cavity was not completely emptied, but about the same amount as withdrawn left behind.

The heart is only functionally disordered, as in ordinary anæmia; the urine more or less healthy, no albumen or unusual amount of bile pigment present. The motions call for no comment. He has had, since the spleen enlargement, slight bleeding, off and on, from the gums.

His temperature manifests but a very slight variation from the normal; on occasions there was a rise of a degree or so in the evenings. The blood changes, however, were important, and with the enlargement of the spleen, atrophic cirrhosis of the liver and ascites complete the picture of my diagnosis of the disease.

Not to give too lengthy details of the blood, the result of two examinations only are considered sufficient. On the 13th September 1907, a few days after the patient's admission, the following facts were noted :—R. B. C. considerably reduced in number, being only 1,500,000 in the cubic millimetre, instead of 5,000,000; hæmoglobin 35 instead of 100, and the colour index, 1·15—0·15 over the normal. Slight polychromasia, megalocytosis and two normoblasts in a leucocyte count of 500: in other words, a picture of mild primary anæmia. The leucocytes were decreased in number, being 5,000 instead of 10,000 in the cubic millimetre. The relative frequency of the different kinds were—

Polymorphonuclear	... 312	62·4 per cent.
Mononuclear	... 47	9·4
Lymphocyte ...	... 106	21·2
Eosinophile ...	... 35	7·0
	500	100 0

a small relative decrease in the polymorphos and increase in the mononuclears and eosinophiles, but otherwise not indicating any very marked variation from the normal.

Two months after, another blood examination was taken (on the 12th November); this showed an improvement in the condition of the blood as far as the R. B. C. were concerned. The red cells had increased by nearly a million, hæmoglobin 40 and the colour index 0·83 per cent. A few of the R. B. C. were oval-shaped, very slight inequality in the size of the cells, no polychromasia and no nucleated elements. The leucocytes now numbered 3,500 to the cubic millimetre, their relative quantity remaining almost the same as on the previous occasion.

Polymorphonuclear	... 310	62·0 per cent.
Mononuclear	... 43	8 0
Transitional	... 2	0·4
Lymphocyte ...	... 100	20 0
Eosinophile ...	... 45	9 0
	500	100 0

From the foregoing, it will be seen that the cardinal signs of Banti's disease are present, *i.e*, enlarged spleen, anæmia, cirrhosis of the liver and ascites, and finally, to clinch the diagnosis, I shall attempt to show, by a process of exclusion, that no well-recognised attributable cause is forthcoming to explain the patient's condition.

Several other diseases give rise to similar, if not identical, sequelæ. To take a few, we have chronic malaria, leukæmia, kala azar, syphilis, tuberculosis and malignant disease; these I differentiate as follows :—

In what I call extinct malaria, that is, in which no parasites are present, no schizonts, gametocytes or gameto-schizonts (schandiun the latent forms), it would be hard to differentiate, as Banti's disease is held by some to be the heritage of malaria, in which the exciting cause is extinct or spent out, but the injured or pathologically cirrhosed organs, especially the liver and spleen, remain to tell of the previous ravages of the malarial organism. There is a certain amount of evidence in favour of this hypothesis, but I cannot offer any opinion from the experience of two cases.

There is no hesitation in excluding leukæmia; the appearance of the blood change at once disarms any suspicion.

Kala azar was suspected for a long time, but as after half-a-dozen careful examinations of the peripheral blood, no signs were present, the spleen was punctured and no leishmania found.

Syphilis and tuberculosis do not give rise to such abnormally huge spleens as in the patient under question.

Malignant disease does not give rise to the picture depicted in the signs and symptoms described.

The only doubt is from chronic malaria of the extinct type, and another factor to strengthen this doubt is, that the patient's brother, who lived in the same house for years, suffered from malignant tertian.

NOTE.—This patient died on the 22nd February 1908, of pneumonia. The spleen weighed 136 ounces and the liver 64 ounces. Microscopical examination showed marked increase in fibrosis; no parasite of any kind detected in the splenic smears.

A Mirror of Hospital Practice.

A CASE OF BLACKWATER FEVER IN THE UNITED PROVINCES.

BY H. AUSTEN SMITH, M.B., B.C. (CANTAB), ETC.,
MAJOR, I.M.S.,
Civil Surgeon, Mussoorie.

