Clinical Notes :

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

FURTHER REMARKS ON THE AGGLUTINATING ACTION OF PLAGUE BLOOD.

BY E. KLEIN, M.D., F.R.S.

In addition to the experiments which I described in the first communication¹ I have made some further observations on this subject.

As I pointed out before, recent gelatin culture of the bacillus pestis yields readily a useful and workable salt emulsion, on which a decided and undoubted agglutination with the blood of rats that have recovered from infection with plague-culture can be demonstrated. I have prepared also guinea-pigs for this purpose. Guinea-pigs were on three different occasions, at intervals of from five to seven days, injected subcutaneously with a large dose of plague-growth scraped from the slanting surface of agar-culture suspended in salt solution and sterilised for 10 minutes at 70° C. Half a culture tube was used for each injection. The injection caused no illness in the animal, a passing slight tumour being the only effect. The animals were now injected with a small dose of living culture, from one-thirtieth to one-sixtieth of an agar tube; this caused illness and bubo, but the animals recovered. The first sign of definite agglutinating power by the blood of the animals was noticed about a fortnight after the last injection, from 1 in 20 to 1 in 30 causing agglutination within 15 minutes. A second injection with a small dose of living culture enhances this agglutinating power, inasmuch as 1 in 30 causes complete agglutination within five minutes.

With the blood of the so prepared guinea-pigs I have tested the agglutination of salt emulsions² of different strains of plague bacilli derived from human subjects infected in various countries—India, the Cape, South America, Alexandria, Smyrna, and Hong-Kong. In addition to these I had plague cultures which were obtained from a rat that had died from plague in Cardiff docks. The prepared guinea-pigs' blood agglutinated all these strains equally well, but it failed to agglutinate accidental impurities of different microbes belonging to the tribe of bacillus coli and the group of proteus, so that this blood is of use in diagnosis of plague culture.

I may add here that while the prepared guinea-pigs' blood has this specific action on bacillus pestis all of different strains other samples of blood which I have tested—blood of normal animals and blood of normal human beings—have no such action. Amongst the negative reactions I may mention the blood of the boy from the City-road who was, early in April, suspected of being affected with plague. The blood of this boy, kindly supplied to me by the help of Dr. Turner of the South-Eastern Hospital, during convalescence (towards the end of April), was tested on two different occasions; it failed to cause agglutination of the plague bacilli of any of the prepared strains.

St. Bartholomew's Hospital.

BLUE URINE.

BY JOHN GOOD, M.R.C.S. ENG., L.S.A.

The following case may probably interest some readers.

On April 14th, 1901, an unmarried man, aged 43 years, came to me complaining that he felt sickly, had no appetite, felt pains in his loins, over his kidneys, and that his urine was of a "bad" colour. He was a tall, thin man, of a nervous

manner. His face was somewhat puffy and his conjunctivæ were yellowish. His family history was good. He did not smoke and was of fairly steady habits. He had, however, recently indulged in too much beer and vomited after his last debauch. He had suffered from gonorrhœa about 20 years ago but never since. Since the commencement of this year he had taken an occasional dose of "salts" or a Seidlitz powder at intervals, but no other medicine—liquid, pill, or powder. His bowels acted regularly as a rule, but lately had been "out of order." He had a slight throat cough, his tongue was furred, and his skin was darkly pigmented over the abdomen, chest, and back, showing leucodermatous spots in places—particularly upon the abdomen. He repeated his statement about his urine being a "bad" colour, comparing it to a dull green book which was lying closed upon my table, and said that the urine had never been like it until that morning. I told him to send some to the surgery. Having been engaged in general practice for 20 years without having seen or heard, otherwise than casually in the medical journals, that there was such a condition as "blue" urine, I thought the patient was giving an exaggerated description, but when I unwrapped the bottle of urine it was of peacock-blue colour, clear, and stained the cork. It had a specific gravity of 1010 and an acid reaction; it contained no sugar or albumin, but turned a pretty rose colour on boiling with hydrochloric acid. Under the microscope were seen deep blue granules with squamous epithelium. Upon his coming to see me next day he said he felt less sickly, but his urine was not right. He passed in my presence about two ounces of sage-green urine, which I examined and found as before, except that microscopically the blue granules, where grouped, shaded into an orange colour. Although I had previously given him a saline aperient mixture in repeated doses the bowels were not acting, so I supplemented the aperient with pilula hydrargyri cum colocynthide. The following day he had four loose stools and his tongue was cleaner; the urine had been greenish in the morning, but had since assumed its natural colour and his appetite was returning. I now gave him alkaline gentian mixture with sodium salicylate in five-grain doses and he quickly recovered his normal health and spirits. He assured me, and I believed him, that he had not taken anything that he knew of that would cause his urine to become blue, that he had never seen his urine blue before, or known anyone else who had blue urine.

The view I took was that it arose through duodenal indigestion. Trypsin in the small intestine breaks up proteid into peptone, peptone into leucine and tyrosin, and further into indol, phenol, and other bodies. Indol by the putrefactive action of bacillus coli in the intestine forms indican—i.e., potassium indoxyl sulphate. When urine boiled with hydrochloric acid gives a pink colour it indicates that indican is present in excess. Indican turns indigo-blue by oxidation. Osler and Fagge both say that the urine in many cases turns blue after exposure to the air. In the above case the urine was passed blue, undergoing no subsequent change. I sent a specimen of the deep-blue urine to be examined by an expert and received the report that it was due to methylene blue, suggesting that the patient may have taken it in pill, but looking at the history of the case, the excess of indican, and the orange tints of the immatured blue, I cannot yet bring myself to alter my diagnosis. I should, however, like to hear the opinion of others on the matter.

PS.—On April 22nd I sent both specimens of urine to London and received them back this morning (May 22nd). When they arrived here I was surprised to find both colourless, but upon exposing them to the air for re-examination both regained their original colour. I think this incident supports my view on the etiology.

Stockport.

A CASE OF PRIMARY CARCINOMA OF THE VAGINA.

BY RAINSFORD F. GILL, M.D. LOND.

A CASE of this exceedingly uncommon form of disease has recently come under my care and I record it because McClintock says that no well-marked and undoubted case fell under his notice and Barnes speaks only of some cases of ulceration of the vagina which he believed to be of a cancerous nature.

The patient was a healthy-looking woman, aged about 30 years, who had requested her husband to call upon me to

¹ THE LANCET, Feb. 16th, 1901, p. 456.

² A simple method to obtain a good emulsion is the following. Remove by means of a platinum loop a particle of the growth from the surface of a recent gelatin culture, rub it well and uniformly over the slanting surface of fresh gelatin, then pour from one to two cubic centimetres of salt solution over this infected surface; by shaking the tube the transferred plague material is readily washed off as a uniform emulsion.