

charity and benevolence, into which we find it impossible to follow him.

There are many amusing descriptions and playful passages scattered through the book, such as the friendship of the donkey and the dirty drake who disliked cold water; and the droppings of the reindeer, which the author spread round his Iceland poppies because he thought it might amuse them; and it is also very pleasant reading on account of its evident sincerity and absence of affectation, of which the following is a fair example.

The author describes the snails in his garden: "the common 'tabbies,'" he says, "have already begun to hibernate, but the bushes are covered with a small flat kind." A less conscientious and more pretentious writer would inevitably have made a shot at their generic and specific names, and given us the words "*Helix aspersa*" and "*Helix nemoralis*" in brackets; but Mr. Leslie very wisely makes no pretensions to be considered a naturalist, though he knows more of the aspect of organic life than many an authority on comparative anatomy; his knowledge is that of Götze von Berlichingen, who "knew every pass, pathway, and ford about the place, before he knew the name of village, castle, or river," and he seems thoroughly to sympathise with the sentiments of Shakespeare's "Biron":—

These earthly godfathers of heav'n's lights
That give a name to every fixed star,
Have no more profit of their shining nights
Than those that walk and wot not what they are.

The accuracy of Mr. Leslie's observation is shown by the illustrations which he has scattered through the volume; some of these are extremely beautiful, such as the "Bird's-eye View of a Swallow," "The Fruit of *Rosa Rugosa*," and "Flight of Starlings and Rooks," as is also the frontispiece, representing his house at Wallingford.

This book we can confidently recommend for its tonic properties. To the great world of men and women given over to satiety and boredom it cannot but be salutary, by pointing out what a world of enjoyment, what a peaceful and engrossing occupation for leisure, lies open to all of us, outside our own doors, and the only price we have to pay for it is to take the trouble to use our eyes.

OUR BOOK SHELF.

A Text-book of Heat. The Tutorial Physics, vol. ii (Univ. Corr. Coll. Tutorial Series.) By R. Wallace Stewart. (London: W. B. Clive, 1893.)

NOT long ago we had occasion to say a few words about the books which have appeared from the pen of this author, and we then stated our belief in him as a writer whose clearness of explanation and conciseness of language would render him popular among students of physics. In the volume now before us, which is devoted simply to the one branch of this large subject of physics—heat—we may again apply the same remarks to the treatment of the subject, the author stating with all clearness and necessary accuracy the various laws, and showing their practical application by means of appropriate examples. In the descriptions of the experiments, as, for instance, in those for determining the absolute expansion of mercury, the object of the experiment in question, the end to be obtained, and the different means of attaining it, are especially emphasised, and the diagrams aid the reader in grasping a clear

idea of the arrangement of the apparatus employed. At the end of each chapter, under the heading "calculations," are brought together all the formulated expressions of the laws deduced in the one preceding—a very useful arrangement for a short revision of the subject. The concluding chapter deals with the application of graphic methods to the results of experiment, and this part of the subject is one of great importance, although generally omitted in text-books. The work, as will have been noticed from the heading, is published in the Tutorial Series, and is a most useful addition to it.

The Industries of Animals. By Frédéric Houssay. (London: Walter Scott, Ltd., 1893.)

THIS—the twenty-third volume of the Contemporary Science Series—is an English edition of a good book. It is not merely a translation, but a revised and enlarged edition, to which numerous bibliographical references have been added. By this addition the work has gained considerably in value; for such references are not only useful to the student who desires to increase his knowledge of any matter broached in the book, but they also furnish a means of estimating the weight of the many stories of animal intelligence and instinct contained in it. The first chapters of the book deal with those industries of animals of which the object is the search for prey. These industries are necessarily connected with protective effects providing for the immediate safety of the individual. A number of examples are then given, to show that "social species unite for the common security the forces and effects which they can derive from their own organs." The art among animals of collecting provisions, of domesticating and exploiting flocks, and of reducing their fellows to slavery, is well described, and, finally, the series of modifications which the dwelling undergoes is investigated.

Except in one or two places, the translation reads very well. Forty-four figures illustrate the text, most of them adapted from that great repository of facts in natural history—Brehm's *Thierleben*. Altogether the book is very pleasant reading, and it contains a large amount of matter of interest to all students of animal skill and intelligence.

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.]

"Flame."

IN NATURE for November 23, p. 86, under this title, there appears an account of a lecture delivered by Prof. Smithells to the British Association on September 15, in which he brings before the Association those fascinating experiments with which his name has lately become identified. The apparatus by means of which Prof. Smithells draws the "inner cone" of a flame away from the "outer cone," and which he describes as an *appliance for dissecting the flame, or the cone-separating apparatus*, is now quite familiar to most. By means of it a regulated stream of air is admitted along with the burning gas, until a portion of the flame recedes down the tube, and is arrested in its downward movement at the top of an inner tube, where the issuing gases are moving upwards at a slightly greater rate.

In all cases Prof. Smithells calls this descending flame the *inner cone*, and regards the remnant of the flame that remains at the top as the *outer cone*. It would appear to follow, therefore, that if, by means of the "cone-separator," a flame can be so dissected, it must have originally consisted of two cones.

Prof. Smithell describes the flames of hydrogen and of carbon monoxide as being of the simplest construction; it being out of the question that any complications can arise in the combustion of hydrogen to water, and of carbon monoxide to