

matical thought and work to be found easily. Passages 907 and 1643, which are given in German from Schiller and Jacobi, as well as in English, appear to be repetitions of the same story in slightly different renderings.

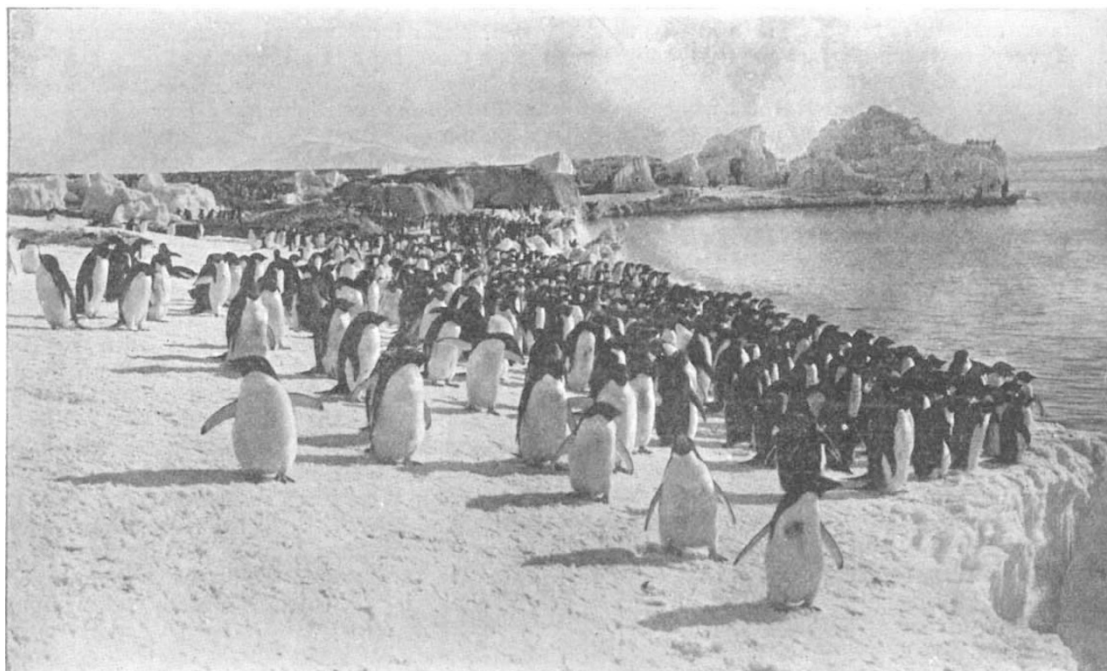
Zur Lehre von den Zuständen der Materie. By Prof. P. P. von Weimarn. Band I.: Text. Pp. x+190. Band II.: Atlas. Tafeln lii. 2 Vols. (Dresden and Leipzig: T. Steinkopff, 1914.) Price 7 marks.

THESE two volumes are put forward in proof of the author's main thesis "that colloid-amorphous properties appear in bodies as their comminution increases, and that such comminution is possible in all bodies." The well-executed atlas of plates

PROBLEMS OF THE PENGUINERY.¹

DR. LEVICK has made a fascinating study of the Adélie penguins (*Pygoscelis adeliae*), and the charm of his book is enhanced by his beautiful and really interesting photographs. He has certainly a good subject, for penguins are among the quaintest of living creatures, among the most ancient of birds, triumphs of adaptation to aquatic life, remarkably congruent with Antarctic conditions, and very instructive from a psychological and even sociological point of view. Inquisitive, unafraid, altruistic and social, they make a strong claim on our interest and sympathy.

The Adélie penguins spend their summer and bring forth their young in the far South. They



"Occasionally an unaccountable 'broodiness' seemed to take possession of the Penguins." From "Antarctic Penguins."

reproduces photographs of crystallisation processes in various concentrations, chiefly of barium sulphate and aluminium hydroxide. It is shown that the size of the crystals is strongly influenced either way by the concentration. Examined in the ultra-microscope, jellies and transparent colloid structures generally show minute particles which are essentially crystalline, differing from crystals only in their size. Any solid, sufficiently comminuted, might be made into a "solid mist" of particles showing Brownian motions, but the latter are just what leads as a rule to crystalline agglomeration. By comminuting aniline-blue into a neutral substance (urea), Pihlblad obtained colloid solutions of the former in water of any degree of fineness. The author, in view of these facts, proposes to substitute the term "dispersoid" for the less significant term "colloid," and would call the science of colloids "dispersoidology."

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seek out wind-swept places, kept bare of snow, where they find solid ground and pebbles for making nests. After the chicks have been sufficiently educated to be able to fend for themselves, young and old leave the southern limits of the sea and make their way to the pack-ice out to the northward. The first year's birds remain on the pack for two winters, until they get their adult plumage. "The spring following this, and probably every spring for the rest of their lives, they return south to breed, performing their journey, very often, not only by water, but on foot across many miles of frozen sea." That they find the breeding ground is remarkable, for they cannot see far when they are swimming (and there is often nothing to be seen), or when they are "tobogganing," and their horizon when walking

¹ "Antarctic Penguins." By Dr. G. Murray Levick. Pp. x+140+ plates. (London: W. Heinemann, 1914.) Price 6s. net.

is only one mile distant. Dr. Levick believes that they have a special sense of direction.

