

is built, the kind of engines used to propel it when cruising on the surface and when submerged, the armament, and many other details. All his explanations are well illustrated. After a brief discussion of the tactics of the submarine, the book goes on to describe and illustrate a great number of devices employed—not all successfully—to track and destroy the U-boat. There are many American devices the value of which has probably been exaggerated—indeed, some of them are merely fantastical suggestions—and these, with others, are given to render the work complete. The concluding portion of the book deals with the many plans that have been put forward from time to time for salvaging sunken ships or their cargoes. Here, again, it remains for experience to show whether any of them are of value. It is not claimed that Admiral Bravetta's work can be of practical technical value, but as a well written and illustrated record of the achievements of human ingenuity in combating a menace to the world's safety it is well worth perusal by all who are able to follow semi-technical Italian. In fact, an English translation might well fill a want until some similar work is compiled in our own language.

E. S. H.

Birdland's Little People: Twelve Nature Studies for Children. By Capt. Oliver G. Pike. Pp. 123. (London: The Religious Tract Society, 1919.) Price 4s. 6d. net.

THE author of this volume is well known as a popular writer on natural history, and presents in the work before us an excellent series of essays, written in an interesting style, on the habits and haunts of several of the most attractive members of the British avifauna. The subjects are well chosen, and include certain feathered denizens of our gardens, lanes and copses, the reedy lake and the breezy moorland. In each case the love-making, nest-building, and subsequent care of eggs and young nestlings are described graphically from personal observation, so that the book is not a mere compilation, but a vivid account of bird-life written with the enthusiasm of a true lover of feathered creatures and their entrancing ways. The book will interest any boy or girl possessing a fondness for animal life (and this, we fancy, includes the majority of young people), while at the same time the various phenomena are so accurately and carefully described that persons of maturer years may read its pages with advantage. The birds selected include two species of grebe, two of warbler, the kingfisher, dipper, brown owl, lapwing, wren, cuckoo, whitethroat, great tit, and buzzard. The parasitic habits of the cuckoo, the cannibalistic propensities of a young buzzard, and the mysteries of migration are among the more interesting phenomena touched upon in a book which is well printed and illustrated by a series of twenty-four excellent reproductions of photographs taken from Nature by the author himself.

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LETTERS TO THE EDITOR.

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Velocity of Electric Currents.

WHILE the velocity of electric waves is well known, as Maxwell and Heaviside have pointed out, we know absolutely nothing of the velocity with which electricity travels in a wire. As Heaviside says ("Papers," vol. ii., p. 3, line 4):—"It may be an inch an hour or it may be immensely great."

Mr. Aston's extremely interesting discovery (NATURE, June 5, p. 275), that the striae in capillary tubes containing neon or helium travel with approximately the same velocity as that of sound in the gas, is of interest in connection with the fact pointed out by the writer in *Science* for July 22, 1892, and more fully in the *Physical Review* for March, 1900, that "resistances of equi-molecular wires of pure metals are proportional to their transmission times for sound-waves" (to an accuracy of about 3 per cent.), and is in line with the suggestion made in the *Physical Review* paper referred to (March, 1900), that the time of travel of electricity in wires is the same as that of sound.

The double coincidence for metals and gases is at least suggestive, and further work along these lines might give results of interest.

If cohesion depends on the electrons in the outer rings, the tensile strength of the lead isotopes should be the same; but might not their electrical resistance and sound velocities (easily determined for small quantities of material by resonance methods) afford a means of distinguishing them?

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August 5.

The Magnetic Storm of August 11-12, 1919.

THE earlier months of 1919 showed a great deal of magnetic disturbance, but for some two months past conditions have been unusually quiet. On the morning of August 11, at about 7h. G.M.T., there was a "sudden commencement," followed by the largest magnetic storm experienced for some years at Kew Observatory. Conditions remained highly disturbed until near 10h. on August 12, when the photographic sheets were changed. The range in declination was $2^{\circ} 5'$, and that in vertical force 935 γ . The horizontal-force trace was twice beyond the limits of registration, on each occasion for more than ten minutes; thus the range shown, 840 γ , may have been considerably exceeded. Many of the movements were too rapid to be shown clearly in the trace. Rapid oscillations were especially in evidence between 7h. and 10h., and again between 14h. and 18h., on August 11. The declination curve also showed smaller but very rapid oscillations from midnight to 9h. of August 12. The extreme easterly reading, $13^{\circ} 44' W.$, was recorded at about 8h. of August 11, and the extreme westerly reading, $15^{\circ} .49' W.$, at about 16h. 32m.

The commencing movements near 7h. of August 11