

use became a general necessity with a large and reputable class, and acquired considerable volume, that it was emancipated from narrow and vulgar prejudices. The business of supplying capital for such loans, however, though carefully restricted by jealous laws, has become the special care of nations, and is in the front rank of honorable employments, while, with a degree of contemptuous prejudice that would be almost ludicrous but for its fearfully cruel consequences, the business of supplying loans on "uncommercial" security has been placed under the ban of society, or altogether beyond the control of the laws. Meantime the interests affected are assuming such enormous proportions, and involve the well-being of such vast and increasing numbers, that every man who does not willfully shut his eyes to the truth readily admits the necessity for some action that affords a promise of relief. That such relief can not be attained by any species of prohibitory enactment is too clear to call for any argument. The people whose necessities compel them to borrow money *must* go to the only sources from which they can obtain it, whatever those sources may be. As a general thing no time is left them to "pick and choose" for advantageous terms. They would gladly borrow this money at low rates and on long time; for no man ever *prefers* to pay usury; but no such privilege has in this country been provided for them. The laws curtail the power of even the licensed pawnbrokers to furnish the required assistance. Moreover, on these larger loans, 2 per cent. per month, "with charges and expenses," is altogether too much, while the legal rate may at the same time be insufficient to tempt capital to such uses. In practice it has been found so. The uniform rates of the *Monts de Piété* seem to have solved this difficulty. The reason of this may be found in the fact that a "pawn" is not in the nature of a mortgage; the pawnee acquires no property or use in the article pledged, and is bound to retain it in his possession. He can not re-employ it as a means of obtaining further capital, and his "banking" may thus be said to be reduced to "single entry."

So strongly has the state of things set forth in this article been brought home to the minds of our more intelligent financial men, that, at the time of writing it, a charter is pending before the New York Legislature for the incorporation of an institution for this city, framed on the model of the Parisian *Mont de Piété*, though embracing even more liberal provisions for the protection of the interests of the poor. The parties engaging in the enterprise are second to none among our reputable and responsible citizens, and may be safely intrusted with the development of their important undertaking. At the same time similar movements are understood to be organizing in Boston and Philadelphia. The special charter system, however, ought no more to be applied to this business, except during its experimental era, than to any

other species of banking; but as speedily as possible a scientific system should be developed which will admit the application of a general act, that the expansion of facilities may be in proportion to the demands of the people, and that any thing like monopoly may be shunned. It is a marked feature of the charter in question that it assumes the form of a "Mutual Savings Institution," with all surplus profits divided among its depositors—a plan which has already been found to work admirably well in practice.

The adoption of some such remedy is and can be only a question of time, even if the present effort should prove unsuccessful. We are far too shrewd, as a people, to long insist that our most needy classes shall be the worst protected, or that our laws should be left in a shape which renders their infraction morally compulsory. So long, indeed, as only the flat-irons and cheap watches were involved, and we imagined that the whole business passed under the sign of the three balls, in insignificant dribblets, we might have snubbed the whole question with supercilious contempt; but now that the French statistics have given us some fair hint of what our own must be, and the columns foot up with millions on millions of gold, paying interest at from thirty to one hundred and eighty per cent. per annum, and with forfeitures which call to mind the snap of an alligator's jaws, the whole thing assumes a different aspect, and we shall be willing to "do something."

Nor will it be hard, either, for "so shrewd a people," to ascertain that there is but one thing to be done, and the experience of Europe will be acted upon. An unlimited supply of money at a low rate will enable the borrowers to laugh at all attempts at extortion, and the shattered laws will have a fair opportunity to recover their self-respect, if not that of the people.

The legitimate business of the licensed pawnbrokers will be but slowly affected by the introduction of the *Mont de Piété* in America. The real execution will be done among the illegal dealers. So well do the former understand this that as yet but little jealousy has been expressed on their part. The new system will necessarily be of somewhat slow growth, for it is an exotic, and must gradually become accustomed to our soil and climate. All who pity the poor in their distress, or the victims of sudden misfortune, or even of their own folly, will hope for the success of the proposed reformation.

THE PRIMER OF THE WORLD.

SOMETIMES there is discovered an old vase or stone, covered with strange characters that are not to be found in any books now read. But men compare them with other stones engraved in characters that have been read, and by putting this letter and that together, make out, perhaps, the name of a king, his battles, and his captives, who had all been forgotten hundreds of years ago.

Now yesterday I saw a leaf from the book of the old world, and on it was written the history of millions of lives and deaths that happened under the waves in a sea-city. The little sea-people are all dead, but there were their houses, packed together by millions, as I tell you. It told also a yet more surprising story, of how this sea-city and many others like it had been lifted from the very bottom of the sea to the tops of the highest mountains. If you would like to know the name of this leaf it was a limestone rock; and I read this story something as men make out the characters on the old stones and vases. It was not written in our A B C's, you may be sure, but the same characters are still used on earth by two mighty workers, Fire and Water. And by studying their handwriting you will recognize it wherever you meet it as certainly as though it was written plainly—Fire, his mark, or Water, his mark.

