buildings have been improved, for a cowhouse of a substantial character to accommodate 24 cows has been built, as well as a dairy with all modern sanitary appliances.

In a word, no one can deny that the appearance of the camp sewage farm in 1897 contrasts most favourably with that presented in 1895; and that the trivial sum of about £2,000 expended by Colonel Jones on behalf of the War Office on permanent improvements since that time has been utilised to the best advantage. In proof of this, it appears that the Urban District Council of Aldershot, who naturally look with a jealous eye upon the doings at the camp, owing to the rateable value involved, are of the same opinion; for their Inspector of Nuisances, in the *Aldershot Times* of June 6th, 1896, then reported that the whole of the farm was in a much better condition than in former times, whilst Mr. Rushford, their surveyor, stated in confirmation that its general appearance had much improved since his last visit.

At this point, however, all commendatory remarks must cease, because I am convinced that the effluent from the farm, which without much stretch of imagination might on the day of my inspection be termed "clarified sewage," must always at its point of discharge into the river Blackwater be chemically impure, even if it be sometimes clear to the eye; and that no effort on Colonel Jones's part can produce a good result unless the Government allow him an adequate sum of money in order properly to underdrain the land and thoroughly to prepare its surface. Small grants of money such as he now receives may do more harm than good. In proof of my statement that the effluent is chemically impure, I read the other day in the remarks appended to one of the periodical analyses, which I understand are made regularly by the military authorities, that in the opinion of the analyst the effluent was "a bad one." As the principal test of a successful sewage farm is the character of its effluent, it follows that a continuously bad one must cause the condemnation of the farm contributing it. In this instance such condemnation is quite preventable if only the War Office would take the necessary steps to ensure success by a reasonable expenditure of money.

It is obviously discreditable that the present state of things should continue; and steps should be taken forthwith to expend the money necessary to secure successful results on the present farm, or, if the authorities prefer, to select and prepare other land for the utilisation and the purification of the sewage, because not only does the result now obtained reflect on those in authority, but needless harm is done to sewage farming as a science.

It is not for me to hazard an opinion as to what are the reasons held by those in authority in favour of the removal of the farm elsewhere, but I am sure that no one could urge the unsuitability of the soil as one of them. Indeed I am of the same opinion now, as I was in 1895, that there is not a farm in England where the soil is more suitable for sewage purification provided only, as I have stated before, that it is properly laid out and underdrained; and that it would cleanse without the slightest difficulty the liquid refuse of at least 40,000 people instead of about 16,000.

Residential objections cannot certainly be brought forward, inasmuch as all the land, which is not liable to floods, is Government property, and therefore not likely to be built over, whilst it must not be forgotten that the farm has been in its present position for thirty years.

The consumption of its produce and the consequent effect on health is of course in this instance a matter of national importance, but your readers will probably agree that in no published instance has any harm to human beings been traced to the consumption of produce from a well-managed sewage farm, still less to animals. Moreover, it is obvious that the question of production in relation to consumption has not much bearing, for very few consumers know where purchased vegetables come from, especially when they are supplied by contract.

Colonel Jones at the beginning of last summer commenced the sale of milk in the Farnborough district, but was within a few weeks of starting peremptorily stopped by an order from headquarters. With regard to the milk question, Sir Evelyn Wood, Quartermaster-General, as President of the Army Sanitary Committee, stated in a report to the War Office, dated July 27th, 1896, that milk from a sewage farm

could not be said to be free from all dangers of contamination, unless it was the produce of a farm where it was impossible to use anything but clean water for washing or rinsing the dairy utensils; and it was, therefore, the opinion of the Army Sanitary Committee that a dairy should not be placed upon a sewage farm at all, but at a selected site at a distance of one-fourth of a mile from it. The sale of milk, therefore, although the public water supply of Aldershot is used throughout the dairy under a competent staff (which fact the Committee appear to have ignored altogether), was peremptorily stopped; but, oddly enough, the sale of butter was not so, with the result that the latter, which is uncommonly good, is still sought after by officers, etc., and duly appreciated by them. The public will hardly understand why the consumption of milk from a sewage farm is considered to be dangerous when that of butter is not.

