sounds of *p b m, t d n, k g ng*,—depicted in the "Visible Speech" symbols,—are entirely *in*visible in the substituted symbols for the sounds of *m n ng*. So, also, for the symbols of *s sh th*, —which form a related series in "Visible Speech,"—the "modifications" depart altogether from the original plan of symbolization by substituting a set of merely arbitrary forms.

In some few points Mr. Sweet disputes the correctness of the "Visible Speech" analysis; for example, in the sound of *ah*, the "low back wide" vowel which Mr. Sweet says should be the "mid back wide." Such difference of opinion is of course legitimate, but each opinion should be attributed to its proper author. In the preface to this book Mr. Sweet says, "I feel convinced that the path of progress lies through the 'Visble Speech' analysis, and that the first duty of the very few who have a practical command of it is to do what they can to spread the knowledge of it." Yet in the above case Mr. Sweet gives his own analysis only, and makes no reference to its divergence from that originally made, and still upheld, by the author of "Visible Speech." The same procedure is further manifested in the introduction of symbols for the teeth, turned in different directions – as, surely, never teeth were turned – to represent the sounds of *th* and *f*. In reference to these symbols, Mr. Bell says, in his "Lectures on Phonetics," "The symmetry of the system has been deformed in republications which have been made without leave asked or given. One emendator, it seems, had supposed the system wanting in symbols for the teeth, and accordingly he actually provided it with a set. 'Visible Speech' was certainly not born with teeth; or, rather, teeth being in the mouth, their presence is implied as a matter of course, and requires no symbolizing – as they are not in the habit of shifting their root-fast positions. The teeth, like the hard palate, are only passively employed; and it will be time enough to call in dental aid when the teeth are shown to be the active agents in forming any oral sound."

In spite of this protest, Mr. Sweet brings in his symbols for the teeth, without a word to show that they form no part of the original system. This is altogether indefensible. "Visible Speech," as we learn from the inaugural volume, cost its author the labor of twenty years: and, although its inventor might be scientifically glad to see his system superseded by a better, no person can look with equanimity on wanton interference with so elaborate a plan. All that Mr. Sweet has to say in his "Primer" might have been said —if not better said—within the limits of the symbolism that has not, we are told, been found wanting in means to discriminate the phonetics of any language. Mr. Sweet's "modifications" cannot be accepted as legitimate; far less can they be considered as improvements: but the chief objection to them is that they are mixed up with the true "Visible Speech," as if they formed part of the system. In it, yet not of it, they misrepresent it, and mislead the learner.

Simple Elements of Navigation. By LUCIEN YOUNG. New York, Wiley. 16°.

To the yachtsman who annually, and about this time of year, goes down to the sea in a schooner, or a sloop, or a cutter, or perchance in a steam or naphtha launch, this little pocket-volume will prove invaluable; and to the naval apprentice, the petty officer, or the ambitious able seaman, it will be of greater immediate assistance on the road to promotion than more pretentious works intended for the use of accomplished mathematicians and experienced navigators. The treatise is not intended to take the place of any other work, for we know of no other of similar scope; nor does it aim to supply any real or imaginary deficiency in previous works on the subject. It is put forth as a compendium or epitome of the simple elements of navigation, containing every thing necessary to enable a man of ordinary intelligence, with a little "seafaring education," to navigate a vessel to any port in the world; but it does not aim to supplant more comprehensive works on navigation. All complicated mathematical formulas are omitted, and also all calculations not readily and easily comprehended and performed. About one-half the volume is of necessity given to the tables of difference of latitude and departure; refraction, dip, and parallax; declination of the sun; equation of time; sines, tangents, and secants; etc.; without which no work of the kind is complete.

But, good as the book is, it has serious defects, which we hope to see remedied in later editions. These defects, however, while marring the literary value of the work, do not interfere with its value for the main purpose the author had in view. They arise from the attempt to condense into a few pages matter which, from its nature, does not readily lend itself to condensation. As a consequence, there are many sentences in the book which must be carefully studied, read over and over again, before the meaning is apparent. To the author, of course, familiar with the subject, all is clear; but to the student, to whom navigation may be "all Greek," the translation into plain English of puzzling obscurities, produced by ultra-condensation, may be a distasteful task. Then there are occasional lapses in grammar and in diction, which would not be so noticeable were they not in so noticeable a work. As a whole, the treatise is a good one, the need of such a work was felt, and we have no doubt that it will have a cordial reception.

A Century of Electricity. By T. C. MENDENHALL. Boston and New York, Houghton, Mifflin, & Co., 1890. 12°. $1.25.

THIS is a second edition, with additions, of this book, which was first published in 1886,—with additions, we note, as the progress of electrical science, which has been made mostly in the last hundred years, did not cease four years ago, but has made further strides Many of these advances have been in the applications of electricity to the production of light, and, in a broad way, to the transmission of power. Four years ago electrical appliances were popping up on every side, each putting forth a claim to great usefulness and to perfection. This activity in a new industrial field gave rise to the inevitable fever of speculation, which could but result in great disappointments, as the incompleteness of the novel inventions as they then stood was shown by experience. Then, again, the use of so powerful an agent in methods most crude led to disasters to human life and property, that aroused hostility to the new force. Our author traces all this matter of history, and shows how even the much talked of alternating currents have been gradually made more amenable to human wants, and records the general settling-down to really useful work of the electrical industries.

But it is on the side of theory also that enormous advances have been made recently in electrical science. Many know that a connection between electricity and light was suspected a dozen or twenty years ago by Clerk Maxwell. Now, in his additions, Professor Mendenhall records the experiments of Hertz, which show the suspicion of twenty years back to be true.

Many are interested in the display of electrical energy on every hand, and yet know little of how it has come to pass that there are electric cars, electric lights, electric printing-presses. For these Mendenhall's "Century of Electricity" is intended, and that they may rely upon it is shown by the fact that in two years only two errors have been pointed out in the text; and one of these dates back to Faraday himself, who overlooked a misstatement of one of the laws he discovered in his own publication of them,—an error which was inadvertently copied.

The Elements of Laboratory Work: A Course of Natural Science. By A. G. EARL. London and New York, Longmans. 12°.

THE author is a late scholar of Christ's College, Oxford, and now science master at Tonbridge School. The book is for use in laboratory work, and presupposes a fairly well stocked room for the instruction of beginners in physical science. The field of work is somewhat more limited than is frequently the case with books of this class, experiments on the physical and to some extent on the chemical properties of matter being made most prominent. Electrical measurements, which lend themselves admirably to higher laboratory work in physics, are but sparingly referred to. For ourselves, we do not approve of the minuteness with which the primary facts in regard to matter are supposed to be observed by the student using Earl's methods, but we are