centimetre when suppuration takes place, and this sign may therefore be used to indicate operation, as has been claimed in the case of appendicitis. The condition of the throat has an important bearing on the degree of leucocytosis, but as long as the discharge is free the increase of leucocytes is not excessive. Measles can be readily distinguished from scarlet fever, as it is one of the few febrile diseases where there is no leucocytosis. Contrary to the experience of Cabot I found no leucocytosis until the rash had been out for about 24 hours; the statement of his about there being leucocytosis six days before the eruption is difficult to understand, as in most cases that would be before the child was even exposed to infection.

That the chief increase should be in the polymorpho-nuclear variety is only what one would expect, but the increase of the eosinophile variety is interesting. Those who believe that the coarsely granular eosinophile cell has to do with the production of antitoxin will find their theory substantiated, though unfortunately it does not hold good in other diseases where antitoxins are produced. It seems rather that the eosinophile cells have some relation to skin conditions, as in many skin diseases they are much increased, and if this is the case the greater number should be found in those cases which present the most intense and lasting rash, but neither on this point nor on the question of leucocytosis in relation to acute nephritis have I been able to collect any evidence.

Addendum, June, 1901.—The finding a deficiency of red blood cells is not surprising, as everyone who has been brought into contact with patients convalescent from scarlet fever notices the frequency of anæmia. It is scarcely necessary to add that this fact establishes as a rational one the custom of administering to all children one of the iron-containing syrups—with the possible exception of those who have had arthritic complications.

Bristol.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

BACTERICIDAL EFFECT OF THE BLOOD OF NATIVES OF INDIA ON BACILLUS TYPHOSUS.

By F. N. WINDSOR, B.Sc. VICT., B.A. CANTAB., CAPTAIN, I.M.S.

(From the Pathological Laboratory, Army Medical School, Netley.)

THE opportunity being given by the presence at Netley of four Sikhs (invalided for wounds from West Africa) and one other native of India (an adult Bengali) I have, at Professor Wright's suggestion, investigated the bactericidal power of their blood on bacillus typhosus with a view to a possible bearing of such inquiry upon the problem of the comparative immunity of Indian native troops to typhoid fever. The method employed was that recently described by Professor Wright,¹ the details being as follows. A 24-hour old broth culture of the bacillus typhosus was employed and the number of bacteria contained in it was elicited as described in the paper above referred to. A series of dilutions of the culture were then made and a certain volume (about five cubic millimetres) of each was mixed with an equal quantity of undiluted blood serum (drawn an hour or so previously) in a capillary glass tube. After the serum had remained in contact with the culture for 24 hours at a temperature of 37° C. a comparatively large volume of sterile broth was drawn along with the contents of the tube into the mixing chamber at the upper end. The series of tubes were then incubated for 24 hours at 37° C. When the contents of the chamber remained clear the bactericidal action of the serum was assumed to be complete; when it had become turbid, incomplete. In case of doubt the inoculation of nutrient agar decided the question.

The results are shown below in tabular form and may be

compared with those obtained from a similar investigation of the blood of several ordinary Europeans :—

Dilutions of Culture employed and Number of Bacilli in One Cubic Centimetre of each Dilution.

	1 in 5. 40,000,000 in 1 cubic centimetre.	1 in 10. 20,000,000 in 1 cubic centimetre.	1 in 25. 8,000,000 in 1 cubic centimetre.	1 in 50. 4,000,000 in 1 cubic centimetre.	1 in 100. 2,000,000 in 1 cubic centimetre.	1 in 1,000. 200,000 in 1 cubic centimetre.	1 in 10,000. 20,000 in 1 cubic centimetre.
Sikh, N. S.	Growth	Growth	Growth	Growth	Growth	Sterile	Sterile
" D. S.	"	"	"	"	"	"	"
" R. S.	"	"	"	"	"	Growth	"
" B. S.	"	"	"	"	"	Sterile	"
Bengali, { S. B. ... }	"	"	"	Sterile	"	"	"
European, { E. V. A. }	"	"	"	Growth	"	"	"
European, { J. S. H. }	"	"	"	"	"	"	"
European, { E. A. S. }	"	"	"	"	Sterile	"	"
European, { F. N. W. }	"	"	"	"	Growth	Growth	"
European, { J. B. C. }	"	Sterile	Sterile	Sterile	Sterile	Sterile	"

The agglutinative reaction was also tested in sedimentation tubes and gave a negative result with all the above sera.

