

SCIENCE FOR HOME.

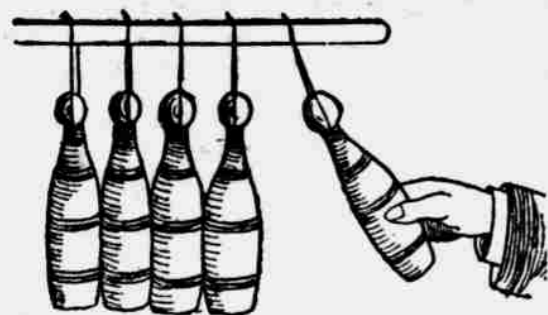
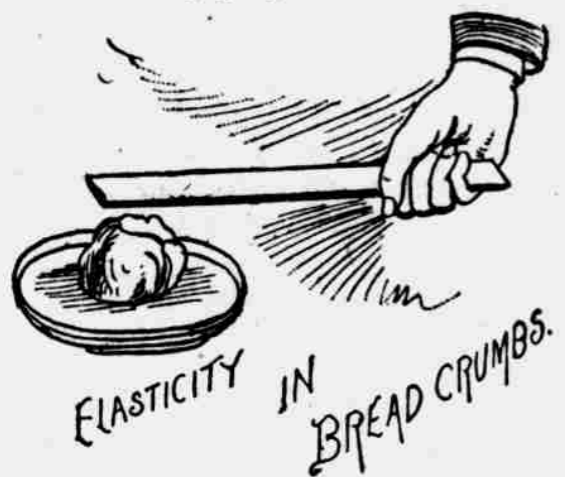
SOME WONDERFUL RESULTS FROM EXPERIMENTS.

Simple Experiments Which Can Be Made Without Expense—A Season in Terms Used in Science—Elasticity of Hard Matter.



SCIENCE HAS A language of its own, so to speak, and scientific students find it safest to use scientific language whenever it will be understood, because the use of popular expressions, and especially of illustrative metaphors (like current of "electricity," "law of gravitation," "electric fluid," and so on), may lead to erroneous conceptions among people who are not scientific philosophers, and derive their ideas from literature designed to be adapted to their understanding.

Thus, many people who have heard



ELASTICITY IN NINE PINS.

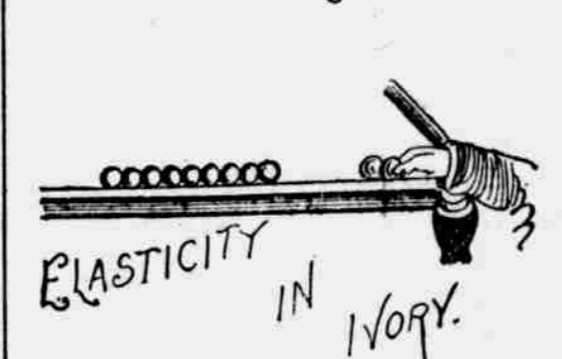
of "electric fluid" and "currents," conceive of the mystery of electricity in an entirely wrong way. The truth is that we do not know what electricity is, only of this we are quite certain, that it is not a fluid, writes T. B. Russell. Similarly, we talk about the "laws" of nature, as if these were a kind of force or influence causing certain sequences of events to happen, which is quite untrue. What people mean, who use the term with understanding, is simply this, that certain things are found always occurring in the same sequence, and that to that sequence the name of a law is given.

The great difficulty to be faced in trying to popularize science is not to teach something that is true, for that is comparatively easy, but to avoid, if possible, giving any erroneous impressions while dispensing, as much as possible, with severely scientific language.

Let us try to see the meaning of one or two scientific terms, for thus it will be possible to talk of scientific things without making or perpetrating mistakes. One of the commonest technical expressions is "matter." Matter simply means anything that exists, and we speak of anything material existing when it is capable of impressing sensations upon our consciousness—when it has weight and occupies space, that is, we know very well that even the intangible air has weight, and as for occupying space—well, we are more familiar with air in that capacity than almost any other.

When we speak of a room being empty, we mean that it is occupied entirely by air. And the weight of atmospheric air is shown every time a child's air balloon bursts and is flattened out by the weight of air surrounding it. The elasticity of the contained air keeps the balloon tight as long as it is unpunctured, but otherwise, as we know, it is immediately made limp and flabby.

