

her displacement by projecting or withdrawing telescopic chambers in her sides, instead of pumping water into or out of ballast tanks, the method usually followed in similar boats. The boat is spindle-shaped, 60 feet long and 8 feet in diameter amidships, built of $\frac{3}{8}$ -inch steel, and is propelled by an electric motor of 45 horse-power, current being furnished by storage batteries.

LETTERS TO THE EDITOR.

*.*Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

Popular science.

It is often very popular indeed. Here is an article on the voices of animals by Detler von Geyern (whoever he is), from *Ueber Land und Meer*, translated for the *Popular science monthly*, January, 1887, written in the good old traditional vein, quoting what anybody has said on the subject in a wonder-mongering way, as if every thing said and written must be true. And Herr von Geyern himself says, "Fish can produce no sound in water, because air is lacking as a medium to propagate the waves of sound; and yet we incline to the belief that water itself may admit of forming some kind of sound-waves which the fish may be capable of exciting, and which will be experienced and comprehended by other fish;" and he adds, "As far as we are concerned, of course, fish will remain mute," etc.—as if between fifty and a hundred species of fish are not known to make sounds, many of which have been described and explained by naturalists; and as if water and every other elastic medium were not well known as propagators of sound, often better than air,—a fact familiar to boys, who hold their heads under water, while bathing, to hear the loud sound made by the striking-together of two stones under water in the hands of a companion at a little distance.

H. W. P.

Grinnell, Io., Jan. 14.

The natural method of language-teaching.

I read with much pleasure the recent article of Professor Carpenter on the natural method of teaching languages. Such articles are in the direct interest of truth, and therefore of science; for the more the claims and achievements of the teachers of these methods are scrutinized, the more evident their weakness becomes. Every intelligent teacher knows that there is little if any thing really new in any of these methods, and every good teacher of languages has employed several, if not all, of their varieties and sub-varieties, each of which is superior to the others in the opinion of their self-styled inventors. We are safe in assuming that the natural method of learning a foreign language is at least as old as the time of Cain, for it is both probable that he learned the language of the people of Nod, and that he used neither grammar nor dictionary.

I believe, that, in the main, great improvements have been made recently in the teaching of languages, but not greater than, or even so great as, in the natural and physical sciences, as they are commonly called. For some reason the teachers of the last two have either been more modest in proclaim-

ing their progress, or they have been more generally aware that they are only employing methods that the best teachers in these departments, as in all others, have been using to a greater or less extent ever since the birth of science.

Several years ago I took considerable pains to examine, both at first-hand and at second-hand, the claims of several of the most widely known teachers of natural methods as applied to foreign languages. I then made some statements that agree almost verbatim with those made by Professor Carpenter. In spite of the well-established fact of every-day experience, that the adult is able to retrace but very imperfectly the psychological experiences of his early years, we are told that all persons, no matter how old, should, if desirous of learning a foreign language, proceed exactly in the same way that they learned their mother-tongue. This is the inductive method run riot, while experience and generalization count for nothing. To me the best refutation of the claims of most teachers of natural methods lies in the fact, that, while professing to be able to teach us to "read, write, and speak their vernacular correctly in an incredibly short time," I have not yet found one or heard of one who spoke English more than passably, even after years of practice. Shall we say, 'Physician, heal thyself'? or shall we excuse their shortcomings for the reason that 'physicians never take their own prescriptions'? CHAS. W. SUPER.

Athens, O., Jan. 16.

Stereoscopic vision.

The letters in the last two numbers of *Science* (ix. Nos. 204, 205) in relation to stereoscopic vision lead me to ask if any of your readers have ever tried the experiment of viewing a stereoscopic picture with the naked eye, and, by changing the focal distance, or visual angle of the eyes, so adjusting them, while looking at the picture, or, more properly, the two pictures, that the full stereoscopic effect is produced, and all parts of the picture stand out distinct, and in as bold relief as when seen through the two glasses. The first effect of the change of the visual angle, from the paper on which the pictures are imprinted to a more distant range of vision, is to double the number of the pictures, four now coming into view. The two inner ones overlap more or less, and slide over each other to right and left, as the visual angle undergoes alteration, until finally, when the proper adjustment is reached, the two pictures coincide in all their parts, coalescing, as it were, like two drops of water or two globules of quicksilver when they meet and run together. And now there are three pictures in view, and the eyes may be turned about from one point to another, and any part or particular object in the picture minutely inspected in any one of the three copies. The central picture is the most clear and distinct, being held in view by both eyes, while the two outer ones are respectively visible to only one eye.

W. W. ANDERSON, M.D.

Stateburg, S.C., Jan. 13.

An electric ball of fire.

In the summer of 1881 it was my good fortune to observe some electrical phenomena in the way of 'globular lightning,' which differ, I think, in some respects, from any other case on record. It consisted of a ball of fire which rolled down an iron water-