

A current or a projectile or a Foucault pendulum is equally deflected whatever be the direction of motion. The deflection is always to the right in the northern hemisphere and to the left in the southern. An eastward going current in both hemispheres is deflected toward the equator.

THE NATURE OF VOWELS.

MY next criticism is of a statement contained in article taken from the *London Times*. This, of course, is not an authoritative source, but since it reappears in SCIENCE it ought not to go unchallenged.

Speaking of the use of the phonograph in analyzing complex sounds, the writer says: "Hermann has obtained the curves corresponding to the tones of the vowels and has shown that vowels are true musical tones, *each having its own pitch*, and not, as Helmholtz supposes, the pitch of a harmonic tone corresponding to the shape of the oral cavity."

Now it is true that the vowels are true musical tones, but it is not true that each has its own pitch. The vowel sounds are a phenomenon, not of pitch, but of quality or *timbre*. All the vowels can easily be made successively without at all altering the pitch of the voice. Pitch is made in the larynx; the timbre is made in the mouth cavity. The one depends on the *number*, the other on the *form* of the waves. Doubtless the phonograph will prove a very useful instrument in analyzing vowel sounds; doubtless the investigations of Hermann and others mentioned are important; doubtless Helmholtz's theory will be corrected and improved, but that the vowel sounds are a phenomenon of timbre and not of pitch is too plain to be doubted. The writer has not fully understood or else not clearly stated either Helmholtz's theory or the bearing on it of these recent investigations.

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[It would add much to the interest and value of this journal, and thus contribute to the advancement of science, if we should all follow the recommendations made by Professor Le Conte in his opening paragraph. J. McK. C.]

SCIENTIFIC LITERATURE.

Analytical Chemistry. By M. MENSCHUTKIN; translated by JAMES LOCKE. Macmillan & Co. Pp. 512. \$4.00 net.

Among the numberless text-books on analytical chemistry, the well-known work of Menschutkin appears to occupy a unique position in this respect, that the author emphasizes the didactic rather than the practical value of this branch of chemistry. Skill and accuracy in Qualitative and Quantitative Analysis have such a distinct commercial value that we cannot properly find fault with the share of attention they receive in the chemical curriculum of most institutions; the supply of competent analysts and essayers cannot be too great. But, in this age of specialization, it is allowable to ask whether the elementary education of the scientific investigator ought to be identical with that of the analyst.

Largely through the influence of one great writer, analysis has been 'codified,' and 'Fresenius' has become for the chemical student what 'Blackstone' is to the beginner in law. The ease with which we can acquire the principles and methods of analysis, by the careful study and practice of such a code, is wonderful; but we do not, in the meantime, advance appreciably beyond that point, in *chemical knowledge*, where the Elementary Inorganic Chemistry had left us. Menschutkin's book is intended, according to its Introduction, for students who propose advancing into Organic, Physical and Theoretical Chemistry, and he strives to cultivate the same habits of thought, in their study of Qualitative Analysis, as will be essential in the advanced branches.