

larly employed on such work. We are accustomed to quote with pride the old saying, that wherever wood would float an English pendant was to be seen, and it is true at the present time, that every sea, well known or slightly known, is visited more or less frequently by our men-of-war. But unfortunately many of these places are roughly surveyed, the coast lines inaccurately laid down, and the positions of the principal dangers doubtful. Here much valuable work can be done by those not surveyors, who have time and are willing to take the opportunities often given them, to improve our knowledge by making a correct survey or verifying the charts of the coasts they may visit. To these Mr. Laughton's book will be exceedingly valuable, and though in his introductory chapter the author modestly says that he writes "not for the guidance of surveyors, but for those who know little or nothing at all about it," we are sure that many old surveyors will find their work easier from having the principles so clearly brought before them. The work is the more valuable in showing what can be done with the means at hand on board every vessel, though not especially equipped for the work. The second chapter describes the choice and measurement of the base line, and the methods for determining the exact latitude and longitude of the first position. The rules given are exceedingly clear and simple, and can be readily followed by anyone in the habit of using the sextant and artificial horizon. The hints on the choice and adjustment of the sextant will be found very useful to every navigator. Mr. Laughton's practical way of dealing with the subject is shown in his suggestion to get an old sextant and let it fall on the deck in order to acquire a thorough acquaintance with its mechanism in putting it to rights again. But it is a pity that the description of the instruments should be placed between the rules for the choice and measurement of the base line, indeed it would be better if this chapter were re-arranged. A great deal more might be said on the selection of objects for triangulation, this is a point on which the beginner encounters his greatest difficulty; some hints also as to the best way of noting angles would be useful, this want is supplied when levelling is treated of. Chapter III. is devoted to the construction of charts and various projections of the sphere, it is very clear and concise, and will prove valuable not only to the chart-maker, but also to the navigator, who will here gain a clearer knowledge of the plan on which the chart he uses is laid down, than is to be found in most books on navigation. We recommend, especially to young surveyors, the method advocated for graduation of charts according to the gnomonic projection, it is more comprehensive and certainly more mathematically correct than the methods usually employed, and we do not remember to have met it described in any other work. The part of Chapter IV. relating to the determination of positions is perplexing, and would with difficulty be understood by an inexperienced surveyor, without examples. The author might have well supplemented this part by showing graphically the way of protracting the angles, and finding the points of intersection. It is not clear why he has omitted from the description of instruments all mention of the protractor, an instrument as essential to the surveyor and navigator as his pair of compasses. The remarks in the last few pages on the "danger angle," or as it was called by old surveyors the "approximative angle," will be found very useful by all navigators, especially those who since the introduction of iron ships have experienced the difficulty and uncertainty of determining positions quickly by the compass when the course is changing rapidly. The running survey is ably treated, but we regret there is no illustration of the mode of surveying a harbour; this is a serious omission, but notwithstanding this, and the want of illustration of the choice of stations and selection of objects, we can recommend the book as the best out on the subject.

The Lepidopterist's Guide, intended for the Use of the Young Collector. By H. Guard Knaggs, M.D., F.L.S. Second Edition, illustrated. (London: Van Voorst.)

THE want of such a "Guide" as the present was long felt by "young collectors" before the appearance of this book; but now this want is so well supplied that a second edition has not only been issued, but nearly exhausted, and we call attention to it with confidence, because, although eminently popular in its style and treatment, it is the work of a practical hand, and is as reliable as it is full and complete. In these days of cheap books it is marvellously cheap, and we are led to wonder how a scientific manual of upwards of 120 pages, closely printed, and copiously illustrated, can be produced for one shilling. Everything that the young collector is likely to require information upon will be found by a little searching, which a copious index would greatly facilitate, and which we hope to see appended to a future edition. We have no doubt this Guide will continue to receive the support it so well deserves.

C.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

The Variation in Outline of American "Flint" Arrow-heads

I FIND, after a careful perusal of the sixteenth chapter of Mr. Evans's magnificent work on British Stone Implements—on javelin and arrow-heads—that he has considered the American forms far more uniform, less varied in outline than they really are. I am familiar with many collections made at distant parts of the Union, and have an immense assortment of my own collecting now in the Museum of the Peabody Academy, at Salem, Mass. In these several collections is every form that Mr. Evans has figured, and several that he has not mentioned.

On page 362 of Mr. Evans's work, I find the author asserting as a prevailing type, "that with a notch at the base on either side." While this form unquestionably is very common, it cannot be considered as the "prevailing" one, inasmuch as several distinct patterns equal it in numbers found, and some exceed it, as those that "have merely a central tang, with little or no attempt at barbs." A second statement of Mr. Evans strikes me as very remarkable. He says, "the leaf-shaped form is very rare." This is a very great error. In any locality where arrow-points are to be found at all, they are always to be met with; and I have gathered scores of them that for symmetry far excel any of the figures given by Mr. Evans.

Nor can I admit the correctness of Mr. Evans's assertion concerning arrow-points, that "for the most part the chipping is but rough, as the material, which is usually chert, hornstone, or even quartz, does not readily lend itself to fine work." I believe no arrow-points have ever been discovered that can exceed, in beauty of finish, those I have myself gathered from the fields and meadows of central New Jersey. And I am the more surprised at Mr. Evans's remarks, inasmuch as the specimens I have found, that have been wrought from white or rose quartz, are remarkable for the smooth surfaces and sharp edges they present. So, too, of our jasper and hornstone specimens. Remarkably diversified in form, uniformly well finished, they strike the beholder with astonishment, when the "intractability" of the material is recognised. I have seen but few specimens of arrow-points not found in the United States; but judging from them and the illustrations of Mr. Evans's work, I unhesitatingly assert, that although we have no convenient flint in New Jersey or near it—Prof. T. A. Conrad has discovered true flint and chalk in Colorado—we have, in the jasper, chert, hornstone, quartz, and slate arrow-heads, examples of such weapons, as are in no wise inferior to those of Europe in beauty of finish, or less diversified in the various so called "types."

Mr. Evans seems to have based most of his impressions concerning our antiquities upon Schoolcroft's ponderous tomes, which present little or nothing of value, of our "antiquities," whatever may be their reliability as concerning the "Indians," at the time when the volumes were compiled.