British Insects and How to Know Them. By Harold Bastin. Pp. ix+129. (London: Methuen and Co., Ltd., 1917.) Price 1*s.* 6*d.* net.

THE inquiry often made by beginners for a small book giving trustworthy, if elementary, information about the common insects of our countryside may be safely answered by a recommendation of this handy little volume. After a short introductory chapter on the general characters of the Insecta and some of the varieties in life-history to be observed among them, the author takes a survey of the orders in ascending series, describing the leading structural features, the transformations, and the habits of the principal families as illustrated by their commoner and more conspicuous genera and species. The book contains a relatively large amount of information on systematic entomology, but Mr. Bastin has so much of interest to tell about the mode of life of many of the creatures which he mentions that the effect is far from that of the dry, catalogue-like summary which might easily have been the result of an attempt to survey the whole class of insects in little more than a hundred pages. The book is illustrated with twelve photographic plates, on each of which five or six figures are printed with admirable definition and softness. The frenulum and retinaculum of a hawk-moth's wings on plate ix. may be mentioned as treated with special success.

G. H. C.

Fresh-water Wonders and How to Identify Them. By J. H. Crabtree. Pp. 64. (London: C. H. Kelly.) Price 1*s.* 3*d.* net.

THE author of this little volume is an enthusiast on pond-life, and he seeks to introduce others to what has been to himself a world of wonder and beauty. He deals with diatoms, desmids, confervæ, Volvox, water-weeds of many kinds, amœbæ, infusorians, Hydra, rotifers, Bryozoa, Annelids and some other worms, bivalves, water-snails, water-fleas, crayfish, insect-larvæ, and amphibians. There are thirty photographic illustrations, many of which will be useful to beginners in identification.

It is a simple, unambitious book, but the author's standard of accuracy should have been higher. The amœba does not "flit about"; the young "volvoces" do not occupy "the parent cell"; the bell-animalcule does not feed on smaller "hydrozoa"; nematodes are not Annelids, nor "segmented like the river-worm"; a Cercaria is neither an Annelid nor a Planarian, as is alleged; the fresh-water mussel does not feed ravenously on water-spiders; the antennæ of Daphnia are not fringed with cilia, nor are the swimmerets of the crayfish. Whatever one may say at the fishmonger's, it seems a pity in a book to call the crayfish a fish, especially after calling it a crustacean. And why should one compare a tadpole with a "fish without wings"? We are amazed at the easy-going way in which the author has tolerated numerous inaccuracies. It is not the way of science.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Radiation-Pressure, Astrophysical Retardation, and Relativity.

THE conclusion was reached by the late Prof. Poynting (Phil. Trans., 1903) that the radiation from a material body in space gives rise to a small retarding force, which acts cumulatively as a brake on its movement through the æther; and the consequence was deduced, the significance of which has not yet been exhausted, that the sun's radiation, acting in concert with its gravitation, operates to keep the solar system swept clear of fine cosmical dust. The system may travel through nebulous clouds, but no such clouds can permanently belong to it.

A view seems to be prevalent that this conclusion contradicts electromagnetic theory, because for an isolated radiator like a star this force of retardation is specified as proportional to its velocity through the æther, and this is said to violate the principle of relativity (see, for example, the *Observatory*, July, 1917, p. 275, on "Radiation-Pressure and the Solar Rotation"). The evolution of mathematical theories is now carrying the modes of formulation of that principle far away from the simple considerations on which it originally reposed; but it can fairly be said that none of the original enunciations seek to apply the principle that all motions are relative to systems that are not self-contained. If a body is losing its energy by radiation, it must surely stand in relation to the bodies or to the medium to which it transfers that energy, even though it be a star remote from all other bodies. Any kind of relativity that supersedes this consideration would seem to stand in self-contradiction.

As a matter of fact, however, Prof. Poynting's principle has nothing to do with the refined second-order negative results which were the source of the very interesting modern development regarding relativity. His effect is proportional to the first power of the velocity of the system; it is thus a direct consequence of the original Maxwellian theory, now universally accepted; to traverse it would appear to knock over the whole fabric of modern mathematical physics. How to reconcile it with special views on relativity is another matter.

The argument on this point may be found set forth in Proc. International Mathematical Congress, Cambridge, 1912 (vol. i., p. 213, "On the Dynamics of Radiation"), or in the forthcoming collected edition of Prof. Poynting's papers. It appears from it that the effect of the solar radiation incident on a particle of dust, in orbital motion round the sun, is simply to reduce the factor of its gravitation, while the effect of its own radiation again of the radiant energy which has been absorbed by it from the sun is to retard in a frictional manner its motion through the æther. There can be no question in general of this retardation being exactly annulled or compensated by diminution of the inertia of the particle due to loss of its energy; in the present case the particle, in fact, absorbs just as much energy as it radiates. The principle and its cosmical results seem to stand firm on established laws, and *a priori* views as to relativity must adapt themselves to it. Any attempt in that direction will have to take account of the inertia of free travelling radiation.

JOSEPH LARMOR.

Cambridge, July 14.