

every district which they reached they would be joined by large numbers of Afrianders, and they talked of drinking champagne in Cape Town over their conquest within a month. With the great majority of the burghers their confidence of success was absolute. One burgher said that after they had killed all the English soldiers General Joubert would hire a ship and they would send him and his men to England to fetch "Victoria" out of her house and bring her to the jail at Pretoria.

BOER NEWS—OFFICIAL AND OTHERWISE.

An information commission at Bloemfontein sent out official telegrams recording the progress of the war. On the whole the news was reliable, but in one point these official telegrams consistently perverted the truth. They grossly exaggerated the casualties on the British and always understated those on the Republican side. For instance, after Belmont the official telegram stated the Boer losses as ten killed and 40 wounded, and said that the British losses were estimated at far in excess of 2000. In this instance they seem to have divided their actual losses in killed by ten whereas they multiplied ours by about the same figure. Current gossip exaggerated the British casualties still further. We were said to have lost 7000 or more men at Belmont. At Magersfontein we were reported to have lost 9000 killed, and the blood had run four feet deep. The man who brought this report said that he had it from the lips of a minister of the Dutch Church so that it must be true. Our losses were heavy but when they were exaggerated to this extent it is not to be wondered at that the Dutch farmers imagined that there was little chance of British success in this war. When the news of the naval brigade fighting under Methuen reached them it was said that England evidently had no more soldiers to send and was sending sailors to fight now.

CONCLUSION.

In justice to the Free State officials it is only fair to state that in Burghersdorp the English residents were on the whole very fairly treated. Among the Free State burghers drunkenness was certainly less in evidence than with our own men. The liquor regulations during the Boer occupation were more stringent. As soon as the town was re-occupied the difference in this respect was painfully brought to our notice.

TACHYCARDIA FOLLOWING ENTERIC FEVER.

By CHARLES BURLAND, M.D. BRUX., F.R.G.S.,

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THE subjoined synopsis of cases of enteric fever and dysentery which recently came under my care as medical officer in charge of one of the hospital transports from South Africa to Southampton, and the preponderance of typhoid fever cases will, I trust, plead my excuse for submitting a somewhat extensive and varied personal experience to the readers of THE LANCET.

There were under my care, out of a total of 632 patients, 265 cases of enteric fever and 82 cases of dysentery. All these patients had been discharged direct from hospital to the steamer in the early stages of convalescence, and one pronounced symptom which was present in the majority of cases greatly impressed me; this was an unusually rapid, small, and compressible pulse peculiar to the enteric fever cases, associated with signs of early cardiac dilatation. For purposes of investigation I enlisted the help of Surgeon-Captain Fenwick of the New Zealand Mounted Infantry and we made a careful and exhaustive examination of 300 cases of enteric and dysenteric convalescents. In every case in which the pulse-rate exceeded 90 the heart was examined binaurally by Surgeon-Captain Fenwick and myself.

Roughly gauging the severity of the illness by the past military history, as regards work and hardships; having regard, in the case of civilian soldiers, to the sufferer's previous occupation and habitual mode of life; calculating the number of weeks which were spent in hospital; and after prolonged and searching individual examination we obtained the following results. The lowest pulse-rate in the military enteric fever cases was 72 per minute and the highest

was 150, an average exactly of 98-25. In 56 per cent. the pulse-rate was 80; in 25 per cent. it was 95; in 10 per cent. it was 100; in 5 per cent. it was 110; and in 4 per cent. it was from 120 to 140.

In investigating 50 cases of dysentery we found an average pulse-rate which varied from 72 to 80. The number of hearts examined was 75 per cent. of the total cases. In five cases valvular disease was present and these were excluded. In 25 per cent. of those examined the apex beat was displaced. In 50 per cent. the impulse was diffused, undulatory, and difficult to localise. A feeble first sound and a sharp and accentuated second sound were frequent features, while in a small percentage of cases undoubted dilatation was present.

The following is an interesting case illustrating the points which I wish to bring forward.

A Scots Guardsman, aged 30 years, a man of superb physique, came on board apparently convalescent. Seven days later he collapsed suddenly on deck and was at once placed in his cot. His condition was so serious that I summoned Dr. Atherstone, assistant medical officer, in early consultation. The pulse at this time was 150, and was thin and compressible. Dyspnoea was distressing, the face was pinched, cold, and markedly blanched, while the body was covered with a clammy sweat. The patient complained of acute abdominal pain and the abdomen was tympanitic but not rigid. The pain on deep-seated epigastric pressure was excruciating. I was inclined to regard the case as one of acute cardiac failure, but as there seemed to be a possibility of perforation—these men take every opportunity of eating forbidden food surreptitiously—I asked Surgeon-Captain Fenwick for the benefit of his surgical experience. It was decided to continue the medical treatment. The patient rallied slightly under a very free exhibition of stimulants, but expired 36 hours after his first seizure.

