editor. Among the more important topics assigned to Professor Baldwin are *Intelligence* and *Heredity*.

The question whether a child is naturally moral or immoral will be taken up by Professor James Sully in *The Popular Science Monthly* for September. This article will be devoted to primitive egoism and altruism, and will show that many of a child's acts that seem perverse or cruel are explained when we try to look at things from the child's personal standpoint.

The first number of the American Journal of Sociology has been issued from the press of the University of Chicago under the editorship of Professor Albion W. Small. The number opens with an editorial article entitled 'The Era of Sociology,' followed by an article on 'The Place of Sociology Among the Sciences' by Lester F. Ward. The other articles are contributed by members of the University of Chicago.

Sir John Tomes, a distinguished dental surgeon and writer on dental anatomy, died at Caterham, England, on July 29th. He was born at Weston-on-Avon in 1815. In addition to a large number of scientific papers he published in 1848 a 'Dental Physiology and Surgery' and in 1859 'A System of Dental Surgery.' In its latest edition the latter work is regarded in England as the standard text-book on the subject.

Joseph Derenbourg, professor of oriental languages at the École Pratique, died at Paris on August 5th in his 84th year.

Dr. George Stevens, professor of English language and literature in the University of Copenhagen, died in Copenhagen on August 9th at the age of 82 years. He is known for his writings on history, folklore, linguistics and runology.

Dr. von Gneist, professor of jurisprudence in the University of Berlin, died on July 21st, at the age of 79.

CORRESPONDENCE.

CAUSES OF THE GULF STREAM.

I am convinced that one of the most important functions of such a journal as Science is the friendly criticism of articles whether appearing in its own pages or in those of other journals. Much harm is done by allowing to go unchallenged even slight inaccuracies in scientific statements. Permit me then to draw attention to some such inaccuracies in our issue of July 26th.

1. In Mr. R. Meade Bache's excellent article on the 'Causes of the Gulf Stream,' which I have read with the greatest interest and satisfaction, on page 89, 2d column, in speaking of these causes the writer says: "One of these, the centrifugal force of the earth's rotation, *draws the water as a submarine flow* from the poles to the equator." And again on page 92 he criticises Carpenter for omitting 'this agency of rotation.' Now, to say the least, this is an inaccurate mode of statement. For on the equilibrium theory, which he is sustaining, the only force which determines the exchange between poles and equator is difference of density. Rotation cannot *generate*, but only *deflect* a current already generated by some other cause. Centrifugal force determines the form of equilibrium, but does not disturb the equilibrium, and therefore cannot generate a current.

2. Again, on pp. 92 and 93, he says: "Both the Northern connecting current and the Southern connecting current run for the greater portion of their course *due east*, and therefore the direction of their courses is not, for that portion of their journey, influenced (deflected) by the rotation of the earth." Here we have again the very common but wholly false idea that deflection by rotation takes place only in bodies moving northward or southward. The fact is, the deflection is a function of latitude, but wholly *independent of the direction of motion*.

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 Hemholtz'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 an 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.