If you would like to know more about this old world book there are sure to be bits and shreds of it in all your houses. For instance, in every lump of coal is written a story, prettier even I think than that of the limestone—a story which I should like to tell you by-and-by. But the book itself is the solid earth. We may call the ground on which we walk the cover, ornamented with cities, mountains, and seas. The leaves are beneath, laid regularly in such order, one over the other, that we come in digging down first to the last leaf, and reach the first leaf last. These leaves are of rocks of different kinds, as granite, limestone, and chalk, or of coal, or of different clays and sands, mixed in with corals, pebbles, and shells. Some of these rocks are made up of thin layers or slices placed one over the other. In some we find bones, shells, and skeletons of strange animals. Some are made wholly of shells, the houses of the little sea-people of whom we were talking. All of them are written thick with the history of how God made the world.

Should you like to understand this writing? To do that, then, we must try and find something that builds now in layers of mud and sand, and piles up pigmy cities in rocks, and hides shells and skeletons in solid rocks.

If you live near the shore, no doubt you have seen, especially in a storm, how the water is thick and colored by the mud it has scraped from the banks. If you live in the city, you know that the water brought into your houses is apt to be muddy, showing that the river wears on its banks just as the waves do on the shore. Or, if you are near a brook, you will find, wherever there is a great rock or a heap of pebbles in its bed, a little layer of mud and sand which the water has brought there, and to which it adds every day. Water carries the soil that it digs and scoops from the land, as you might run with your hands full of parcels. But when the brook enters a lake, or the river an ocean, or it finds any obstacle to check its swift current, the mud falls to the bottom, as your parcels would be apt to drop from your hands if

you were suddenly stopped in your running. There at the bottom the soil spreads out in a thin layer or slice of mud, mixed with fine gravel, perhaps, or broken shells, as the case may be; and above this other layers are piled, sometimes into high banks, like those through which the Mississippi cuts its way, which still show the different colors of the many layers of which they are made.

So it is water that builds in layers or thin slices. And we must believe that the water-mark is on all those rocks in our old world book that have plainly been piled up in this manner, because we see water now building everywhere in precisely the same way.

But does water now hide shells and skeletons in what will ever become solid rock? Let the river Ganges answer that question. As it comes rushing down from the mountains it tears out, and takes whirling down with it, a tree perhaps. The tree is caught somewhere and held fast, and the great river leaves on it every day a little of the mud and sand that it brings down, as your brook does about its rocks and pebbles. The pile grows in the bed of the river. The water is cramped for room, and digs itself a way by tearing out its banks, leaving some of the mud thus scooped out on the little island. The air brings it the down of plants, and the water brings it seed. Reeds and long grass begin to grow upon it. More trees and branches are caught there; more mud and sand piled upon them; and as its thickets grow, tigers, deer, and buffalo come to lurk in them, and to dwell there.

But now comes a high spring-tide and a strong wind, forcing, you may say, the water back, and making the river overflow its banks. Houses and cattle are swept down in the flood; and if our little islands are not torn out by the roots, the raging water carries its inhabitants struggling down, and buries them in the ocean perhaps, or deep in mud and slime. Now the river is always building, and tearing down, and burying in this manner. And between these many additions and alterations it might happen that the men who live in the year five thousand, coming to the Delta of the Ganges, which is now a woody marsh, full of lions and tigers, might find instead firm ground covered with cities; and digging down to what is now mud and slime, would find rocks—new leaves added to our book of the earth—and breaking open these rocks, might discover, fast in them, the bones and skeletons of lions and tigers, which the river had buried in the slime thousands of years before, and which by that time might have disappeared from the earth, just as the wild-cat and the beaver are disappearing from our own country. Here, then, would be rocks telling the same story and made in the same way as those about which we are asking; and the river Ganges is busy building them to-day.

And for the pigmy cities piled up into rocks!—why, every where, water is a merchant, and its oceans are great markets, to which come

millions of tiny builders for lime and building material. I need not remind you of the coral insect, building up its reefs into islands. But in Bermuda are deep basins of water called lagoons. The bottom of these lagoons is covered with a thick, soft, white mud, which, when dried, can not be distinguished from chalk; which makes a large leaf in our old world book. And this soft white mud is entirely made of little shells—broken, deserted houses of little ocean-dwellers. Just such building, we must believe, went on in the old times; only in those days the water must almost have possessed the earth. For the Bible tells us “that the earth was without form and void, and that the Spirit of God moved on the face of the waters.” And in some of the lower leaves of our book there is no handwriting but that of water. Water, his mark, every where.

Under those dark and ancient seas, then, where now stand continents covered with cities, millions of little workers called Nummulites built the Pyrenees; for many of the mountains of that range are made entirely of their shells. So is the rock out of which was hewn that great pyramid which stands half choked in sand, under the rainless sky of Egypt. The cities built in this way under the waves are perched on some of the loftiest mountain peaks; and we should find the handwriting of the sea on the walls of many of our own houses and churches if we knew how to read it.

