

early English *citra*, *cetera*, or more modern *cittern*. "Fu la cetera usata prima tra gli Inglesi," says Galilei. Examples of instruments of this kind are frequent, but M. Engel startles us by exhibiting the following as an original "*German Fiddle*, 1Xth century, St. Blasius."

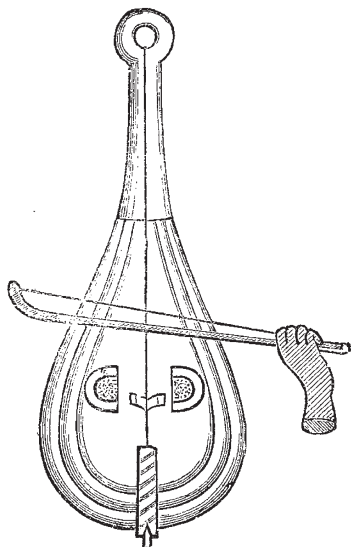


FIG. 7.—Fiddle String. XIII<sup>th</sup> Century. (St. Blaise.)

The above is copied from Gerbert's "De Cantu et Musica Ecclesiae," vol. ii., and is derived from a manuscript which was formerly in the monastery of St. Blaise, and which Gerbert describes as "about 500 years old!" (ex cod. San. Blas. annorum. circ. 500, p. 139) as he wrote in 1774. That would bring the date to the second half of the *thirteenth* century, instead of the eighth or ninth, as M. Engel states in his text. Moreover the plate is not intended to exhibit a fiddle, but a fiddle-string. It is called *lyra*, and the word is explained in two of the glossaries collected by Mr. T. Wright. A fiddle would have had more strings than one, in the thirteenth century, and the strings would have been fastened to pegs instead of a single string passed through a ring.

It will be seen from the above that the claims for Germany are put forth in the strongest light by M. Engel, and that other countries may not so readily acquiesce in them. We ourselves should raise many demurrers to his claims and conclusions, but they would apply to the prefatory essay and to the musical instruments of Europe, rather than to those of the rest of the world. While we cannot but wish that M. Engel's nationality had been less strongly developed, he is justly entitled to the credit of having ably fulfilled his commission, and of having exerted extensive research.

#### OUR BOOK SHELF

*Notes on the Practical Chemistry of the Non-Metallic Elements and their Compounds.* By William Procter, M.D., F.C.S., Lecturer on Chemistry at St. Peter's School, York. (London: Simpkin, Marshall, and Co. York: the Northern Educational Trading Co.)

THIS is a handbook on the Practical Chemistry of the Non-metallic Elements, designed to meet the requirements of pupils of Mechanics' Institutions, and of Science

Classes of a similar kind. The true man of science welcomes every worthy means of spreading scientific truth, and does everything in his power to propagate that truth. He will regard with a jealous eye each work brought forward with a view of extending a knowledge of the sciences; and with a work intended for the use of a class whose opportunities of gaining knowledge are very limited, his scrutiny will be all the closer. A book written for the information of such should be couched in the simplest language, and the sense conveyed should be at once clear and comprehensive. In these respects Dr. Procter's little work cannot be termed a success. To use no stronger expression his language is frequently very vague. For example, on page 14 the author in speaking of "Chemical Affinity" says: "hence, in order that this force may be exercised by the particles coming within the sphere of each others' attraction, the substances must be in the state of liquid or gas." There can be but one way of understanding the latter part of this quotation, viz., that no chemical action can take place, unless the materials taking part in that action are each and all of them in a liquid or gaseous state. Dr. Procter is scarcely less happy in his definitions of bases, acids, &c. He says: "An acid is a compound of an electro-negative radical with hydrogen, which hydrogen it can exchange for a metal or basylous radical, and it is therefore replacable." Again, "A salt is a compound produced by the action of a base upon an acid with the displacement of the hydrogen of the latter." How can such definitions convey to the minds of pupils proper ideas of the true natures of acids and bases? Such explanations would not inappropriately be termed *indefinitions*. Chapters are devoted to chemical calculations, and chemical manipulations, and here doubtless the readers will find many useful hints for their guidance in the preparation of their apparatus, &c. In the body of the book Dr. Procter treats of the non-metallic elements, giving the ordinary methods of preparing them, and their compounds, and illustrating the characteristics of each by interesting and instructive experiments. A few pages devoted to the chemistry of water, qualitative analysis of gases, and the preparation of ordinary reagents, complete a book, which, designed for a good purpose, and containing much useful information, at the same time shows want of care in compilation, and also lacks lucidity. Printer's errors are much too numerous.

#### 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. No notice is taken of anonymous communications.]

##### The Use of the Words "Weight" and "Mass"

Nothing could illustrate more forcibly the necessity of rendering definite the meaning of some of our present fundamental terms in connection with the science of dynamics, than a comparison of my letter to you on this subject (vol. xiii. p. 325) with the letter of Mr. Stoney, in reply to it (vol. xiii. p. 385), and that of Mr. Walker who follows Mr. Stoney.

When we who call ourselves teachers do not agree as to the signification of the most elementary terms we use, it is not to be wondered at, if those who come to learn should fail to attain clear ideas on a part of the science, where such confusion of nomenclature prevails.

My letter to you was for the purpose of pointing out an ambiguity of language, and of suggesting, in order to get rid of this ambiguity, not an alteration of the meaning of any word whatever, but a very simple *restriction* in the use of words, and the bringing into more frequent employment a very valuable old word—*gravity*—which has been lying ready for use but left almost idle. Mr. Stoney admits the ambiguity to be a very real one.

Mr. Stoney, however, says: "I fear Mr. Bottomley's remedy,