

most complete and authoritative existing. Messrs. King and Thompson have also taken some unique photographs of the monument.

In the Sudan, Dr. Budge, of the British Museum, and Mr. J. W. Crowfoot, Inspector of Education in the Sudan, have completed the work which the former began at Meroe in 1903. They finally cleared out the shrine of the largest pyramid, and made some interesting explorations in the country near the Second Cataract. Dr. Budge, whose services had been previously lent to the Sudan Government by the British Museum in 1897, 1899, and 1903, is now engaged on an account of his four missions to that country, which is announced to appear in the spring.

We cannot close this account of British archaeological work without a word of congratulation to our American friends on the success of the excavations of Mr. Theodore N. Davis, assisted by Mr. J. E. Quibell, the British Inspector of Antiquities in Upper Egypt, in the Valley of the Tombs of the Kings at Thebes. Mr. Davis found the untouched tomb of Iuaa and Tuaa, the father and mother of the great Queen Tyi, consort of Amenhetep III. and mother of the heretic King Akhunaten. The tomb was full of the most magnificent furniture, chariots, &c., mostly thickly overlaid with gold. Mr. Davis will proceed with his excavations this winter with the assistance of Mr. Ayrton, who has left the Egypt Exploration Fund for this purpose.

THE BEAUTY OF MINUTE STRUCTURE IN NATURE.¹

ONE of the many ways of beginning the study of natural science is with a "beauty-feast"—of flowers or birds, of shells or gems, of anything—for all natural things are beautiful, in their proper setting at least. It is an old-fashioned mode of approach, commending itself to children and simple minds, but one which often leads far beyond æsthetic pleasure to the joy of understanding. It affords a dynamic to investigation, and fosters a healthy reverence for things. In school "nature-study" the æsthetic factor should be characteristic, though it is too often conspicuous by its absence. Indeed, if we had to choose, we should prefer admiration without science to science without admiration. But a simple book like that before us shows that there is no necessary antithesis; it is a disclosure of beautiful things, and yet within its limits it is quite scientific.

The author's aim is to illustrate by well chosen examples the beauty of minute structure, the beauty which the microscope discloses, and he is to be congratulated on his success. While older books on "the wonders of the microscope" had to be content with drawings, some of which were exquisitely done, this book presents us with photomicrographs of the highest excellence. It is difficult to over-praise them. Moreover, while the older books gave too much

prominence to curiosities and out-of-the-way objects, we are here brought into close quarters with the familiar, with diatoms and Foraminifera, the whelk's radula and the barnacle's cirri, the butterfly's "tongue" and the scales of the sole, the spine of the sea-urchin and the spider's foot, a gnat and a house-fly's eggs, the dodder entering the clover, the bud of the lily flower, the sting of the nettle and the stem of wheat, and so on through a long list. Along with each of the sixty-five illustrations there is a short and clear description, and a note of the conditions of the photograph, *e.g.* magnification, focal distance, and exposure. The photographs were taken by Mr. Arthur E. Smith, and are certainly among the finest that have ever been published. They were taken, for