From these results it would appear that as regards its action towards bacillus typhosus the blood of these five native Indians did not differ to an appreciable extent from that of an ordinary European. The interesting question as to how this action would be affected by an inoculation with typhoid vaccine cannot at present be determined.

Netley.

A CASE OF CYSTINURIA WITH DIAMINURIA.

By H. A. SCHÖLBERG, M.B. LOND.,

AND

A. E. GARROD, M.D. OXON., F.R.C.P. LOND.

THE observations recorded below have been made on a case of cystinuria in a boy, aged 12 years, an account of whose case appeared in THE LANCET of Feb. 16th, 1901, p. 470. He had been admitted to the Birmingham Children's Hospital for the removal of a cystin calculus from the bladder. We are greatly indebted to Dr. E. A. Sadler of Ashbourne for his kindness in collecting and forwarding samples of the urine and for giving us leave to publish these observations on the case. The urine was examined at different periods from Feb. 15th to April 18th, the whole time making a total of 10 days. The method employed for detecting the diamines is that known as the Udranszky-Baumann. Huppert¹ gives the details for those who may wish to use this way. The total urine passed in 24 hours was received for the following days, the results being tabulated as follows :—

Date.	Urine for 24 hours.	Diamines.
Feb. 15th—16th.	670 cubic centimetres.	Absent.
" 16th—17th.		
" 17th—18th.		
" 18th—19th.	70 "	"
" 19th—20th.	40 "	"
March 1st—2nd.	156 "	"
" 2nd—3rd.	56 "	Putrescin.*
" 3rd—4th.	90 "	Absent.
April 16th—17th.	160 "	Putrescin and cadaverin.†
" 17th—18th.	260 "	

* The melting point was 175° to 176° C.

† The melting point was 159° to 161° C.

¹ THE LANCET, June 1st, 1901, p. 1532.

¹ Neubauer und Vogel: Analyse des Harns, p. 265.

It will be seen from this that on three occasions out of 10 examinations diamines were found, in one case putrescin (dibenzoyl derivative) being separated as a pure product. This is the second case recorded which has given such a result, the other being described by Garcia² who was examining the urine of Baumann's case recorded in the same journal in 1889. The evidence that we had separated dibenzoyl putrescin is as follows: (1) benzoylating yielded a crystalline compound having the same melting point as dibenzoyl tetra-methylene-diamine—175° to 176° C.; (2) it was insoluble in water; (3) it was soluble to a certain extent in ether and readily soluble in alcohol; (4) the platinum salt of the compound was prepared and the crystals corresponded with those of the platinum salt of putrescin. The yield was insufficient to allow of a further experiment and an ultimate organic analysis could not be done.

The results obtained with the samples dated April 16th to April 18th indicated a mixture of the two diamines putrescine and cadaverine. The melting points of the two dibenzoyl derivatives of these two compounds are 175° to 176° and 130° C. respectively, and a mixture of the two would give a lowered melting point corresponding to the proportions of the two bodies present. The melting point of the crystalline bodies separated was in both cases 159° to 161°, suggesting that we were dealing with a mixture of dibenzoyl putrescine and dibenzoyl cadaverine, the greater part of which was the putrescine derivative. Ether dissolved the greater portion of the mixture, leaving a small crystalline residue. An examination of the fæces was not made.

In conclusion, we wish to emphasise the intermittent character of the excretion of diamines and the necessity of making a repeated examination of the urinary output before deciding that these bodies are absent. We wish to express our thanks to Dr. F. W. Andrewes for allowing us to carry out this work in his laboratory.

The Pathological Laboratory, St. Bartholomew's Hospital, E.C.

MALARIAL COMA; PREMATURE DELIVERY; DEATH.

