

## LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

## To the Editor :

It seems to me that the editorial article concerning the American Society of Microscopists, which appeared in "SCIENCE" on page 225, so far as it relates to what I have presumed to write elsewhere, is likely to place me in a false position before your subscribers. I will not ask for the space that would be necessary to discuss the merits of the question; suffice it to say that, with many others, I was inclined to regard the proposition to form a National Organization of Microscopists with disfavor from the first, not owing to any feeling of opposition to such an organization, but purely from considerations of expediency. Your remarks, however, would lead one to suppose that I had made a direct criticism of the officers of the society, which is not the fact. The only words I have written that could possibly be construed to such a meaning, are these: "We have regarded the establishment of the society as a worthy experiment, but as one mainly conducted by a few leaders, who had not the necessary support from microscopists generally to insure its success, nor sufficient experience to directly it properly." I have nothing to retract; but if any explanation is necessary, I have only to say that my language was intended to apply to those who were most active in forming the society in the beginning, not to the officers who have since been elected. Nevertheless, to quote again from my article, I wrote: "Once more we desire to say, in order that no person may misunderstand us, either wilfully or otherwise, that we are not moved by any spirit of opposition to the American Society of Microscopists." The course which I strongly advocate, because it seems to me that it would be beneficial to both organizations, is that the American Society should disband and its members unite with the A. A. A. S. It is true that this plan has met with opposition from the Society, but if I read the signs aright, the same resolution to do this, which was indignantly voted down at Indianapolis, will be more carefully considered if offered next year.

The question that presents itself to my mind is not: Can the American Society of Microscopists be made to exist as an independent organization, by the efforts of a few enthusiastic members? but it is rather: Can research with the microscope be fostered better by such an organization, or by the sub-section of the A. A. A. S.? The microscope is an instrument that is used in many branches of scientific study, but microscopy is not the name of any science. A local microscopical society may, indeed, be a centre of attraction of scientific men generally; but it is doubtful if a national microscopical society can ever prove sufficiently attractive to induce its members to travel half way across the continent to attend its meetings. Respectfully,  
NEW YORK, November 11, 1880. R. HITCHCOCK.

## To the Editor of Science :

Vol. 1, No. 10, of the Humbolt Library, is an essay on "The Theory of Sound in its Relation to Music" by Prof. Pietro Blaserna, of the Royal University, of Rome. It is interspersed with illustrations and demonstrations of a very interesting character, and written in a popular manner.

Every musician must feel the touch of a kindred soul as the subject reaches the historical phase, whilst the criticisms, on national influence upon music, are very impartial and indeed beautiful. The temperate scale is referred to, in too scourging a manner, which should rather be applied to the dogmatic assertions of would-be-musicians who have failed to acquaint themselves with scientific truths.

The essay is very useful as the stepping stone to a very much involved subject, and may perhaps be endorsed as a whole, with the exception of what follows and the consequences entailed thereby—namely the conclusion at which he arrives that "vibration is the CAUSE and sound the EFFECT," in reply to which, note as follows :

A. 1. The laws of inertia apply to aerial as well as to solid bodies, only in a less degree.

2. The vibration of air may be made apparent to the ear or the eye, within the limits of their perception.

3. These limits are not throughout coincident.

4. The perception by eye and ear simultaneously is only possible within the limits of coincident perceptions.

Therefore to expect that what is popularly called sound, viz., the perception of vibration by the ear, should be concomitant with the perception by the eye, is evidently absurd in all cases except within the limits in which those perceptions coincide—otherwise vibration would always be heard, when seen.

B. 1. Air in the undisturbed enjoyment of inertia will never vibrate.

2. It may however be made to do so, by applying dynamic power or energy, either muscular force, mechanical force, electricity, heat, etc., as in the drum, siren, thunder, sham-whistle, or what is popularly called the "ke tle singing."

3. The vibrating air may then be apparent to the nerves of sight, hearing, or feeling.

Therefore it is the EFFECT of a disturbing cause, and may be studied either objectively or subjectively through any of those perceptions.

We listen to the sound of the bell—what we perceive by the ear is the vibration of air, the exciting cause of which is the energy, which set the bell in motion. The bell itself being the mechanical vibrator and resonator—the loudness of the sound results from the manner of applying the energy—what musicians sometimes call the "mode of attack," and do we wish to know the relation existing between the energy and the vibration? All that is necessary, *thanks to Balfour Stewart*, is to use his formula, viz., that "energy is proportional to the square of the velocity," velocity in this case being as the number of vibrations per second. So the vibrations of the harmonic series being related to the fundamental as the whole numbers, the energy necessary to produce this series increases in the ratio of the square root of the vibrations. The resistance necessary to overcome this increasing energy is peculiarly attested by the lip of the cornetist, in the production of the ascending harmonic series.

JOHN H. RHODES.

NEW BRUNSWICK, November 13, 1880.

## INTENSITY OF CERTAIN PHENOMENA OF ATMOSPHERIC ELECTRICITY OBSERVED IN THE NORTH OF THE SAHARA.—

L. Amat has observed that in tropical countries the electric phenomena of the atmospheric stratum in contact with the soil are more distinct than in colder climates.

METHOD OF DETERMINING THE FATTY ACIDS CONTAINED IN OILS.—M. Carpentin takes a small flat-bottomed flask or a medicine phial holding about 250 c.c. Into this phial are measured 50 c.c. of the sample of oil, and 100 c.c. of alcohol at 90 per cent., and 3 or 4 drops of tincture of tumeric are added. The phial is then corked and violently shaken. The phial is then placed under a Mohr's burette containing a solution of 40 grms. pure sodium hydrate per litre of water. As 40 grms. soda saturate 282 of oleic acid, 1 c.c. of the liquid, containing 0.04 gm. soda, corresponds to 0.282 gm. of oleic acid. If another fatty acid has to be determined this number is modified accordingly. The alkaline liquid is carefully dropped into the phial, which is shaken. When a red coloration appears it is corked, agitated for a considerable time till the yellow color reappears, the alcohol having extracted a fresh quantity of acid out of oil. These operations are continued until the red color becomes permanent. The number of c.c. and the fraction of a c.c. consumed are then multiplied by 0.282 grms., in order to find the quantity of oleic acid present in the sample examined.