Another probable reason against the continuation of the sewage farm on the present site is the erection of the new hospital, the nearest point of which is 180 yards from its boundary. It is not the general opinion amongst men experienced in sanitary science that the proximity of a sewage farm is detrimental to the wellbeing of a hospital. At any rate the idea is not favoured at Leicester, where the Corporation Hospital is only 470 yards from the sewage farm, whilst the small-pox hospital is only 50 yards. At Wimbledon the infectious hospital is on the farm itself, whilst at Berlin four metropolitan convalescent homes have been purposely built within the area of the sewage farm.

It has, I am told, been brought forward that such an amount of atmospheric impurity must result as would prove detrimental to patients after operations. Surely the truth of such an idea should be ascertained by an actual analysis of the air surrounding the hospital before it is published abroad and believed in by many without proof.

I understand that the retention or removal of the sewage farm from its present site rests with the Army Sanitary Committee above mentioned, which is composed of several well-known men in addition to Sir Evelyn Wood, Quartermaster-General, amongst whom should be mentioned Sir Douglas Galton. If this is so the importance of the question demands that instead of issuing reports and dictating telegrams from London they should pay a visit to the camp, and see and understand things for themselves upon the ground, taking, if necessary, the evidence of expert witnesses. By this means the truth would probably be arrived at, the present unsettled state of things done away with, and the question settled whether the present farm should be retained after an outlay of about £8,000 upon it, or whether it should be removed further away from the camp, where of course a far heavier expenditure would be unavoidable. Under any circumstances the time for immediate action has arrived.

THE HEALTH OF THE TROOPS IN MATABELELAND, 1896.

By R. T. MICHELL, M.B., C.M.Ed.,

Late Surgeon in B.S.A.Co.'s Forces, Johannesburg, South African Republic.

PROPERLY to understand the diseases from which the troops in Matabeleland suffered, we must review briefly the conditions under which they were placed in 1896.

CLIMATE.

The rebellion broke out just at the end of the rainy season, and the Buluwayo volunteers suffered a good deal from exposure at the commencement; but by May the winter had set in, and scarcely a drop of rain fell till September. The winter day in this part of Africa is usually quite as hot as an August day in England, but the peculiar dry crispness of the air renders it possible to travel and to work without remitting through hours that would otherwise be unbearable. As soon, however, as darkness falls radiation takes place rapidly; sometimes there is a heavy dew, depending greatly on the locality; in any case by midnight the temperature has fallen to 40° F., or lower, and in June and July there is frequently hard frost till dissipated by the morning sun. This means a difference of 40° F., or even more, between 2 P.M. in the shade and 2 A.M. outside the blankets. In August, September, and

October the nights become much warmer, while the day temperature does not rise in proportion.

DIET.

At the beginning of the year rinderpest rapidly exterminated the transport oxen, and as the distance from Mafeking to Buluwayo is 600 miles, the state of affairs looked serious. The authorities, by means of mules, managed to cope fairly successfully with the food question, but equipment was necessarily deficient, notably in special departments such as the medical. Beyond the meagre programme afforded by "canned beef" (affectionately called "bully"), flour, rice, and coffee, tea, sugar, salt, and a limited quantity of baking powder, the men had no variety except when they looted cattle from the Matabele, and these as often as not were sick and dying of rinderpest. Milk, of course, was seldom obtainable at any price, and the war having put a stop to all farming, no vegetables, fowls, or eggs could be procured for many months, even for the sick.

Water was frequently scarce, stagnant, muddy, and, especially on the march up, contaminated with rinderpest. Occasionally it was brackish. Efforts were made to compel the men not to drink water unless previously boiled or in the form of tea or coffee, but it was found impossible to carry this completely into effect.

These facts, as will be seen, all had a bearing on the health of the men and on the treatment of the maladies that had to be dealt with.

ENTERIC FEVER.