At Cape Adare the penguins returned from the sea about the middle of October; they were at first fatigued and sleepy but soon began to pair and nest. Dr. Levick describes the combats of the cocks, who strike one another doughtily (with one flipper at a time, but ambidextrously); the gentleness and patience of the combatants in their overtures to their desired mates, who make some show of reluctance and have a tendency to hen-peck; the ecstatic attitude assumed at times by either sex, with an associated *chant de satisfaction* which seems to arouse the other partner to come to soothe the first; the activity of the cocks in gathering stones for the nest, often stealing them (a preference for bright colours was noticed); and the individual differences in character, for there are vigilant and unwary, tough and timorous birds. A very remarkable fact is that they do not eat anything all the time!

The fast may be prolonged for twenty-seven days of strenuous life. Thirst is quenched with snow, and on rare occasions the cock may bring a lump to the nesting hen. Incubation seems to last for rather more than a month, the female taking the first fortnight while the male goes off to recuperate; towards the end of the period the parent birds go to the sea in turn, feeding greedily on the abundant Euphausid crustaceans. The developing eggs have to be protected from the cold and from the intrusive skuas. "Evidence goes to show that the sea-leopard is the only living enemy, excepting man, that threatens the life of the adult Adélie penguin." Dr. Levick gives a delightful account of the habits of the penguins in the water and of their games. But there are two points of even greater interest. As the chicks become bigger and their appetites likewise, the turn-about method of securing food is inadequate. "The individual care of the chicks by their parents is abandoned, and in place of this colonies start to 'pool' their offspring, which are herded together into clumps or *crèches*, each of which is guarded by a few old birds, the rest being free to go and forage." The guardians of the *crèche* protect the chicks from the skuas and from the not less troublesome "hooligan" cocks (apparently idle bachelors and wicked widowers). Also suggestive of social development was an extraordinary occurrence witnessed by Dr. Levick and Mr. Priestley, a congregating of penguins into massed bands some thousands strong and an apparent drilling! From one of the motionless bands a single bird ran out in the direction of another band, and stopped. In a flash the entire band from which he came executed the movement "left turn." The band which he had approached did the same, and the two bands marched straight towards one another, and joined to form one body. Similar procedure continued for many hours. Dr. Levick's suggestion is that the "drilling" is a reminiscence of "massing" before migration, going back perhaps to flying days! We have to congratulate the author on his well-told story

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THE PROTECTIVE TREATMENT AGAINST TYPHOID FEVER.

TYPHOID fever is inseparable from war. It finds in war, ready for it, all that it could desire. In times of peace we have a thousand ways of avoiding it, a thousand ways of holding it up: so sure are our defences, so elaborate our plans, that we get into a stupid way of thinking of typhoid fever as if it were due only to "insanitary surroundings"; as if it were a disease altogether unlikely to show itself within ten miles of a good medical health officer. Then comes war; and, with declaration of war, comes the general mobilisation of the infective diseases. They are called up, they are sent to the front. Louvain as it was and Louvain as it is are scarcely more unlike than are typhoid in times of peace and typhoid in time of war.

For sheer inaccuracy it would be difficult to surpass a paragraph lately published in a little journal which bears a medical name, but certainly does not in this matter represent either medical opinion or public opinion. This journal "objects *in toto* to serum inoculation as a method of dealing with typhoid." We can measure the wisdom of the little journal, here, by the fact that the protective treatment against typhoid is not a serum-treatment, and has nothing to do with any sort or kind of serum. Then the journal says: "In the parts of France where our troops are operating there should be no difficulty with regard to hygiene. The troops are not shut up in a city closely invested and living on famine rations, but are constantly on the move in a land flowing 'with milk and honey,' not to mention rivers of grape juice, which is, if rationally used, Nature's own 'anti-typhoid serum.'" It says that; it really does. And one of the "anti-vivisection" societies has published an advertisement saying that the protective treatment "leads to tuberculosis"!

Typhoid is, of course, already taking part in the present war. Given the Allied Armies and the German Army in the Western Theatre, how should there not be typhoid? The only question is, How much more will there be a month hence? The lateness of the year, happily, will kill off flies, which are great carriers of the disease; but the flies are not yet gone, and they will more or less repeat that deadly part which they took in the South African War. There is plenty of the disease for them to carry. "It is well known," says Sir Almroth Wright, in the *Times*, September 28, "that the infection of typhoid is thickly sown all along the frontier of France and Germany." Besides, among two millions of men, there are bound to be some who have the germs of the disease in them. And what is the good of talking of "sanitation," as if our men could have the warm baths and the water-closets of the average Englishman's home? Let us take Dr. Johnson's advice, and clear our minds of cant. "An army," as Wright says, "on going out on active service goes from the sanitary conditions of civilisation straight back to those of barbarism. . . . In war the doors are everywhere opened