Elasticity! That is another word which has a scientific use. It means the property by which matter which has been deformed in any way re-acquires its original shape when let alone. Some things which we should not regard as elastic are really so in a very remarkable degree, as a few ex-



periments will show. Take a small handful of crumbs from the interior of a new loaf of bread, and knead it into an irregular shape with the fingers. It would be difficult to think of any thing which most people would call less elastic.

Yet if we strike the mass ever so hard with a flat ruler, we cannot alter the shape! It is flattened, but springs back into position instantly. A glass marble, or any other kind of marble, for that matter, rebounds from a hard surface when dropped, in virtue of its elasticity. The downward side of the marble is flattened out, but it re-assumes its round shape so quickly as to throw the marble up again in the air. We may prove to our own satisfaction that it really was flattened, if we put a little ink on the marble, and see how small a dot it will make when placed gently on a paving stone. On dropping the inked marble from the height of three or four feet, it will make a much larger stain, for the flattening of the side will allow a greater surface of the ink to touch the stone.

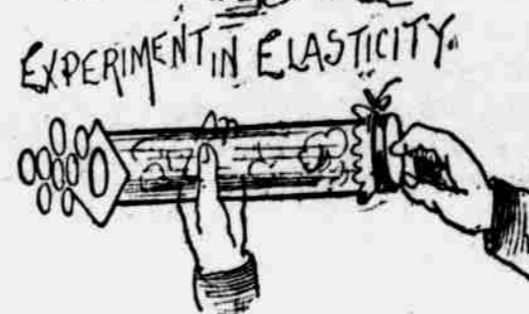
Hang up by the strings four or five wooden skittles or nine-pins, such as are sold at the toy shops. The strings must be tied to a stationary and horizontal bar in such a manner that the skittles hang straight, and are lightly in contact. Now lift the one end, and let it fall again, striking its neighbor. The skittle at the other end will immediately fly up to about the same height as you raised the first, but the others will not appear to have moved at all. The truth is, that each will have been "flattened," and in the rebounding action, by which it resumes its correct shape, it will have similarly "flattened" its neighbor, until the last, having nothing on the outer side to restrain it, actually bounces.

The experiment may be imitated by standing a number of persons in single file, each with a hand on the back of the person in front. Now go to the rear of the column (as it would be called by a soldier), and give the last person a slight push. The impulse will be transmitted from one to another, without causing any perceptible shock, but the person at the other end of the column, having nobody in front, will either fall down or be compelled to step forward to avoid doing so.

It is the elasticity and consequent rebounding capacity of ivory which makes possible the game of billiards. If we place a number of billiard balls against the cushion of a table, or, if not available, if we place a dozen mar-

bles against the edge of a book, we may, without disturbing any of the middle balls, send any desired number flying from either end of the row, by simply detaching a similar number from the remote end, and rolling them back to their place together with gentle force. And by covering with a duster the hand with which this is done, we may considerably astonish any one not acquainted with the experiment. Exactly the same thing may be done with a row of coins, the coins being of course, made to slide flat on the table.

Vortex rings, such as some smokers make for their amusement, are elastic, and repel one another if they strike. We may make them without tobacco by holding a lamp glass, which has one end covered with paper, as shown here, the smoke of anything (such as damp shavings or brown paper) which emit a heavy smoke. On tapping the paper drum-head at the end of the glass, we get fine vortices. They consist of small rings circulating round the circumference of the large ring that is visible, in a manner which has been very cleverly described by the analogy of covering a curtain ring with string, by winding the latter round and round, passing the ball through the space in the center. The



VORTEX RINGS.

rings will be most successfully obtained if the open end of the lamp glass has over it a piece of card with a circular aperture smaller than the bore of the glass itself.

Water is one of the things which is not elastic. It can hardly be compressed at all, on which fact depends the principle of the hydraulic press.

Coal.

The very marked advance in prices of all grades of hard and soft coal will make a vast difference in the coal bill of Nebraska. While this is true much can be saved by buying of first hands in car lots. The J. J. Thomas Co., is prepared to furnish coal on any line of road in Kansas or Nebraska and will take pleasure in giving you prices right at your station. See their advertisement in this paper and write them mentioning THE ALLIANCE-INDEPENDENT.

Fine Playing Cards.

Send ten cents in stamps to John Sebastian, Gen'l Ticket and Pass. Agt. C., R. I. & P. R'y. Chicago, for a pack of the "Rock Island" Playing Cards. They are acknowledged the best, and worth five times the cost. Send money order or postal note for 50c, and we will send five packs by express, prepaid.

