary clinical tests; time did not permit of my counting the corpuscles, etc.

I examined in all 200 persons, 51 young men and 149 young women. Of these, 22 belonged to the anæmic class, 31 to the slightly anæmic, and 147 to the not anæmic.

In the 22 anæmic there were 19 murmurs =	86.4 per cent.
„ 31 slightly anæmic 27 „	= 87.1 „
„ 147 not anæmic 85 „	= 57.9 „

¹ *Practice of Medicine.*

² *Lehrbuch d. Auscultation u. Percussion*, 1890.

³ *Virchow's Archiv*, vol. 107.

Dividing the not anæmics into males and females, there were :—

In 104 not anæmic females 64 murmurs = 61.5 per cent.
 „ 43 „ males 21 „ = 48.8 „
 that is, not a very great difference.

I noted in each case whether the murmur was loud or not. I met with in all 15 excessively loud or roaring murmurs.

In 22 anæmic ... 3 loud murmurs = 13.6 per cent.
 „ 31 slightly anæmic 5 „ „ = 16.1 „
 „ 147 not anæmic 7 „ „ = 4.8 „

My conclusions are the following :—

1. Venous murmurs are more common in anæmia than in other conditions.

2. They are present in about 50 per cent. of not anæmic young persons of both sexes.

3. Hence it follows that their presence in any individual case is not a matter of any diagnostic importance whatever.

4. Even the loudest murmurs are not peculiar to anæmia (though more frequent in that condition), and are therefore of but little, if any, importance. I noticed some of the loudest murmurs in very rosy, full-blooded individuals.

RESULTS OF ENUMERATION OF BLOOD CORPUSCLES IN SOME CASES OF SPLENIC ENLARGEMENT OF MALARIAL ORIGIN.

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 Jubbulpore.

It is the generally accepted view that an increase in the number of the white blood cells occurs in malarial splenic enlargement, very similar to that which occurs in leucocythæmia. Hitherto I have failed to find an increase of the white blood corpuscles beyond physiological limits in any case of malarial splenic enlargement, whether this enlargement be of the transitory type arising during an attack of ague, or of the more permanent kind, where the organ presents itself as a firm, freely movable tumour in the left half of the abdomen. In the following table the results are given of the enumeration of the blood corpuscles in twenty-two cases of malarial splenic enlargement, in the majority of which the hypertrophy belonged to the more persistent type. The patients were men of native regiments, who sought medical aid on account of the debility induced by this disease or for ague.

Hayem and Nacet's hæmacytometer, as modified by Dr. Gowers, has been used for the work of counting the corpuscles, and Gowers's hæmoglobinometer for the estimation of the hæmoglobin.

A solution of phosphate of soda, of specific gravity 1025, was found to be the most suitable diluting fluid for use in the hæmacytometer. Solutions containing sulphate of soda, acetic acid, or common salt, produce great alteration in the appearance of the red blood corpuscles in this country, rendering the work of counting them very difficult.

The pathological change common to all of the twenty-two cases is a diminution of hæmoglobin, accompanied in the majority of cases by a corresponding diminution in the number of the red corpuscles. With two exceptions, the loss of hæmoglobin exceeds that of the red corpuscles, which have in consequence become of relatively less hæmoglobin value than that which they possess in health in a cold climate. In the number of the white corpuscles, on the other hand, no change beyond physiological limits appears to have taken place, whatever the nature of the splenic hypertrophy, whether fresh, soft, and congestive, or firm and of old standing.

It may be advanced that the number of cases given is too small to entitle any general deduction being drawn from the facts obtained. It would not, however, be difficult to increase their number very largely, and at the present stage they appear to justify the statement that the blood changes set up by malarial splenic hypertrophy and malarial cachexia have nothing in common with those which receive the name of leucocythæmia, for in the former the anæmia is due to loss

of hæmoglobin, not to increased formation of the white cell element of the blood.

Number of Cases.	Age in Years.	Service in Years.	Percentage of Hæmoglobin.	Percentage of Corpuscles White and Red.	Proportion of White to Red Corpuscles.	Previous Medical History during Service.	Remarks.
1	31	9	60	88	1 to 523	Ague twice, syphilis twice	Marked anæmia of mucous membranes; spleen reaches to within 1½ inch of middle line.
2	48	18	75	80	1 to 770	Ague 27 admissions	Spleen 4 inches and liver 2½ inches below costal margin.
3	22	5	35	44	1 to 706	Ague 4 admissions, and dysentery 1	Marked anæmia; spleen 2½ inches and liver 1½ inch below costal margin.
4	21	5	70	62	1 to 900	Ague once	Spleen to within 1 inch of middle line.
5	19	1	65	79	1 to 630	None	Spleen reaches middle line.
6	24	2	75	112	1 to 650	Ague once	Spleen reaches to middle line anteriorly, and to a point 2 inches below umbilicus inferiorly.
7	20	1	75	109	1 to 550	Ague once	Spleen hard, reaches middle line.
8	39	21	90	93	1 to 800	Ague 11 admissions, syphilis 1 ditto	Not anæmic.
9	18	1	60	64	1 to 750	Ague once	—
10	22	4	65	90	1 to 1,000	Ague once	Spleen reaches to right of middle line.
11	22	1	70	74	1 to 500	Ague 4 admissions	—
12	18	1	80	80	1 to 300	Simple continued fever once	Spleen 5 inches below costal margin.
13	17	1	80	84	1 to 670	None	None.
14	23	1	70	80	1 to 500	Ague twice	None.
15	22	2	85	99	1 to 600	Ague once	None.
16	22	2	60	100	1 to 500	Ague twice, dysentery twice	None.
17	30	4	50	68	1 to 540	Ague thrice, dysentery 4 times	Spleen reaches middle line.
18	19	1	75	82	1 to 520	None	Spleen 3 inches below costal margin.
19	37	16	75	80	1 to 750	Ague 5 admissions, remittent fever once ditto	Spleen 4 inches below costal margin.
20	23	2	50	68	1 to 270	None	Marked anæmia of mucous membranes; dysenteric tendency; spleen 4 inches below ribs.
21	40	27	70	86	1 to 688	Ague frequently, dysentery once	Spleen reaches middle line anteriorly into the umbilicus inferiorly.
22	18	1	65	96	1 to 720	Jaundice once	None.

In malarial disease the hæmoglobin is less in quantity in each cell, and it also appears to be in less stable union with the cell stroma, for it crystallises more easily, and is more readily acted on by dilute solutions of common salt, soda sulphate, and acetic acid. When using a low magnifying power, I have often found it difficult to distinguish a tuberculated, swollen, red blood cell from which the hæmoglobin had been dissolved from a white corpuscle.

These conditions may account for the difference between the observations which form the subject of this paper and those which receive general acceptance. In ague, remittent fever, and simple continued fever, which may be regarded, especially the first named, as the initial and active manifestations of malarial disease, changes have been observed in the blood similar to those above described as belonging to malarial splenic hypertrophy.

In no instance have the white blood cells been found increased after an attack of ague, but in every case examined diminution of hæmoglobin and red blood cells was the pathological condition produced by the disease. This is shown in the following table, which gives the enumeration of the blood