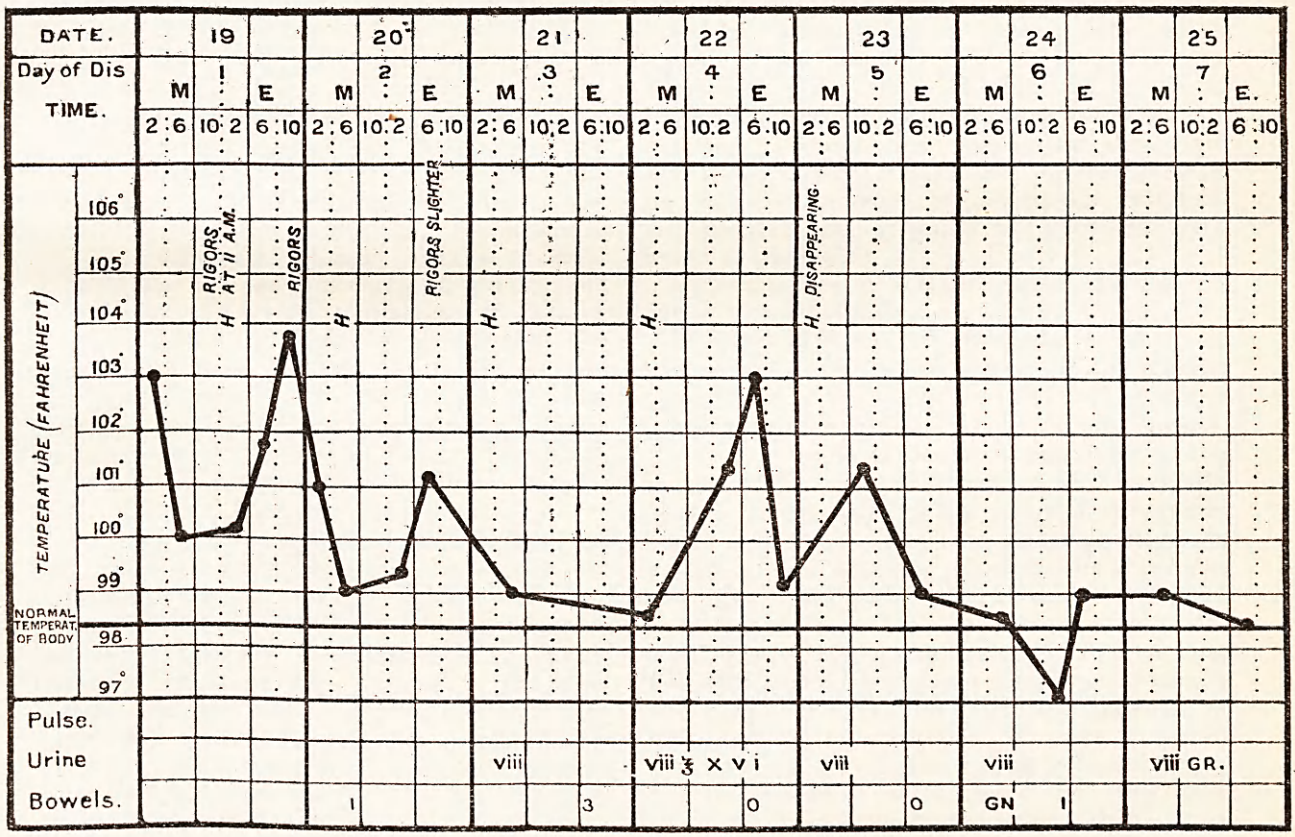
I CONSIDER it necessary to record this case, as it will be of considerable interest to all in emphasizing the fact that Blackwater fever can occur in the United Provinces, although after an experience of some years in these provinces I have never heard of another case. The patient was Mr. T. S. P., *æt.* 27, from Dunkeld,

