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A SPEECH-RECORDER.

Edison's great invention, the fonograf, gave a means of recording actual speech with the marvel that the speech-recording machine could give back the sounds it had recorded. Its mode of riting is a sharp point fastened to a vibrating disc. The sharp point makes indentations on thin foil whose surface is fixed to a revolving disc. We believe the indentations furnish no object that could be utilized for study of speech sounds.

Lately we have seen some newspaper notices of improvements in the fonograf, so that its speech-recording powers were improved and the record made more amenable to study and comparison. The improvements were chiefly in the direction of substituting a composition for the foil in fonograf. The composition is of a waxy nature, into which paraffine enters largely. The improvements appeared to emanate from Washington, D. C., and Cleveland, Ohio. Beyond uncertain reports there is nothing to hand.

Recently, Prof. Hensen, of Kiel, has published an important paper (*Zeitschrift für Biologie*, Band xliii, 291) on the graphic exhibition of sound vibrations. In the same number of the *Zeitschrift* will be found Dr. Paul Wendeler's description of an attempt to represent graphically the vibratory curves of some consonants and of other sounds with Hensen's speech-riter. Hensen, in his paper, does not attempt to describe accurately the "logograf," or word-riter, as given in its older form in Gruetzner's "Fysiology of Speech." His object is rather to point out principles on which such an apparatus should be constructed. The receptive membran should resemble the ear drummed as closely as possible. In order to get even riting for differing pitch, a heavy damper, a stiff membran, and very minute riting are essential. The riting is done by a delicate glass splinter attached to vibrating membran which by its motion produces tracings on a visible smoked-glass plate. Wendeler employs steel pens instead of glass. The greatest elongations seldom exceed one-fifth millimetre, and so are less than one-hundredth inch. The curves have to be rendered visible by microscope with power of 300 to 400 diameters. A longer pen or splinter is found not to be as good as a short one.

We are likely to learn much about laws of vibration from graphic representation and permanent fixation of sound waves. A careful study of curves is necessary to understand the subject thoroughly. To cite a few examples, vowel curves are nearly pure, consonant curves in each word are combined with curve of preceding and following vowel. It appears that short intermittent curves representing pseudo-vibrations; M, N, and L exhibit vowel-like curves;

S gives a mixt curve. In highest octaves there are 1000 to 1500 vibrations per second. When the artificial membran is less than the vibrations are undeniably more extensive but soon become quite indistinct. Hence if we stretch the sensitive receptive membran we obtain an extremely advantageous representation of vowel curves, while consonants are shown off more distinctly on a membran slightly relaxed.

POPULAR STAGE.

At the General Meeting, in May, of the French Association, there came up for discussion whether they should modify, and how far, certain rules for slightly amending current French Spelling—rules we have already given. A speaker counseled moderation in opposition to some restlessness to go fast. We are facing the same problem as they. The speaker put the case so well that we prefer to quote:

[Translation.] "The end to attain is radical reform, not orthographic alone, but alphabetic. Now, such reform includes repeated experiments as well as serious studies. These experiments will be disastrous if made on the public; but we can make them in school in teaching children to read by means of fonetic alphabets. We no longer teach children to learn more quickly to read by means of any fonetic alphabet whatever than by ordinary ones. So that our experiments will be useful to the children. Meanwhile, let us continue to employ revised orthography which, in reforming some of the grossest anomalies, serves to affirm our principles and habituate the public to the idea of a reform. To go farther will vex and discourage those who already take pains to rite and print in Simplified Spelling. He had in press a linguistic work in which he employed Simplified Sp., but, if that is to be [eternally] changing, he would stick to Academic orthography."

The above is from the *Bulletin Mensuel*, the monthly mouthpiece of the French Society. The rules were ultimately referred to a committee which was to examine them fully and make report, which, will be final, presumably, for popular missionary work should its report be adopted.

Rev. DAVID SWING, the well-known Chicago preacher, thus expresses his opinion of Amended Spelling, which we reproduce as we find it spelt in a daily paper:

"It seems at first glance like a cruel slaughter of shade trees and pet birds and the family dog; but if one will look at the matter calmly he will see that it is no destruction at all, but is really an improvement of the old house, a trimming of the hedge, a mending of all the old fences, a making of a turnpike where there has been too long a mud-road, and the hanging of a neat gate where our fathers were wont to let down heavy bars. We ought to make a distinction between mere feelings and reasonable feelings, for if we have permitted ourselves to become so attached to an old wooden plow that we would not exchange it for the best steel one, we are not persons of deep feelings, but rather of deep babyhood and stupidity. The human race that will from deliberate choice spell the word program, programme, and tsisk, phikisik, and which, when its folly is pointed out, will proceed to affirm that it prefers the longest way of spelling a word, should be compelled to go back to canal-boats and pack-horses and dip candles and to serious two hours long. Progress is a radical movement of all things."