

submarine cables in the same time that 20 words can be sent now. Dr. Herz's invention would allow of cabling 50 words at a cost of five cents, and would render submarine telephony and multiplex telephony feasible.

CORRESPONDENCE.

THE NATURE OF VOWELS.

THERE is one statement in Professor Le Conte's letter in *SCIENCE* (Aug. 16th) which seems to me worth further examination. He writes, "Now it is true that the vowels are true musical tones, but it is not true that each has its own pitch."

In a paper on the voice published in the *Journal of Physiology*, Vol. IV., 1883, I took ground on this subject at variance with the view set forth by Professor Le Conte at least in its most rigid form. I consider his statement a partial truth only.

My paper is not at hand, so I cannot quote from it, but the matter was put somewhat thus: There is but one position of the vocal apparatus—vocal bands and supraglottic parts—one structural and functional combination so far as the human vocal mechanism is concerned for the perfect production of each vowel, and the further this is departed from the greater the deviation from this true and perfect result. It will be noticed that the entire range in pitch in ordinary conversation is very limited, and even in the most exciting dramatic passages the range covers but a few notes. Moreover, the best classic music and the popular songs that are most lasting and effective have a limited range, all of which is a matter of considerable significance, but part of that significance is owing to the fact that the proper production of the vowels in their purity is determined as I have indicated; and the poet, orator, actor, singer or composer who recognizes this principle will prove so far as this can go most successful. Compare such words as 'roar' and 'scream.' What effect would 'roar' produce if spoken or sung at a very high pitch or 'scream' at a very low pitch?

Now, if any one doubts as to this let him make the simple test of singing the vowels o,

u, a, at his highest pitch, and at the same time require some listener to name the vowel he is attempting to produce. I venture to say that there will be some very ludicrous answers, and I think the majority of persons will be convinced then that pitch does go a long way in the *proper* production of vowels. That something more or less like them may be produced at different points in the scale I do not question and, of course, we accept in practice these departures from the proper vocal effect or best result if not too great. WESLEY MILLS.

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THE 'DATE OF PUBLICATION' IN THE LIGHT OF THE LAW OF PRIORITY.

THE American Association for the Advancement of Science, in common with its sister organizations in Europe and in Australasia, has repeatedly had occasion to consider the question of scientific nomenclature; and as a result of many deliberations, zoölogists have practically agreed upon a code of rules, which have now been adopted by the International Congress and should be followed by every worker. These rules, as well as their predecessors, contain the so-called law of priority; and in consequence, the entire structure is made to depend on last analysis upon the 'Date of Publication.' How important it is then to define exactly what is meant by this term!

The present rules, adopted by the International Congress through the initiative of Dr. Raph. Blanchard, show a distinct advance in that they declare that the date at which a paper is read before a learned society does not constitute publication in the sense of this law. A thing to be published must be printed. Some still maintain that a memoir is published as soon as it leaves the hands of the author after the last corrections have been made upon it. I am even told that this is the ruling in certain legal cases—patents and the like. It is, however, a date which is in practice impossible to establish, and is consequently wholly unfitted for such a code of rules. These rules are confessedly arbitrary to a certain extent, and it is by no means necessary that we should avoid setting up a somewhat artificial rule in this case as well.

Such a step was taken by Dr. Blanchard in his first report, when he declared that publication in a daily newspaper could not be regarded as publication in this special sense, *e. g.*, the *Rostocker Zeitung*, though official organ of the *Rostocker Verein*.

Similarly it has been proposed that the date, of publication' should mean the date at which the printed work issues from press. This is an arbitrary ruling, and yet I fear it is not one which meets the needs of zoologists. Let us suppose the case that a printed memoir lies for months in the desk of the author, unknown to any of his colleagues. Is it wise for us to accept a rule which shall give this withheld memoir priority over one which, though it was printed later, had already been long known to specialists? Such a course would result in a needless revision of established names and could surely raise no claim to being convenient.

But the third possibility is the one which has already won the support of the majority of zoologists, and should, in my opinion, be incorporated into our rules. The difficulty, however, would be only half solved; we should know what the criteria are, but we should be at a loss to apply them, for the *date of distribution* can almost never be accurately determined. The date which the publisher uses is, as everyone knows, utterly untrustworthy. One does not need to have been specially occupied with bibliographical matters to know that the dates on the title pages of our scientific monthlies do not correspond with the time of issue; but that the 'June' number appears in May, etc. I have collected a large number of instances among journals upon whose dates we are more accustomed to rely, in which it was shown by internal evidence that the preface was written after the 'date of issue,' etc. I shall not publish this list, for it is something which everyone must have met in his own experience, and I do not wish to single out certain journals for criticism.

There seem to be but two ways to remedy this evil: either a reform must be worked in our methods of publication, or a date must be affixed by some competent agency. The former course is not likely to find favor, I fancy, with persons who have had experience in such matters. The second means seems to involve

undue complication. Surely it is not necessary to maintain a recording agency for the single purpose of settling trifling disputes of priority. The case becomes, however, singularly simplified when we consider that the new bibliographical Bureau for Zoölogy* can readily undertake this task without materially increasing its labor. Indeed, it could do this simply in consideration of the greater promptness with which it would receive the publications for its index. In view of this circumstance, it seems desirable to make the following suggestion in regard to the date of publication:

The Bibliographical Bureau should record with each paper a date of approximate distribution, to be determined by the date at which the paper was sent to the Bureau. For this determination, the Bureau might (1) use the postmark; (2) deduct from the date of receipt the number of days ordinarily required for the transmission by post from the place of publication to the Bureau (this in case the postmark should prove illegible), or (3) record the date at which the paper might have been mailed as a registered package. The ideal solution of the question would seem to be, since we have already the precedent of arbitrary rules adopted for convenience, to declare that not merely must a description be printed, it must also be placed on record. I would not be understood as advocating the incorporation of such a modification into our law priority. The practice would have to become quite general for such a step to be possible. I am, however, of opinion that it would be very desirable for the A. A. A. S. to take the necessary steps towards introducing this custom. HERBERT HAVILAND FIELD.

ELECTRIC STORM ON MOUNT ELBERT, COLORADO.†

THE daily course of the weather was very peculiar and singularly uniform. The mornings

* The new bibliographical bureau is described in SCIENCE, N. S., II. p. 234.

† A storm experienced by Mr. Welker while occupying a triangulation station of the Coast and Geodetic Survey on Mt. Elbert, Colorado, in July, 1894. Mt. Elbert is about 14,440 ft. elevation. The camp was only one hundred yards from the summit.

H. G. O.