— A. L. Burt has issued a volume on "Fugitive Facts," edited by Robert Thorne. It comprises short articles, alphabetically arranged, on topics constantly arising in conversation and general reading, on which it is hard to find accurate and definite information. The queries in the correspondence departments of periodicals and newspapers have suggested many of the subjects treated. The editor has added an appendix, devoted to short selections of constantly used medical terms and short dictionaries of mythology and music.

— G. P. Putnam's Sons will publish shortly a new volume, in The Story of the Nations Series, entitled "The Story of the Barbary Corsairs," by Stanley Lane Poole, with the collaboration of Lieut. J. D. Jerrold Kelley of the United States Navy; and two new books in The Questions of the Day, on "Railway Secrecy," by John M. Bonham, and "American Farms," by J. R. Elliot.

— The December number of the Riverside Literature Series (published quarterly during the school year 1889–90 at 15 cents a number, by Houghton, Mifflin, & Co., Boston) contains "Waste Not, Want Not, and The Barring Out," from Maria Edgeworth's "Parent's Assistant." The great popularity which the "Parent's Assistant" has had, ever since its publication in 1822, has induced the publishers to include some of the stories from this book in the Riverside Literature Series. The stories selected are interesting and simple: the lessons which they inculcate are the advantage of frugality and the disadvantage of a blind party spirit. The same publishers announce that they have in press for early publication a book by John Fiske on civil government. This book treats in a simple way of the government of towns, cities, states, and the nation, and will be a most valuable book for schools and families.

— Andrew D. White will resume his "New Chapters in the Warfare of Science" in the February *Popular Science Monthly*. The forthcoming chapter will be on "Comparative Mythology." It deals with the myths invented to explain strangely shaped or distributed rocks, taking the story of Lot's wife, which has gone through many curious variations, as a special example. "The Localization of Industries" is the subject of an article by J. J. Menzies, to appear in the February number, which will throw light on the most important problem before Congress this winter. It tells what lessons science draws from the course of industrial evolution in regard to encouraging the establishment of industries in a country. A searching examination of Henry George's taxation doctrine, by Horace White, will appear under the title, "Agriculture and the Single Tax." Mr. White maintains that the interdependence of all industries disposes of the claim that agriculture has enough advantage over other occupations to warrant laying the burden of all taxation upon it, and he asks whether the scheme of "economic rent" would include paying a bounty to farmers whose profits are a minus quantity. A second instalment of "Letters on the Land Question," from Huxley, Spencer, and others, including an especially able review of the question by Auberon Herbert, will be printed.

— Fords, Howard, & Hulbert have published a small volume by Martin W. Cooke on "The Human Mystery in Hamlet," the object of which is to present a new view of the character of Hamlet himself. The theories of Hamlet's character that critics have heretofore advanced are many and various, but Mr. Cooke's theory is quite different from them all. He holds that the dramatist's object in exhibiting the career of Hamlet was to portray "the conflict between his will and his passions, . . . the strife between the higher forces of the being and the lower." Or, as he elsewhere expresses it, "the theme of Hamlet is the interior life of humanity in this world, striving to harmonize its actions with a supernaturally imposed law of rectitude, which it recognizes but ever fails to fulfil." Now, we confess that this theory is less satisfactory to us than any of its predecessors, for we cannot see the least indication of a *moral* conflict in Hamlet's action or conversation — indeed, we should say that the moral element was conspicuously absent; nor can we see the propriety of calling the command of a ghost "a supernaturally imposed law of rectitude." Students of Shakspeare will take an interest in reading Mr. Cooke's work, but we doubt if they will agree with its conclusions.

LETTERS TO THE EDITOR.

**** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The editor will be glad to publish any queries consonant with the character of the journal.

Physical Fields.

PROFESSOR DOLBEAR'S interesting article on "Physical Fields," that appeared in your issue of Dec. 27, was called to my notice, and I have read it with considerable attention. It seems to me that he is entirely wrong in some of his premises, and that his conclusions are therefore, some of them, untenable. With your permission, I will point out where I differ with him.

His use of the term "stress" is certainly not correct. He says, under the head of "The Electric Field," "The phenomena are explained as due to the stress into which the neighboring ether is thrown by the electrified body. . . . Experiment shows that this kind of a stress travels outwards with the velocity of 186,000 miles a second, or the same as that of light."

It does not seem to me to be proper to say that a stress travels: it rather exists. In this particular case he is referring to the phenomenon of electrification, which is a static effect or condition. As I understand Maxwell, and Hertz and Thompson and Lodge, they do not any of them believe that electrification involves motion in any way whatever. It is a condition which is dual in its character. The negative exists because of the existence of the positive, not because of propagation from one to another. They also believe that one cannot exist without the other: the very existence of one, therefore, involves the existence of the other. The element of time, and therefore of rate of propagation, must be eliminated entirely.

What he does mean is, that an impulse due to the yielding to this stress is propagated, etc.

Again he says, "If this assumed electrified mass of matter were the only matter in the universe, any electric change in the mass would ultimately re-act upon the whole of space, and be uniform in every direction." This statement involves a contradiction of terms, for how can we have a condition of stress that is uniform throughout all space? It is certainly true that under static conditions, or under conditions of stress generally, where there are two bodies or more concerned, the field is distorted by their mutual re-action (that constitutes the stress); but I maintain that where there is but a single body in space, there can be no such thing as stress in that space outside of the body itself. If the body in question be but a mathematical point, there can be no stress at all. There can be no tension on a cord that is perfectly free to move.

The same criticism is made upon his remarks under the head of "The Magnetic Field." In the case of the magnet the justice of my criticism will be, perhaps, more apparent. Were it possible to conceive of a magnetic particle with but a single pole, could we imagine that pole surrounded by a magnetic field? Our conception of the ultimate particle of magnetic matter endows it with two parts, which re-act upon each other. If there were but a single particle of magnetic matter in space, the "lines of force" would form closed curves within that particle, passing from pole to pole: they could not, without violating all the laws of stress, radiate off into space, as he says they would.

Under the third head, "The Thermal Field," we come to a very different class of phenomena. Here, as in the case of light, we have vibration: we have distinctively a condition of motion of the ethereal medium. We have passed from a state of rest, — a static condition, — a state of potential, to one of movement, — a kinetic condition.

He says, "A hot body has a field, as well as an electrified or a magnetized body:" so it has, but his fundamental and fatal error is in not being able to discriminate between the two kinds of field. The magnetic, the electric, and we may add the field of the force of gravity, are purely static, purely potential, whereas the luminous and thermal fields are kinetic. In the former there can be no propagation, as the element of motion is entirely wanting. Add to these fields of stress the element of motion, and they at once become kinetic, and will then obey the laws of kinetic fields.

A potential field without motion will exist forever: a kinetic field requires the continual addition of energy for its maintenance. Move a magnet, or the earth relatively to any other magnet or body, and kinetic fields are produced. Move an electrified body,

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.