Perthshire, the head engineer of the firm of Bruce Peebles & Co., Edinburgh, employed in carrying out the erection of the hydro-electric scheme at Mussoorie. Mr. P. and his assistant, Mr. R., both lived in a bungalow built for them at the power station at Gulogi, situated in a deep valley between the lower hills, about 3,000 feet below Mussoorie, and about 3,500 feet above sea-level. It is a very malarious place and the bungalow and servants' houses and power station are surrounded on two sides by water, the stream from which the power is taken. Mr. P. remarked that at Gulogi mosquitos were very numerous and were chiefly of the anopheles class and very large ones. Many of the hill-men on the work there suffered severely from malaria, and Mr. P., who by his energy and example kept them at work, used large quantities of quinine in his efforts to combat the fever. I am informed that four hill-men died of fever there, showing that the fever was of a malignant type. I may say that Mr. P., being a very quiet man, of great energy, applied himself entirely to the work and never revealed, as far as I know, to anyone the fact of the unhealthiness of Gulogi or the large amount of fever that he had to contend with, so that no medical officer was consulted and the issue of quinine was made on advice from Prof. Ronald Ross's book which Mr. P. had read carefully. Mr. P. had himself been suffering from fever for the last ten months, getting regular severe attacks lasting two to three days and then passing off, and occurring regularly once a week or fortnight. The fever would commence one day at midday with a rigor, necessitating his stopping work, and continue until night when he perspired freely, the temperature going up to 103° F. The next day he would have another similar attack but milder, and it would then pass off or continue as a still milder attack the third day. During this time he had been carrying on his work, which was of a very heavy and exacting nature, and he had taken sulphate of quinine regularly during the attacks only, taking McKesson and Robins' tabloids in ten-grain doses at night when the fever was on, and never at other times, as it affected his head and increased his deafness. It is of interest to note that four years ago he had been employed by his firm on engineering work at Hyderabad for nine months, and that during this time he had one very severe attack of malarial fever. He was then employed at home again and had one or two slight attacks of fever there. In November 1906, he came out to the Mussoorie hydro-electric scheme and for the first fifteen months enjoyed excellent health, but he was working more in Mussoorie and was only at Gulogi at intervals. On February 16th last, Mr. P. had a slight attack of fever, starting about midday, but he took no notice of this, as he had some very urgent work on; on the 17th, he again had fever, but did not take any quinine at night, as the quinine upset him so and he wished to be fit for work. On the 18th, he worked hard all day in the sun, but had to leave off in the afternoon, as he felt so ill, and went to bed; on taking his temperature he found it was 102° F. He then at night took 10 grains of sulphate of quinine, as he usually did in these attacks. He passed a very restless night, vomiting constantly the whole night and perspiring profusely, and on the 19th, at 11 A.M, on passing urine he noticed that it was almost black in colour and thicker than usual. He called the attention of his assistant, Mr. R., to this, and Mr. R. being alarmed, sent word at once to me at Mussoorie to come down to Gulogi as soon as possible. It is a very difficult journey down and I did not arrive till the afternoon when I found Mr. P. had a temperature of 100·6° F., was sweating profusely, vomiting everything he took, and passing dark hæmoglobinoic urine; fortunately he had been able to secure the services of a very first class lady-nurse and I found her in charge. I made no diagnosis at the time, but was almost certain that it was a case of Blackwater fever, so I arranged to get Mr. P. up to Mussoorie, as it would have been impossible to do the best for him at Gulogi, and he was taken up very carefully on the early morning of the 20th and placed in a nursing home. I appreciated the danger of moving him, but it was absolutely necessary to do so, and his condition I considered was then good enough to stand it. He stood the journey fairly well and was put to bed in a very warm room at once; his condition was then as follows:—temp. 99·4, pulse 110, soft and weak, skin and scleræ were of a deep saffron yellow tint; there was severe pain in the loins, over the region of the liver, and especially over the bladder; the spleen was enlarged and extended one inch below the costal margin and was very tender on palpation; there was a frequent desire to pass urine, the vomiting still continued, though less; he was perspiring profusely, was constipated, and the urine, when passed, was very dark in colour indeed. On examination of the urine under the microscope, no corpuscles at all were seen; the colour was a very deep claret, and there was a heavy deposit of dark amorphous debris. Owing to the excessive vomiting, he had been able to take very little fluid, but he was now able to take more, and the amount was gradually increased until he was taking as much fluid as he possibly could, chiefly water, diluted milk, and rectal injections of saline solution were given every four hours, one pint at the time, as he was able to retain and absorb this amount. He kept passing urine every four hours, and, if anything, the colour became deeper, hæmoglobin apparently dissolved in the blood serum acting as a diuretic, showing that a very extensive hæmolysis was taking place. He had a very bad night indeed, rigors occurring frequently, although

A CASE OF BLACKWATER FEVER IN THE UNITED PROVINCES.

By Major H. AUSTIN SMITH, M.B., B.C. (CANTAB.), ETC., I.M.S.