The most fatal disease undoubtedly was enteric fever. This seems distinctly in some cases to have been contracted while on the march sixty or seventy miles from civilisation—that is to say, if we are to accept the usual limits of incubation. The death-rate was high,¹ owing, no doubt, to the fact that the patients sometimes had to be transported long distances, when almost into the second week of the disease, and also to the impossibility of supplying them with suitable diet. It was found exceedingly difficult to get some patients to take even the unsweetened variety of condensed milk.

The disease was often modified considerably by the presence of malaria, giving rise to so-called typho-malaria. The most marked of these cases were characterised by an onset with rigors or semi-rigors, severe headache, backache, and by an unduly high temperature for several days, occasionally showing distinct intermissions. After this the chart became more typical of typhoid, but the pyrexial period, if the patient survived, would be irregularly prolonged.

DYSENTERY.

Next to enteric, dysentery must rank for severity. Its etiology in Matabeleland is a little obscure. It seems to occur in districts which can hardly be called malarial, and in times of peace when the conditions of food and exposure are favourable. Amongst the troops there was no lack of causes. Besides the usual campaign conditions of chill after fatigue and irregular action of the bowels (from the irritating nature of "bully" beef and heavy bread, cooked in ashes), the great alternations of temperature, bad and sometimes brackish water, were also predisposing causes; while the fact that the disease is endemic would account for the presence of infection, which is especially liable to attack newcomers.

If one may be allowed to draw a conclusion from general observation, it seems that the consumption of rinderpest meat, or, what is more probable, the presence of the germ in the water, gave rise to a catarrh of the lower bowel in numerous cases which was indistinguishable from the milder forms of dysentery.

For this "rinderpest catarrh" one or more good doses of castor oil, guarded by opium, and followed up, if required, by a simple vegetable astringent, was generally a successful treatment; but owing to the repetition of the cause relapses were frequent. Castor oil and opium was also successful in the cases that were more probably true mild dysentery, if applied early enough, but severe dysentery was very difficult to cure. The proper administration of ipecacuanha was impossible on the march, and not easy in the base camp. By the time the patients could be placed under more favourable

conditions of diet and medicinal treatment the disease had become established and obstinate. In these cases bismuth, either alone or in large doses, or combined with a little opium or astringents, proved the best drug for relieving symptoms, especially when, as frequently happened, gastric catarrh was a troublesome feature.

It was not always easy to diagnose at first sight between some hemorrhoids and early dysentery. Patients would come complaining of frequent stools with tenesmus and blood, who, on close examination, would be found to be suffering from simple diarrhoea supervening on unsuspected internal piles, aggravated, or possibly developed, by long hours in the saddle and previous constipation.

MALARIA.

A great deal of sickness was attributed to "fever," implying malaria, by profession and laymen alike, and treated with quinine, which proved absolutely useless. There is no doubt that, in addition to typhoid, cases of pure malaria did occur, especially at the very early and very late stages of the campaign, and some of these cases were very severe. Investigation of the history almost invariably elicited a history of at least one previous attack and residence in coast districts or the river valleys of the Zambesi or Limpopo. Winter is not the time of year for the disease, and the closer the observation the more it became apparent that the lesser cases of so-called "fever" were either the effects of alcohol or due to biliary congestion accompanied by pyrexia. In the latter affection the temperature may be found to be 102° or 103° F., but the remittent or intermittent characteristics of malaria are absent. The bowels are usually constipated, and the motions, if any, light-coloured. Occasionally tenderness, and even slight enlargement of the liver, will be found, but very rarely actual jaundice. Headache is a prominent symptom, being often hemicranial, and as a rule the malady yields readily to calomel and salines. This form of hepatic fever, though not described in the usual textbooks, is recognised by many practitioners in tropical and subtropical climates, and is quite distinct from the "bilious" variety of remittent fever.

"VELDT SORES."

Among minor ailments, the so-called "veldt sores" gave more trouble than any other. Wherever a man scratched himself with thorns or otherwise lacerated the skin there would appear one or more persistent eczematous ulcers. These were most common and most obstinate on the hands; the feet and legs also were frequently affected, and sometimes all parts of the body in succession. Not a few men were temporarily disabled by the sores becoming inflamed, especially on the shins and backs of the hands. In some instances abscesses formed.