The post-mortem examination, one hour after death, revealed enlargement of the heart with dilatation of the left ventricle. The valves were healthy; the lungs were deeply congested; the abdomen was healthy; there was no perforation; and the cardiac walls, left ventricle especially, were very thin. The finger readily perforated the heart substance on slight pressure.

My experience of typhoid fever had hitherto, I confess, led me to coincide with the views of the recognised English and American authorities on the slow pulse usually found in convalescent patients from this disease, and it was certainly startling to find that of all my convalescents not 2 per cent. had a pulse-rate below 70.

How can this rapid pulse-rate in military patients be accounted for? Surgeon-Captain Fenwick adduced a theory of sympathetic irritation which I could not bring myself to accept, but which nevertheless recalled cases of physical exhaustion and cardiac disturbance with rapid, feeble pulse due to hardship and privation, which I, in common with other travellers, have found associated with mountain sickness upon the Himalayas, similarly with well-known phenomena which occasionally prevail in the collapse attending persistent and aggravated sea-sickness. It must, of course, be remembered that in the enteric fever cases which I now portray the majority of the patients had been grievously debilitated by fatiguing marches and poor and irregular feeding—thus engendering a state of cardiac irritation which the subsequent typhoid fever had not conducted to allay. May we not assume that the symptoms described are the natural and inevitable sequelæ of such conditions?

I have selected the following cases of relapsing enteric fever and dysentery, my object being to show that although the dysenteric attacks equalled the enteric in severity, yet in the former disease the pulse-rate was markedly slower.

CASE 1.—An officer, aged 27 years, who went through the whole siege of Kimberley, where he distinguished himself by his unceasing energy, had an attack of typhoid fever and was in due course invalided home. Surgeon-Captain Fenwick, who knew him intimately, stated that he was apparently quite convalescent when discharged from Wynberg Hospital. The patient complained of feeling ill directly he reached the ship and was admitted to hospital treatment at once. After a trying illness, which presented all the features of a severe primary attack but which were unquestionably due to a terribly bad relapse, he suddenly had an attack of cardiac failure on the fifth day of the homeward voyage. He was extremely ill throughout the remainder of the journey

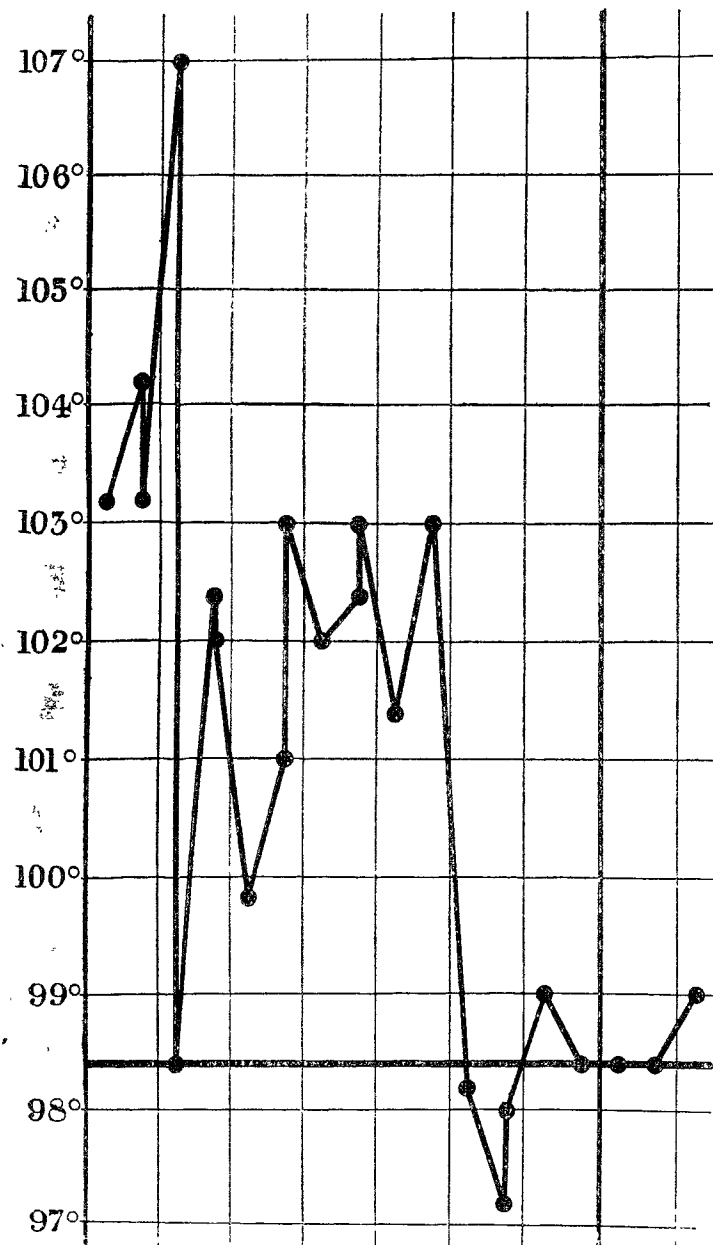
and was eventually despatched by ambulance to Netley Hospital on the arrival of the ship in England.