By J. BELL, M.R.C.S. ENG., L.R.C.P. LOND.,

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A CHINESE prisoner in about the eighth month of pregnancy was suddenly seized with a fit at Hong-Kong gaol on June 1st. When seen she was quite unconscious with contracted pupils, stertorous breathing, insensitive conjunctivæ, and a small, feeble pulse. Under the idea that she was suffering from uræmia she was transferred to the Maternity Hospital. On arrival she was much in the same condition; the temperature was 100° F. and she was quite unconscious. She passed her urine and fæces in bed, but by means of a catheter a specimen of urine was obtained; the specific gravity was 1015, it was acid, and it contained a trace of albumin. The following day she was somewhat better and she could be roused by loud shouting. The temperature was 101°; the urine contained one-sixth albumin with blood corpuscles and blood casts. The labour ended naturally, the child being dead. On the 3rd the temperature was 103°, the urine was normal, and the patient was still unconscious. A blood slide showed numerous malignant quotidian parasites. Ten grains of quinine were given hypodermically twice daily, but without any drop in the temperature or improvement in the mental condition. On the 4th the temperature was 106·8°. As the patient was evidently sinking lumbar puncture was performed, clear serum coming out of the tube which was left in for 48 hours. This, perhaps, combined with ice-packing, brought the temperature to normal at midnight. The following day the patient seemed to be much more sensible, though the temperature again rose to 104°. As the blood still showed malignant parasites in large numbers the quinine was increased to 15 grains twice daily, with iron and quinine every three hours. The patient slowly again relapsed into unconsciousness, the temperature varying between 101° and 106° till the 7th, when she died.

Necropsy.—At the post-mortem examination the heart and lungs were found to be normal save for some old adhesions at the right base. The liver was cirrhotic and weighed two and three-quarter pounds. The kidneys were normal but were much congested. The spleen weighed five ounces. The brain was soft and congested, but there was no increase

in the fluid either at the base or in the ventricles. A smear obtained from the spleen teemed with parasites.

Remarks.—As these comatose forms of malaria invariably show a large increase in the cerebro-spinal fluid, lumbar puncture was tried in the hope of staving off the effects of pressure until the quinine had time to work. The result was disappointing, as also was the effect of quinine which in these comatose forms seems to be useless. In five days the patient had 145 grains hypodermically with practically no effect.

Hong-Kong.

A Mirror

OF

HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

ST. GEORGE'S HOSPITAL.

TWO CASES OF INTUSSUSCEPTION TREATED BY OPERATION; RECOVERY.

(Under the care of Mr. HERBERT W. ALLINGHAM.)

THE following two cases are good instances of the successful treatment of intussusception by laparotomy, and the best results are obtained when, as here, no previous inflation or injection has been practised. In one important point, however, these two cases differ from most other cases of laparotomy for intussusception: in both the vermiform appendix was removed. Inasmuch as shock is the chief cause of death in laparotomy for intussusception this addition to the operation is of doubtful value, and the utility of the modification is but little increased by the avoidance of possible appendicitis in the future and by the possible formation of adhesions which may tend to prevent a recurrence of the invagination. For the notes of the cases we are indebted to Mr. P. L. Mummery.

CASE 1.—A well-nourished child, aged a year and three months, was suddenly seized with acute abdominal pain at 9 A.M. on March 11th; this was followed by vomiting and diarrhoea, the stools consisting of blood and mucus. The patient had previously been quite healthy except that he had suffered from worms for some time, a worm having been passed just previously to the onset of symptoms. The child was admitted to St. George's Hospital at 4 A.M. on the 12th. The abdomen was slightly distended and tender, and a firm roundish mass could be felt extending from the right iliac fossa upwards and then across the abdomen at about the level of the umbilicus towards the left side.

The A.C.E. mixture having been administered, an incision was made about four inches long just to the right of the umbilicus and extending about an equal distance above and below it. On opening the abdomen an ileo-cæcal intussusception was found nearly a foot in length. This was reduced easily by squeezing except for the last portion which was rather adherent. The appendix (about four inches in length) was then removed by turning back a sleeve of peritoneum in the ordinary way. The wound was sewn up with fishing-gut sutures, and the dressings were fixed on by passing broad pieces of strapping completely round the body. The child was subsequently allowed to move about in bed as he liked. He was rather restless all day, but after the administration of two minims of tincture of opium he slept well all night.

On March 13th the child was sitting up playing with toys and seemed to be quite comfortable. Two drachms of castor oil having been given without effect in the morning the child was given half an ounce in the evening which resulted in two good stools during the night. The patient made an uninterrupted recovery, the stitches being removed on the sixth day. The child was allowed to sit up when he wanted to, and, in fact, did so most of the day. The wound was firmly healed on the 25th and the child left the hospital quite well on the 28th.

CASE 2.—A well-nourished child was in good health until

² Zeitschrift für Physiologische Chemie, 1893.