The Tennessee Toiler: England has a land loan scheme by which the farmers of that country will borrow money from the British government at 2 per cent. If the scheme is so wild and visionary that only cranks advocate it, how is it that the British government, under the control of statesmen who rank with the ablest in the world, has given their adhesion to such a scheme? Not only advocated, but actually adopted it and the money is now being loaned.

ATTENTION!

Our "Songs of the People" Have Created For Themselves a Nation-Wide Demand Which Enables Us Now to Reduce the Price.

We have all along contemplated reducing the price of our songs just as soon as we possibly could do so, and we are exceedingly glad to announce that prices will be way down from this time forward. The first cost of sheet music is heavy, and we have been forced to sell hitherto at nearly ordinary prices. We shall now sell our new, popular, splendid, unequalled songs at rates within the reach of all.

Chairman Taubeneck says: "Your songs are the very best that have been prepared for our people. Hope you will do all in your power to push the work. It is badly needed in every state."

The Arena says: "The songs just issued for the industrial millions will, if we mistake not, add tens of thousands of votes to the ranks of the people's party."

President Loucks, of the National Farmers' Alliance, says: "They are admirably adapted for campaign songs."

The Journal of the Knights of Labor says: "They should be in the hands of all lovers of liberty."

The New Forum says: "The sentiment of these songs is grand."

These words of unsolicited praise indicate the enthusiastic reception they are meeting with everywhere.

Do you want songs that will bring down the house? We have two that are regular swivel guns, loaded with fun and thunder, and each worth more in making votes than a hundred dry orators. They are: "We Have the Tariff Yet," and "The Taxpayers Settle the Bills." "Get Off the Earth," is equally popular. Mrs. Mary Baird Finch, our Nebraska poet, says: "If I could write anything as good as 'Get Off the Earth,' I should consider my name and fame permanently established."

"The Workers' Battle Hymn of Freedom," is the new Marsellaise hymn set to the wonderfully thrilling French air. Nothing could be more moving and inspiring.

"Sons of America" is a new tune like the Marsellaise, and we believe equally stirring and fine.

"The Alarm Beat," is our trumpet call to action. It is one of our best quartette campaign songs and arouses much enthusiasm.

"The Flag of Liberty" is the patriotic song of the people's party. It will quicken the pulses of all who love their country and hate oppression. The Farm Field and Stockman selected it from all our list to present to their readers this week.

"God Save the People" is another song that will live long. It touches a popular chord.

You are hearing a good deal about "An Honest Dollar." We have a song on that subject (ready next week) which can't be beat. Send for it at once.

"Truth's Approaching Triumph" is a song of the "thousand years," the reign of righteousness for which we are fighting. It is a beautiful, inspiring composition, refreshing as a song of the angels to those who have become weary waiting.

"The Weakest Must Go to the Wall" gets in some tremendous blows against the money land and transportation monopolists.

"Losses and Lies" shows up where profits come from and how obtained. It is red hot.

"The Millennium Army" is Mrs. Lease's favorite and she has reason to think it our best.

Space lacks to tell the merit of the others. NOW NOTICE: Any one of these songs heretofore sold at 35 cents now can be had for 20 cents. Three songs, your choice, for 50 cents. Seven songs for \$1.00. The entire series, sixteen in number, for \$1.50.

Order at once and get ready for the greatest, grandest, most enthusiastic campaign the country has known.

The following is a list of the songs:

- The Workers' Battle Hymn of Freedom.
- Right Shall Reign.
- The Weakest Must Go to the Wall.
- The Taxpayers settle the Bills.
- Sons of America.
- Get off the Earth.
- The Flag of Liberty.
- The Coal Baron's Song.
- Truth's Approaching Triumph.
- God Save the People.
- We have the Tariff Yet.
- The Alarm Beat.
- The Millennium Army.
- That "Honest Dollar."
- Losses and Lies.

Tourists Trips.

Round trips to to the Pacific Coast. Short trips to the Mountain Resorts of Colorado.

The Great Salt Lake. Yellowstone National Park—the most wonderful spot on this continent.

Puget Sound, the Mediterranean of the Pacific coast.

And all reached via the Union Pacific System. For detailed information call on or address,

J. T. MASTIN, C. T. A., 1044 O St., E. B. SLOSSON, Gen. Agt., Lincoln, Neb.