Civil Surgeon, Mussoorie.



not so often as the night before when they lasted as long as forty minutes each, and he was delirious at times. On the 21st, his condition was very grave, especially as during the night his urine had decreased in quantity, and it seemed as if he were threatened with suppression; the reason of this was that he refused fluid and did not for a time retain the saline rectal injections. Later he was again able to retain the injections and also to take a large amount of fluid again, and so his condition improved to some extent, and the urine increased in amount, but was still black in colour. Two specimens of peripheral blood were taken stained with Leishman's stain, and examined with a $\frac{1}{12}$th oil immersion objective very carefully; no malarial parasites could be seen, but the polynuclear leucocytes appeared to be increased in quantity, possibly owing to the great destruction of red corpuscles going on. Calomel has been given, and this had acted well; saline diuretics also appeared to help when the urine decreased in amount. He again had a very restless night indeed, with high fever and profuse sweating, and his pulse now showed signs of failing, so hypodermic injections of Liq. strychninæ and digitalin were given as required; the urine was still as dark in colour as before, but the amount passed kept up, 60 ounces being the measured quantity in the last 24 hours. On the 22nd, the urine showed signs of lightening in colour, and he was retaining the rectal injections and taking a large amount of fluid by mouth, but the heart failure persisted and his condition was very grave indeed. The heart failure was treated by heart stimulants, brandy in gradually increased doses, nutritious and stimulating food, and oxygen was kept ready in case of need. On the 23rd, he had passed rather a better night, although very restless; still he had required no hypodermic injections of strychnine; he was taking fluids well and passing plenty of urine and the hæmoglobinuria had now practically disappeared after having lasted for four days exactly almost to the hour. During the day his condition was still very grave, as the heart failure still persisted, but with the stimulants it fortunately reacted when very bad. On the 24th, his condition had decidedly improved, and the force and volume of the pulse was better, the improvement being more permanent. He was now taking lots of food, milk, soups, essences, egg flips, brandy and champagne, and the urine was quite clear, excepting for a heavy deposit of urates. On the 25th, he had passed a good night and he was altogether better; the fever had left him and the profuse sweats had stopped, the pulse also was better, stronger and more regular. He was now able to take some solid food, bread and butter, eggs, etc., and the crisis had definitely passed. He continued to improve steadily, still being kept absolutely still in bed, very warm, lots of food of a light digestible nature, brandy, and for medicines, iron, arsenic and strychnine. I give the case more or less in detail, as it is not often probably one has the chance of watching a case of Blackwater fever right through, certainly not in these provinces.

As regards the disease, the two great dangers are suppression of urine from a mechanical blocking of the tubules and heart failure, the suppression for the first two or three days, while there is hæmoglobinuria and heart failure after this from the third day forward. How this patient overcame the persistent heart failure was a wonder to me, as it never seemed to me possible that he could recover from it.

Regarding treatment, the most satisfactory plan appears to be to treat symptoms as they arise, with absolute rest in bed, continued attention to warmth, alkaline diuretics, lots of fluid, heart stimulants and brandy in gradually increased doses after the second day.

I think great value is derived from saline injections per rectum if they are retained and absorbed; it not, by subcutaneous injection. In this case recovery was to some large extent due to the saline injections, and to the heart stimulants, also to very careful nursing indeed, for these cases must be incessantly watched. No quinine was given, as no parasites were found in the blood.

Certain points in this interesting case strike one as worthy of note.

Firstly, the phrase "if preventable why not prevented" comes before one forcibly as regards the position of the bungalow at Gulogi in which the European engineers lived. It was placed, when built some three years ago, right at the bottom of the valley, surrounded, as I have said above, on two sides by the water of the stream which is to some extent here stagnant in pools, giving a fine breeding place for the anopheles mosquito. Its position was, of course, indicated as being adjacent to the power-house under construction, but for the health of its occupants I think it should have been placed out of harm's way on a spur of the hill above the position of rock and easily accessible. It may be noted that on the hill, villages are placed well above the hill streams, on the tops of the lower hills or on the sides of the higher ones. Mr. P. says that there were always many anopheles mosquitos to be seen in the bungalow, and that they were specially numerous during the months of April and September and October.

