or cause its field to change in any possible way, and we have again a kinetic field.

If, however, there be but a single body in space surrounded by a potential field, the movement of that body, while the movement in itself will constitute kinetic energy, still would not convert the potential energy into kinetic.

He says, "So, if there were but a single hot body in the universe, it would impart its energy to the ether and approach infinitely near absolute zero; while an electrified body or a magnet would be perfectly insulated, and, so far as is known, would lose none of its properties, however long it was thus kept. There is no static condition in heat phenomena: exchange is constant. These facts indicate that light or radiant energy is no more an electro-magnetic phenomenon than magnetism is a thermal phenomenon, but that it is one of a distinct order."

The only difference is that in one case there is stress alone, and in the other there is motion, a yielding of that stress. Take away motion from one, or add motion to the other, and the phenomena are identical in kind.

It is the difference between a reservoir full of water on a hill, and that same water in the act of falling from its elevation. It requires an expenditure of energy to fill the reservoir, — to produce the stress or static or potential condition, — but involves no expenditure of energy to maintain that condition. We have in the elevated reservoir of water the analogue of magnetism, electrification, gravity. Let this water fall from its position, and we have something that corresponds to light, — the galvanic current, heat, etc. It requires the expenditure of energy to get these forms of energy, and it requires the expenditure of energy to maintain them.

We must regard electricity as motion; electrification, one kind of stress which is capable of producing electrical vibrations; magnetism may be another. We may compare magnetism, electrification, and gravitation to different tensions of a given string on a violin; and electricity, light, heat, etc., as the tones produced by that string when struck under these varying tensions.

NELSON W. PERRY.

Cincinnati, O., Jan. 15.

The Orthography of "Alleghany."

THIS name appears in several forms, all of which are in common use; and it goes without saying, that in each particular locality there is a disposition to insist on the local orthography of the word. Thus, in the city and the county in western Pennsylvaina, "Allegheny" is the form officially recognized. In the county of New York, "Allegany" is the adopted form. The range of mountains, however, almost always appears under the form "Alleghany." I know of but one exception to this custom; namely, that used by the Engineer Department of the Pennsylvania Railroad: there the range appears as "Allegheny."

In looking up the history of this word, I found nothing authoritative bearing upon the subject in the literature of the State Geological Survey; but a search among the earlier maps of the State throws light on the subject, a number of which were placed at my disposal through the courtesy of Mr. McAlister of Philadelphia.

On Adlum and Walter's map, 1790, the name appears in one form only, "Allegany." On Reading McDowell's map, 1792, it appears as "Allegheny" mountains and "Allegany" River. On Morris's map, drawn by Barnes, 1848, "Allegheny" is the form used for both river and range.

The first and only early map on which I could find the more common form, "Alleghany," is in Mitchell's "Atlas," edition of 1853. These maps were drawn by Mr. Young, and it is more than likely that the same form appeared on previous editions of this atlas. It is only a matter of justice to say here that Mr. Young was the real author of Mitchell's "Geography" and "Atlas."

Thus it seems that the earliest authorized form of the word is "Allegany." When, however, "Allegheny" was adopted, it was evidently the intention to preserve the long sound of *a* by the French *e*; but, in order to avoid softening the preceding guttural consonant, *h* was interpolated, thereby converting "Allegany" into "Allegheny." Subsequently, when the *a* was again restored, the *h* was needlessly left in the word, — needlessly because there would be no probability of a guttural becoming softened before *a*. It is evident, therefore, that while the change to "Allegheny" may be considered of questionable propriety, the now recent form "Alleghany" is an unauthorized monstrosity.

JACQUES W. REDWAY.

Philadelphia, Jan. 18.

Mocking-Birds' Phrases.

WHILE idling at Colonial Beach last spring, the varied phrases of the mocking-bird attracted my attention. One phrase, "pen and ink, pen and ink, pen and ink" was startlingly articulate, and often repeated. So I took my pencil and noted what I heard. Changes of rhythm and changes of vowel brought out with wonderful clearness all the following phrases, apparently from only two birds. The phrases were interspersed with an occasional trill, a whistle, and a mew.

Hurry up! hurry up! hurry up!
Chip chip chip chip chip!
Teetle teetle teetle teetle!
Birdie birdie birdie birdie!
Pen and ink pen and ink pen and ink!
Twitter twitter twitter!
Take care' take care' take care'!
Whit whit whit whit!
Tit it it it it it!
Pee'wit pee'wit pee'wit!
Chivy chivy chivy!
Look away' look away' look away'!
Give' it up give' it up!
Wit wit wit wit wit wit wit!
Johny Johny Johny!
Hear hear hear hear hear!
Ladle ladle ladle!
Go there' go there' go there'!
Not yet not yet not yet!
Wait a wee wait a wee!
Git out git out git out!
Hooray hooray!
Don't go away don't go away!
Chirrup chirrup chirrup!
Say away say away!
That is just' it that is just' it!
Look out look out!
Too too too too!
Tut tut tut tut!
Look here' look here!
That'll do that'll do!
Wheat wheat wheat!
Chickee' chickee' chickee'!
Will you sing' will you sing' will you sing'?
Teazle teazle teazle!
Chew chew chew!
Took took took took!
Tweet tweet tweet!
Tik tik tik tik!
Cheep cheep cheep!
Pick it up pick it up!
Beauty beauty beauty!

There were many more, for which I could not on the instant find representative words. I have not attempted to record any from memory. The above were noted just as they were heard.

A. MELVILLE BELL.

Washington, D.C., January, 1890.

Musical Flames.

THE well-known experiment of making sounds by holding a tube over a jet of burning gas (usually hydrogen) is often omitted in chemistry classes because no suitable tubing is at hand. A fact not noted in any text-book I have seen, and unknown to all teachers that I have consulted, has been brought to light in my classes; viz., a bottle will serve in place of a tube. A "philosopher's candle" properly burning will yield a fine sound if capped by a wide-mouthed bottle, as a quinine bottle or large test-tube. Of course, this is according to the principles of acoustics, but it seems strange that no text-book gives it. I should like to know if this fact is known to any one else.

T. BERRY SMITH.

Fayette, Mo., Jan. 14.