This affection was at times practically universal amongst the officers and men of the volunteer troops, which puts out of court the theory held by some that it is syphilitic in nature.

On the other hand, it seems to be intimately connected with a scurvy-like condition of the blood. A glance at the ration list will show that vegetables—tinned, compressed, or fresh—were not included. Lime-juice was only served out in very small quantities during the first half of the campaign, and this period was fertile in "veldt sores." As soon as lime-juice was supplied more regularly and compressed vegetables became common in the various messes the disease began to disappear. In individuals the regular consumption of organic salts had a marvellous effect. Lastly, sponginess of the gums in all degrees, up to bleeding and loosening of the teeth, was noticed to accompany these sores in far too many cases for mere coincidence. Spontaneous epistaxis also was not uncommon, and in one patient suffering severely from sores tarry motions and hæmaturia occurred. With the experience of 1896 before us we should be justified, I think, in calling this affection "scurbutoderma."

The indications for treatment are—first, to prevent inflammation by avoiding excessive exercise of the limbs affected; secondly, to protect the sores from the dry air and irritating dust by bandaging; thirdly, if of a chronic nature to use some stimulating ointment; lastly, to administer organic salts in the form of vegetables or lime juice.

¹ In consequence of the loss of certain papers on the march down, I am unable to give even the rough figures I had collected.

SURGICAL CASES.

It is not within the scope of this paper to deal with the surgical aspects of the campaign, but I cannot conclude without recording a protest against the *canard* which has been circulated by certain laymen in the colony, and I believe also in England, to the effect that no amputations performed during the fighting in Rhodesia recovered. The number of artificial limbs ordered by the Compensation Committee will alone testify to its falseness.

Owing to the paralysis of transport, equipment in special departments, notably the medical, was at the commencement very deficient, and was never at any time complete. The Medical Staff Corps, though willing, were very inexperienced in nursing. The pressure at the base in Bulawayo necessitated overcrowding, and the hospital staff was inadequate. The so-called Matabele "pot-leg," consisting of a quartz core surrounded with lead, and fired out of elephant guns, introduced a most disturbing element. These balls on striking bone behaved like explosive bullets, lacerating and destroying the tissues far beyond the seat of injury, and in one or two cases giving rise to necrosis of the stumps.

Such are a few only of the difficulties encountered, and it is not too much to say that, taking them into consideration, our primary operations were remarkably successful.

LITERARY NOTES.

THE April number of the *Phonographic Record of Clinical Teaching and Medical Science* contains one of the interesting and instructive Problems in Practical Diagnosis, by the President of the Society of Medical Phonographers, Dr. Gowers. The problem in question was Hæmoptysis: A Mistake, and those who take an interest in life assurance work would do well to read it. Mr. Lamming Burton continues his graphic and practical account of a ship surgeon's life; it certainly will not be time lost for any man thinking of becoming a ship's surgeon to read this contribution. Mr. Peyton T. Beale gives a practical and useful article on Flat Foot. In Humours in Patients we are afforded some amusing incidents between doctor and patient. Under Phonographic News there is an account of what has been done and is being done for shorthand in the medical preliminary examination, with a notice that the Society of Medical Phonographers has been invited to co-operate with other phonographic societies in arranging some scheme for celebrating the sexagenary of phonography this year. A public dinner of medical phonographers at the time of the celebration of the Queen's accession in June has been proposed, and seems to find some favour.

The *Archiv für Schiffs- und Tropen-Hygiene* is a new periodical to be issued every two months, and devoted, as its name imports, to naval and military hygiene, with special reference to pathology and therapeutics. It is edited by Dr. C. Mense, of Cassel, and published by Th. G. Fisher and Co., of the same place. Its title page bears the names of a strong staff of collaborators, including Dr. Baelz of Tokio, Professor Cohn of Breslau, and Professor Rosenbach of Berlin. Among the original articles are one on the examination of the blood in tropical febrile processes and its practical importance, by Dr. Albert Plehn, and one on the etiology and clinical course of beri-beri, by Dr. M. Glogner. The *Archiv für Schiffs- und Tropen-Hygiene* promises to be a valuable publication.