Secondly, the history of Mr. P.'s case. As noted above, he had had a severe attack of malaria in Hyderabad four years ago, two slight attacks while at home in Scotland for a few months, then excellent health during the first fifteen months of his work on the hydro-electric scheme at Mussoorie, but during this time he was not constantly resident at Gulogi, being often at Mussoorie for weeks at the time. For the last ten months when constantly resident

at Gulogi, he suffered from regular attacks of malarial fever of an irregular but severe type. This, together with the fact that all the natives employed suffered severely from malaria, and that four of them died of presumably pernicious malarial fever, assists materially the theory of the malarial origin of Blackwater fever; that it is the outcome of malarial intoxication under certain special circumstances, and, possibly, Mr. P. being very susceptible to malarial fever, presented a favourable condition for the onset of Blackwater fever. It may be noted that no other cases of Blackwater fever occurred at Gulogi, and this we may be certain of, for all the natives working there have been under Mr. P., and no one ever lived there before the work on the scheme started some three years ago, and, also, Mr. P. is a very observant man and would be certain to have noted and reported any such occurrence.

Another point of interest is the relationship of Blackwater fever to quinine. Mr. P. had been in the habit of taking sulphate of quinine always, generally in tabloids taken alone, but sometimes in the powder with water only. He had never taken more than ten grains a day, and had always taken it at night when the attacks were on, because it affected his head, so that he could not do his work, and between the periods of fever he never took quinine. He, therefore, although he had taken the sulphate of quinine in ten-grain daily doses during the periods of fever for ten months, had never taken what may be called large doses, but it appears certain that he was peculiarly susceptible to the action of quinine. As already stated, he had taken ten grains of sulphate of quinine on the night of the 18th after three days of fever, and on the 19th, at 11 A.M., the hæmoglobinuria commenced. Can the sulphate of quinine in this case have been the match required to light the flame?

AN EXCEPTIONAL CASE OF URTICARIA.

BY J. W. WATSON, M.R.C.P. (LONDON),

CAPTAIN, I.M.S.,

Medical Officer, Turbat-i-Haidari Consulate;

AND

G. D. FRANKLIN, B.A., M.B., B.C. (CANTAB.),

CAPTAIN, I.M.S.,

Agency Surgeon, Meshed.

ONE of us (J. W. W.) was the patient in this case. For some days there was a troublesome dry cough, particularly violent at night. The cough was relieved by a Linctus containing heroin. The patient, at that time dependent on a Hospital Assistant, examined his own throat in the looking-glass and observed general reddening and injection as in an ordinary case of pharyngitis; the uvula appeared very long and suggested itself to him as a possible cause of the intense irritability of the pharynx. Thereupon he called on the Hospital Assistant to remove the lower third of the uvula, which was done under eucaine. Some slight benefit accrued from this manœuvre, but the throat remained irritable.

On the third day (21st January), after the partial removal of the uvula, urticaria appeared. This was at first the ordinary small type of the disease. That evening there was some fever (100·8), this being the only occasion on which the temperature was raised. The next day (22nd January) the patches of urticaria were much increased in size, and were numerous all over the body. That evening the cough was very troublesome, and next morning (23rd January) there was intense œdema of both lips, soon followed by swelling of the tongue, at first unilateral, but becoming general later. The lesions resembled those of Angio-Neurotic œdema. The tongue quickly subsided on the sucking of snow, but the lips remained swollen for some twelve hours. In the evening the throat felt very dry and irritable. A Linctus gave relief and some sleep was obtained from midnight till 2 A.M. At this hour the patient woke up with a very dry throat, followed in half an hour by rapid œdema of the soft palate, particularly marked on the right side and in the stump of the uvula. The palate was scarified with some relief, and the œdema lessened by 6 A.M. During the morning (24th January) the œdema of the palate slowly subsided. This was followed closely by rapid œdema of the upper lip and left hand; the œdema disappeared from these situations by the evening. During the night there was a recrudescence of œdema in the lip, accompanied by œdema of the right hand. The next day (25th January) the patient came under the observation of the other of us (G. D. F.), about midday. There was then œdema of the lip and of the right hand, and in addition urticarial patches fairly generally distributed all over the body. The œdema of the lip and right hand differed in no degree from the lesions described in a typical case of Angio-Neurotic œdema, reported by one of us in a former number of the *Gazette*. The general urticaria was of a severe type, the patches being as big in many cases as the palm of the hand and of extraordinarily hard consistence. So irritable was the state of the skin that the slightest touch was followed shortly by an urticarial patch. The throat on examination was found to be injected and very red, the left tonsil, prominent with a large sloughy mass, protruding from one of the crypts. The stump of the uvula had a slough in the middle of it and was intensely inflamed. Nothing abnormal was detected in the larynx beyond redness and injection.

The slough was removed from the tonsil, the base of the uvula scraped and touched with a silver nitrate stick and the whole throat well swabbed out.