genera and species. In a work with such a title one expects rather to find a detailed description of the methods of procedure as regards capture, habits, habitats, &c., and not to require the young collector to plunge *in medias res* without such knowledge. The introduction certainly attempts to deal with these points, but it only consists of eleven pages of large print; and the all-important subject, in such a work, of "the habits of beetles and how to catch them" is dismissed in about thirty lines.

The plates are worth the cost of the work, which may be found useful for a somewhat more advanced student, but which hardly appears to realise our idea of a "Young Collector's Handbook."

Exercises in Practical Physiology. By Augustus D. Waller, M.D., F.R.S. Part iii. Pp. 91. (London: Longmans, Green, and Co., 1897.)

THE exercises and demonstrations contained in this and the two preceding parts are primarily intended to facilitate class work in physiology, and for use in conjunction with such a text-book as the author's "Introduction to Human Physiology." The present part contains sixty-eight instructive experiments on the physiology of the nervous system, and descriptions of the instruments used in investigations in electro-physiology generally. The subject is one which the author has made peculiarly his own; so that the experimental details will be found sufficient to enable students and demonstrators to set up the required apparatus satisfactorily and obtain good results. The book affords a strong argument for the teaching of the principles of physics to students of physiology; for without this fundamental knowledge it would be impossible to perform the experiments intelligently.

Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Fourteenth annual issue. Pp. 270. (London: Charles Griffin and Co., Ltd., 1897.)

THIS work, in addition to being a convenient handbook of our scientific societies, contains lists of the papers read during 1896 before societies engaged in fourteen departments of research. It is thus a very useful index to scientific progress, as well as an indispensable book of reference to the officers, places and times of meetings, publications, and membership fees, of British Societies for the advancement of knowledge of every kind.

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.*]

The Trotting Horse.

IN "The Primary Factors of Organic Evolution," Prof. Cope, whose recent death has taken from us an untiring worker and suggestive writer, adduces the evolution of the trotting horse as an illustrative case of the inheritance of characters due to the exercise of function (p. 426). Prof. Brewer, of Yale, is quoted at some length. He says: "There is every appearance and indication that the changes acquired by individuals through the exercise of function have been to some degree transmitted, and have been cumulative, and that this has been one factor in the evolution of speed. . . . There is nothing whatever in the actual phenomena observed anywhere along the line of this development of speed that would lead us to even suspect that the changes due to exercise of function had *not* been a factor in the evolution, and there is not a particle of evidence, other than metaphysical deductions, much less proof, that it would or could have gone on just the same by mere selection and adventitious variation" (pp. 429-430)

Mr. A. J. Meston, of Pittsfield, Mass., has recently discussed this question statistically in a pamphlet entitled "The Common Sources of 2·10 trotting and pacing speed." The results of this seemingly very careful investigation are of such general biological interest, that I have no hesitation in requesting space to draw attention to Mr. Meston's conclusions.

The first point that is especially noteworthy is the predominant influence of one horse, Hambletonian 10 (1849-1876). "While we have extreme speed without the aid of Hambletonian, it is, nevertheless, a fact that the influence of Hambletonian has been exerted amongst 92 per cent. of the 2·10 trotters, and 84 per cent of the 2·10 pacers [that is to say, trotters or pacers who can cover a mile in two minutes and ten seconds or under] We have pacing speed, apart from Hambletonian, within two seconds of the best record; but trotting speed without Hambletonian is four seconds behind the fastest mile. No mile has yet been trotted faster than 2·07¾ without the aid of Hambletonian. . . . Furthermore, the majority of both the trotters and pacers that descend from Hambletonian have more than one cross of his blood. . . . A very superficial examination of the blood of the 2·10 list shows that Hambletonian has exerted a predominant influence in its formation" (pp. 6-7).

The second point is the conclusion to which Mr. Meston is led with regard to the transmission of acquired speed. "It appears from the table," he says, "that some stallions and mares, after having been trained to fast records, have got foals that made fast records. It also appears that demonstrated capacity for speed and the ability to beget speed are qualities possessed in common by many stallions and mares, but the relative dates of 'making the record' and 'getting the foal' exclude the affirmation, if not the probability, of cause and effect between the two occurrences. It does not appear that a line of trained ancestors is more successful in producing speed than a line of untrained ancestors, or a mixed line of trained and untrained ancestry. Therefore, the evidence is negative upon the question whether increase of speed acquired by the individual through training, habit, or experience, is passed on to the foal, in any degree, by the force of heredity. On the other hand, the evidence is positive and convincing that congenital capacity for speed and innate plasticity for the development of speed are transmitted hereditarily to progeny, and that, by judicious or fortunate crossing, the capacity and plasticity have been vastly increased" (p. 23).

As this is the most careful statistical investigation of the kind with which I am acquainted, it appears to me that Mr. Meston's conclusions (which, he informs me, were not those that he anticipated at the outset of his inquiry) are worthy of careful consideration.

C. LLOYD MORGAN.

Bristol.

Fire-fly Light.

IN *Wiedemann's Annalen* for December last, Prof. H. Muraoka published an account of the rays which he found to be emitted by a fire-fly (described by him as a "Johanniskäfer"), and which resemble the rays which Dr. Dawson Turner has found to be emitted by glow-worms, in that they can pass (like Röntgen's rays and uranium rays) through aluminium. Can any reader of NATURE state what species of insect is known by this name? Muraoka describes them as on the average 13-15 mm. long; the largest being 20 mm. long. He says they have two (or in smaller insects three) rows of luminous spherules on the under side of its body, but that the whole body is photographically active. He used about 1000 insects at a time, with exposures of two to three days.

June 6. SILVANUS P. THOMPSON.

THE LIQUEFACTION OF FLUORINE.[1]

THE physical properties of a large number of mineral and organic fluorine compounds led to the theoretical prediction that the liquefaction of fluorine could only be accomplished at a very low temperature.

Whilst the chlorides of boron and silicon are liquids at the ordinary temperature, the fluorides are gaseous, and well removed from their boiling points. The same difference is noticeable in their organic compounds,

[1] "On the Liquefaction of Fluorine," by H. Moissan and J. Dewar. (Translated from *Comptes rendus* of the Paris Academy of Sciences, May 31, p. 1202).