UNIVERSITIES AND COLLEGES.

UNIVERSITY OF CAMBRIDGE.

EXAMINATION IN SANITARY SCIENCE.—The following candidates have assisted the examiners in both parts of the examination:

C. H. B. Adams, O. W. Andrews, F. J. Brakenridge, G. T. Cattell, G. B. Courtney, J. Donald, G. G. Genge, B. B. Ham, C. P. Handson, W. A. Justice, J. T. Leon, F. Pershouse, J. Pringle, F. A. Rogers, T. H. Smith, H. H. Woods.

SOCIETY OF APOTHECARIES OF LONDON.

PASS LIST, April, 1897.—The following candidates passed in:

Surgery.—H. A. Belbin, Sheffield; W. F. Chrispin, Leeds; H. M. Church, McGill University; E. C. Flint, Royal Free Hospital; P. C. Maitland, Middlesex Hospital; A. F. Millar, St. Thomas's Hospital; J. C. Müller, Calcutta; J. Owen, Liverpool; M. Pantin (Section I), Royal Free Hospital; R. W. C. Pierce (Section I and II), St. Thomas's Hospital; G. Renshaw, Manchester; A. W. S. Sheldon,

St. Bartholomew's Hospital; J. Spencer, Leeds; H. de P. B. Veale, Leeds.

Medicine, Forensic Medicine, and Midwifery.—E. C. Flint, Royal Free Hospital; J. C. Müller, Calcutta; J. Owen, Liverpool; M. Pantin (Section I), Royal Free Hospital; E. J. Parry, St. George's Hospital; R. W. C. Pierce (Section I and II), St. Thomas's Hospital; G. Renshaw, Manchester; A. W. S. Sheldon, St. Bartholomew's Hospital.

Medicine and Forensic Medicine.—P. M. Brittain, St. Bartholomew's Hospital; A. J. Hayes, Middlesex Hospital; A. E. Seller, London Hospital; J. M. Wood, Middlesex Hospital.

Medicine.—S. A. Stride, London Hospital.

Forensic Medicine.—A. Arent, St. George's Hospital.

Midwifery.—F. Atthill, Charing Cross Hospital; A. R. Eates, Edinburgh; G. F. May, McGill University; A. P. Square, Middlesex Hospital.

The diploma of the Society was granted to Messrs. Belbin, Brittain, Church, May, Owen, Pierce, Renshaw, Sheldon, and Veale; and to Miss Flint and Miss Müller.

UNIVERSITY OF GLASGOW.

At the winter graduation ceremony in connection with the University of Glasgow on April 13th, Principal Caird presiding, the following medical degrees were conferred:

Doctors of Medicine (M.D.).—With commendation: W. W. Don, M.B., C.M. (Thesis—"Thyroid Therapeutics"); W. K. Hunter, B.Sc., M.B., C.M. (Thesis—"A Contribution to the Etiology of Beri-Beri"). Ordinary Degree: J. F. Fergus, M.A., M.B., C.M. (Thesis—"Urea: Some Remarks on its Elimination in Health and Disease, with reference to Cases under Observation"); P. F. Macgregor, M.B., C.M. (Thesis—"Hysterotraumatis Paralysis: cases and comments"); R. Stevenson, M.B., C.M. (Thesis—"Scarlet Fever and Milk Supply, with notes of an epidemic"); J. P. Topping, M.B., C.M. (Thesis—"Notes and Remarks on Diphtheria").
Bachelors of Medicine (M.B.) and Masters in Surgery (C.M.).—J. H. Rankin and J. M. Robertson.

CONJOINT BOARD IN IRELAND.