CASE 2.—A soldier, aged 30 years, had a very severe relapse two days after embarkation. He was much emaciated and was for several days in grave danger. The heart was weak, but the pulse, after the initial rise, was uniformly steady and slow. It will be seen to what a high degree his temperature rose (107° F.).

CASE 3.—A ship's fireman, one of the crew of the transport, had a severe attack of typhoid fever. The pulse was steady and slow and the heart's action was forcible and good.

Case 2 and Case 3 would seem to contradict completely my statements regarding the rapid pulses of my soldier patients, but as a matter of fact the patient in Case 2 had been on garrison duty, with no marching or hardships, while the patient in Case 3 was a ship's fireman with regular hours of duty.

I make no comment on the cases, my only object being



This chart serves to illustrate the severity of some attacks of dysentery. Many writers state that a temperature above 102° F. is unusual, but I have not unfrequently seen the temperature in this disease rise to 104° and over. In this particular case I had a doubt as to the existence of hepatic abscess, but the patient's rapid recovery dispelled this idea.

to show that although the relapses were equally severe, yet a marked difference was noticeable in the cardiac action in the two diseases.

The treatment was simple, consisting of free stimulation with brandy and champagne, while digitalis, carbonate of ammonia, and strychnia were the drugs chiefly relied upon, the latter being administered hypodermically in several extreme cases.

Among the enteric fever cases were four who had undergone antityphoid inoculation. My experience of these does not justify me in saying more than that they appeared to

have been mild attacks with an early and uninterrupted convalescence. With regard to the treatment of dysenteric cases I found that doses of ipecacuanha administered by the mouth in the manner I advocated some years ago in your columns,¹ in an article on hæmatemesis, were most effectual, the one point being to soothe the stomach by a small dose of opium, a short time before administering a bolus of ipecacuanha (20 grains) moistened with a few drops of glycerine, all liquids being absolutely prohibited for some hours after the medicine. Cases in which the drug was rejected when given by the mouth were treated by rectal injection.

While regretting that the military exigencies and the ever-increasing demand for hospital accommodation should necessitate such early removal of patients before they are really fit to travel—to which must be in a measure attributed the very serious relapses which have occurred—it must be remembered that as the Equator is approached meteorological and climatic conditions are encountered which are sufficiently trying even to persons in health.

Infinite credit is due to the Royal Army Medical Corps for their unceasing devotion to their patients, and it is in no spirit of criticism upon them that I record these observations.

To Colonel J. F. Supple, R.A.M.C., principal medical officer, Lieutenant-Colonel O'Connor, R.A.M.C., and Major Tatham, I tender my humble tribute of admiration for the excellent arrangements which they made for the embarkation of patients, combining a minimum of fatigue with a maximum of comfort. To these gentlemen, also, we were indebted for our well-organised hospital and excellent staff.

To Captain Sir E. Chichester, Bart., R.N., we all owed much; no suggestion for the benefit of the sick and wounded failed to secure his kind and patient attention and practical coöperation.

In conclusion, I trust that the officers of the Royal Army Medical Corps, whose experience of typhoid fever cases has of late been enormous, will give the profession the benefit of their observation, especially with regard to the points which I have raised.

A FURTHER NOTE ON THE INFLUENCE OF THE TEMPERATURE OF LIQUID HYDROGEN ON BACTERIA.²

BY ALLAN MACFADYEN, M.D. EDIN.,
AND
SYDNEY ROWLAND, M.A.

IN previous communications we have shown that the temperature of liquid air has no appreciable effect upon the vitality of micro-organisms, even when they are exposed to this temperature for one week (about - 190° C.).³ We have now been able to execute preliminary experiments projected in our last paper as to the effect of a temperature as low as that of liquid hydrogen on bacterial life. As the approximate temperature of the air may be taken as 300° absolute, liquid air as 80° absolute, and hydrogen as 21° absolute, the ratio of these temperatures roughly is respectively as 15 : 4 : 1. In other words, then, the temperature of liquid hydrogen is about one-quarter that of liquid air, just as that of liquid air is about one-quarter of that of the average mean temperature. In subjecting bacteria, therefore, to the temperature of liquid hydrogen we place them under conditions which, in severity of temperature, are as far removed from those of liquid air as are those of liquid air from the condition of the average summer temperature. By the kindness of Professor Dewar the specimens of bacteria were cooled in liquid hydrogen at the Royal Institution. The following organisms were employed: bacillus acidilactici, bacillus typhosus, bacillus diphtheriæ, proteus vulgaris, bacillus anthracis, bacillus coli communis,

¹ THE LANCET, Oct. 14th, 1893, p. 923.

² A paper read before the Royal Society on May 31st, 1900. Communicated by Lord Lister, P.R.S.

³ Proceedings of the Royal Society, Feb. 1st and April 5th, 1900. THE LANCET, March 24th (p. 849) and April 21st (p. 1130), 1900.