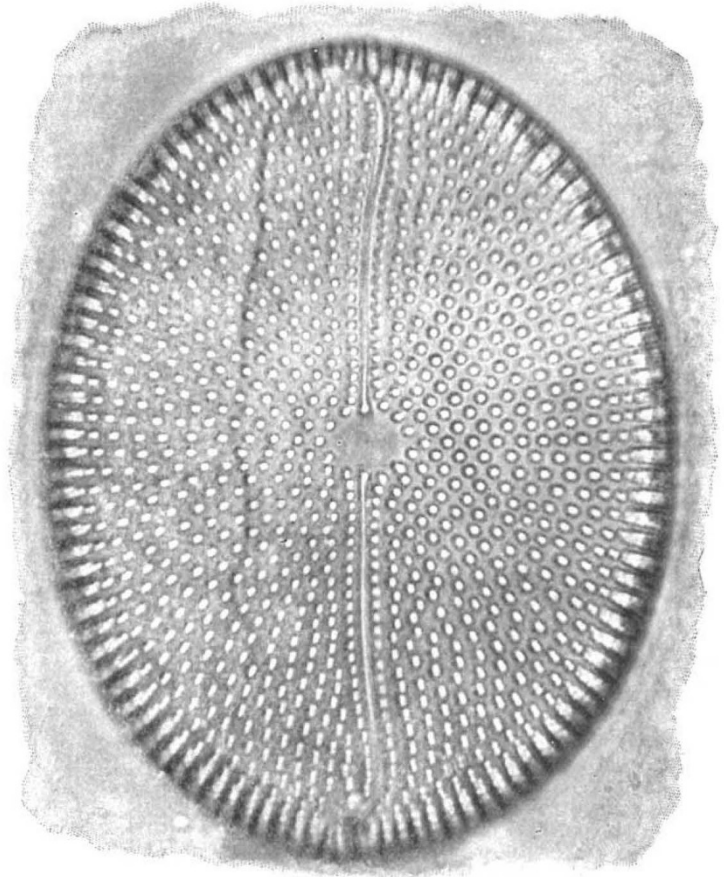


FIG. 1.—Diatom, from Bori, Hungary, $\times 1000$. From "Nature through Microscope and Camera."

the most part, on 12 by 10 plates, and have been somewhat reduced in the process blocks. Mr. Smith contributes a useful chapter of practical hints on photomicrography.

Mr. Kerr is an enthusiastic photographer, who believes in his "intellectual pastime" as helping, indirectly, to remedy some of the ills we are heir to, such as "the amusement feticch." But he is more, he is a student of the beautiful things which he delights in, and he can tell their story in a plain, straightforward way. The moral that adorns his tale is expounded by Prof. G. Sims Woodhead in a finely conceived introduction; but we shall only say this, that the whole spirit of this beautiful book is well

¹ "Nature through Microscope and Camera." By Richard Kerr; with 65 photomicrographs by Arthur E. Smith. Pp. 197. (London: Religious Tract Society, 1905.) Price 6s. net.

expressed in the prefatory quotation from Sir J. F. W. Herschel:—"To the Natural Philosopher there is no natural object that is unimportant or trifling; from the least of Nature's works he may learn the greatest lessons."
J. A. T.

THE WASTAGE IN ARMIES BY DISEASE.

THE recent utterances of Sir Frederick Treves on the subject of the Army Medical Service (see NATURE, November 2, p. 15), and the discussion on enteric fever in the army which has appeared in the columns of the *Times*, have again directed attention to the inadequacy of the means taken in our army to prevent the incidence of enteric fever and other filth diseases. The crux of the matter is this: we have to provide hospital accommodation for 10 per cent. of our forces in the field, the Japanese for but 2 per cent. Why this difference? In the South African campaign no less than 746 per 1000 of the fighting forces were admitted into hospital for disease which is mainly preventable. In this war there were something like 450,000 admissions to hospital on account of sickness and some 22,000 admissions on account of wounds or injuries received in action.

"Among those admitted to hospital on account of disease alone, there were 14,800 deaths during the whole war; further, so far as can be estimated at present, 42,741 of the total admissions to hospital on account of disease, and 7998 of the deaths from disease, were due to enteric fever, while 31,363 of the admissions and 1248 of the deaths were from dysentery. In other words, no less than one-tenth of the admissions on account of disease were for enteric fever, and one-fourteenth were for dysentery, or these two diseases alone were the cause of practically one-sixth of the total admissions and about two-thirds of the total deaths on account of disease; these two diseases also accounted for nearly one-half of the total losses by death from all causes during the war. As we know that both enteric and dysentery belong to the group of diseases which are largely the outcome of faulty environment, the sanitary significance of these figures needs no argument."¹

How does the Japanese Army deal with the prevention of disease? The following record sufficiently answers this question:—