FIRST PROFESSIONAL EXAMINATION.—Candidates have passed this examination as undernoted:

Completed the Examination.—Honours Division: C. R. Boyce and P. F. Dooley (equal). Pass Division: R. Allison, J. F. Brogan, R. A. Campbell, W. F. Cormack, W. H. Dodd, J. Dundon, T. Farrell, R. T. Gordon, H. E. Hayes, R. W. Hillis, T. F. Hurley, R. A. Johnston, C. R. Miller, R. W. F. Myles, J. J. O'Halloran, A. E. O'Reilly, J. F. Peart, J. M. Reynolds, J. J. H. Rainey, J. P. Ryan, H. H. Swanzy, J. J. Tallon, S. M. Tucker, C. B. Vane, R. O. White.

In Anatomy.—J. J. S. Carbery, H. T. Cookman, W. Davis, A. H. R. Duncan, J. Dwyer, W. F. Eustace, T. J. Galligan, J. Hennessy, T. E. Johnston, M. J. Loughrey, T. J. Nicholl, E. O'Grady, J. P. Symott, G. B. Wilkinson.

In Chemistry and Physics.—J. Dwyer, T. J. Nicholl, G. B. Wilkinson.

In Biology.—C. H. Bryan, H. T. Cookman, W. Davis, W. N. Eustace, T. J. Galligan, J. Hennessy, T. E. Johnston, G. W. Knight, M. J. Loughrey, M. E. Lynch, P. M. McGorey.

In Pharmacy.—C. H. Bryan, J. J. S. Carbery, H. T. Cookman, W. Davis, A. H. R. Duncan, J. Dwyer, W. N. Eustace, T. J. Galligan, A. A. W. Ganderton, B. D. Gibson, M. J. Loughrey, M. E. Lynch, P. M. McGorey, T. J. Nicholl, E. O'Grady, G. B. Wilkinson.

SECOND PROFESSIONAL EXAMINATION.—Candidates have passed this examination as undernoted:

Completed the Examination.—Honours: J. S. P. Steward. Pass: J. F. Allen, W. G. Anglim, E. S. Barnard, E. Bennet, W. S. D. Bird, R. A. Campbell, A. Daly, R. B. Daly, R. J. Franklin, J. Gordon, D. Harrington, A. W. A. Irwin, A. H. Jacob, C. A. A. Lever, H. R. Loverock, W. H. May, J. F. C. Megler, J. McDonald, T. O'Kelly, M. J. Russell, H. W. Spaight, R. J. White.

In Anatomy.—W. A. Cooke, S. W. Cumming, M. Gavin, D. L. Harding, R. Hughes, G. L. N. Miles, P. J. McGinn, H. G. Westropp.

In Physiology.—J. W. Clarke-Bayliss, R. B. Elliott, D. L. Harding, J. F. Kennedy, J. Whelan.

In Materia Medica.—R. J. Lane, W. A. Cooke, S. W. Cumming, R. Hughes, J. J. Huston, J. L. Jones, G. L. N. Miles, J. L. McCarthy, T. A. E. Rooke, A. B. Stephenson, A. L. Tyndall.

In Histology.—R. J. Lane, J. W. Clarke-Bayliss, S. W. Cumming, A. D. Dunwoody, M. Gavin, R. Hughes, G. L. N. Miles, A. B. Stephenson, H. G. Westropp, J. Whelan.

UNIVERSITY COLLEGE, CARDIFF.

THE Council of University College, Cardiff, have appointed Mr. A. Francis Dixon to the Professorship of Anatomy, left vacant by the resignation of Professor A. W. Hughes. Mr. Dixon is a graduate of Arts and Medicine of Dublin University, and has held the post of Chief Demonstrator of Anatomy, under Professor Cunningham, for some years in the School of Physic, Dublin University. He is author of a paper on the Development of the Branches of the Fifth Cranial Nerve in Man, and also has done some good work at marine invertebrate zoology.

THE annual dinner of the Volunteer Medical Staff will take place at Limmer's Hotel, George Street, Hanover Square, on May 5th, at 7.30 P.M. Sir William Mac Cormac will preside, and among those who have accepted invitations are the Director-General, the Principal Medical Officer of the Home District, Sir Joseph Fayrer, and Colonel Alt. It is hoped that there will be a good attendance of Volunteer medical officers. Those wishing to be present should send in their names to Surgeon-Captain Fletcher, Croome, Streatham Park, who is acting as Honorary Secretary.