"The care of the sick and wounded occupied but a small share of the time of the medical officers. The solution of the greater problem of preventing disease by the careful supervision of the smallest details of subsistence, clothing and shelter was their first and most important duty. Nothing was too small to escape their vigilance, nor too tedious to weary their patience, and everywhere, in the field with the scouts or in the base hospitals at home, the one prevailing idea was the prevention of disease. The medical officer was to be found both in the front and in the rear. He was with the first screen of scouts, with his microscopes and chemicals, testing and labelling wells, so that the army which followed should drink no contaminated water. When scouts reached a town, he immediately made a thorough examination of the sanitary conditions, and if cases of contagious or infectious disease were found, he put a cordon around the quarter where they were. A medical officer accompanied foraging parties, and, with the commissariat officers, sampled the various food, fruit, and vegetables sold by the natives before the arrival of the army. If the food were tainted, or the fruit over-ripe, or if the water required boiling, notices to that effect were posted in suitable places. So strict was the discipline from commanding officer to rank and file that obedience to the orders of the medical officer was absolute. The medical officer also supervised the personal hygiene of the camp. He taught the men how to cook, how to bathe, how to cleanse the finger nails so as to free them from bacteria, as well as how to live in general a healthy, vigorous life, and it was a part of the soldier's routine to carry out these instructions in every particular. As a

¹ Lieut.-Col. Firth, R.A.M.C., *Journ. of Hygiene*, Sept., 1905, p. 543.

result of this system the medical officer was not obliged to treat cases of dysentery and fevers that follow the use of improper food and the neglect of sanitation. During six months of terrible fighting and exposure in a foreign country there was only a fraction of 1 per cent. of loss from preventable disease."¹

It may be true that vehicles other than water, particularly dust and flies, convey the infection in enteric fever, diarrhoea, and dysentery, but much can be done by safeguarding the water supplies.

Diminish the incidence of these diseases by any means whatever and the subsequent incidence of the disease will naturally be lessened—cases beget cases.

It may or may not be practicable to sterilise the drinking water for a big army in the field, but in camps and in small campaigns such as our "little wars" on the Indian frontier, and in Africa, a great deal more could be done than has been done. Thus in the Tochi Valley, in 1897, a force of some 4000 men was condemned to inactivity and suffered severely from diarrhoea, dysentery, and enteric. The British troops averaged an annual strength of 622, and among them there were 59 cases of enteric with 30 deaths, 371 cases of dysentery with 65 deaths, and 211 cases of diarrhoea with 10 deaths. Here was an ideal instance in which sterilisation of the water or distillation for the sick (as the water was very saline) could have been carried out, as there was plenty of fuel, and the extra cost involved would probably have been more than covered by the saving in pensions, &c. Lieut. Nesfield, I.M.S., in the Tibet campaign used his iodine iodate tablets (see NATURE, July 27, p. 303, and August 31, p. 432), with the result that of 700 men who drank water sterilised with them, none contracted cholera, while of other batches of men passing through the same region a few days later an average of 3 per cent. contracted cholera.

There can be no question that the medical officers of our army are a devoted body of men, highly trained, and fully alive to what should be done, but they are too few adequately to cope with the problem of prevention, and what is more they receive little encouragement in this direction from those in authority. In addition, a body of intelligent trained non-commissioned officers and men, a sanitary corps, is required to carry out the policy of the medical officers. At present guards for the water supply and similar purposes are drawn from the ordinary strength of the regiments, with, of course, no special training. In the China Relief Expedition in 1900 the Japanese provided three skilled men to take care of their sick and wounded for every two provided by the other armies. In olden times it was thought cheaper to obtain a new soldier than to cure a sick or wounded one; the reverse is the case nowadays if the authorities would but appreciate it, and prevention is even better than cure.
R. T. HEWLETT.

NOTES.

WE announce with deep regret that Sir J. S. Burdon Sanderson, Bart., F.R.S., late Regius professor of medicine in the University of Oxford, died at Oxford on November 23.

PROF. EMIL WARBURG, president of the Reichsanstalt in Charlottenburg, and Prof. Henri Moissan, of the University of Paris, have been elected corresponding members of the Academy of Sciences of Munich.

THE twenty-first anniversary of the Royal Scottish Geographical Society was celebrated by a dinner in Edinburgh on Monday, November 27. Prof. J. Geikie, the president of the society, presided.

¹ *Brit. Med. Journ.*, 1904, ii. p. 1332.