But if water builds, it builds like a child at play, to tear down again. Over and over again, on our leaves of rock, is written how water overflowed the land, and held it for years beneath its waves; and we see now, on every side, water perpetually wasting and destroying. All other things rest, but water never sleeps, never is tired. If you wake at midnight you will hear the waves grinding on the beach, or the brook roaring over its rocks, just as they have done, without once stopping, ever since the world began. And what is this worker who is never tired doing, do you think?

Why, eating at and wearing away the land!

The fingers of every little brook are busy pilfering mud and sand. The hands of the great Irrawaddy River seize on sixty-two feet of earth every *second* and carry it down to the sea. The Ganges in a few years has scooped out twenty-six thousand acres in one place. The Mississippi is raising the bottom of the sea. The ocean is beating down the coast and tearing out the heart of the rocks. The Shetland Isles are built up of hard porphyry rocks. But the Atlantic digs them out in caves, and scoops them out in arches, and wears the great bluffs thin and sharp, till the solid cliff is broken up in pointed towers, standing apart as if the hard porphyry were so much chalk and the waves were iron borers.

Again, on the old maps of Yorkshire, England, are set down the towns of Auburn and Hyde. But the waves have taken away the ground on which their houses stood, and there

are only sand-banks in their place. And there was Ravenspur, once a great sea-port, from which Edward Baliol sailed to invade Scotland! If on that day some one had told the men of Ravenspur “there will be no sign left of your town in the year 1869 except a wide sand-flat seen at low water,” how they would have stared at him! But the water has torn down its shore, and carried away its houses, and overflows Ravenspur and possesses it. Or you may have read of St. Michael's Mount in Cornwall. It is a rock, washed on all sides by the hungry ocean. But its old Cornish name means the “Hoar Rock in the Woods.” And under its sands are rotting roots, and branches, and hazelnuts, that fell from trees that Cornish boys and girls used to watch, no doubt, as you do the chestnuts in nutting-time.

Now we know that God holds the earth in “the hollow of his hand.” And that when he called the waters together into seas he set bounds for them, and said to the ocean, “Thus far shalt thou come, and no further.” But we can see that God works with means that we may call machinery. He uses fire and air and water, gases, metals, and minerals. Indeed, what we call science is only finding out a very little of his wisdom, and our wisest men are only spelling out a little here and there in his wonderful book of the world, as you might make out a verse or two in some of your father's volumes. So, when we see that water every where makes war on the land and conquers it, and that we should not have a foot of standing room left if something did not rebuild and uphold the earth, we ask, what holds it up? And when water ruled over the earth what raised the land above it, and lifted the sea-cities to the mountain peaks? And, finally, what in the beginning supplied Water, the builder and merchant, with material, and so in reality laid the foundation of the world?

To answer these questions I must tell you now of a great magician who changes every thing that he touches. He can turn a hard, white substance of no value into agates, opals, and jaspers; and a metal not worth so much as silver into sapphires and rubies. He can hide himself in a match, and can raise a whole chain of mountains in one night. He is in all your houses, and familiar to every one, and yet few people really know any thing about him, for he is continually called a devourer, when the fact is that he never devoured any thing in his life. And you will often hear him spoken of as a destroyer, though he is the greatest builder and manufacturer in the world.

This magician has a master who is a spirit of the air, and full of contradictions. He is so thin and colorless that he is invisible, and of such airy make that the very lightest gas will pass through his body. Yet he is so strong that you may squeeze him with a weight of twenty tons to the square inch and he will never feel it. He is of such a fierce and fiery nature that iron burns like tinder in his breath, and he goes

loaded with chains lest he should set the world on fire, of which he is quite capable! Yet this active, fiery spirit is always asleep! And no voice but his servant's voice can wake him. The name of this spirit is Oxygen; and the magician, his servant, is Fire.

Oxygen, as very likely you know, is a gas that makes about one-fifth of our air, four-fifths of every plant, one-half of the solid rocks, and eight-ninths of all water. I told you that it was always chained, because, though it is locked up so fast in plants, rocks, and water, and is so weighed down by gases and vapors in the air that we handle, and breathe, and drink it without harm, it is really the fire-element. Put a diamond or an iron spring in a jar of pure oxygen—that is, oxygen that has been freed from its chains—and it will burn like tinder. And I said that Fire devoured nothing, though you can see that it burns up whatever it touches, because burning is only a change of form.

Perhaps you are surprised at that; but let us see what really happens in the burning of a log of wood. And the better to do that, you must let me present you to two more wonder-workers, known as Carbon and Hydrogen.

In your mythologies you may have met one Proteus, who could wear what shape he chose. Carbon is the real Proteus. He is an invisible gas, floating in air. He is also a dweller in the water and in the rocks. He is the substance of coal and of the diamond, and you must thank him for all the books that have ever been printed, for he is at the bottom of all printers' ink. Carbon is also the soul of honor. What you confide to him he never gives up; and although he has so many forms, in one sense he is unchanging. Examine charcoal, even through the microscope, and you will find, although it has been red-hot, the most delicate rings and cells of the wood from which it has been taken unharmed. A sort of salamander, in the fiercest flame Carbon never melts. If it did, the coal would run out in liquid form from our grates and furnaces, and there would be an end of our fires. And though Carbon is on intimate terms with Water, and even lives in it, he has never yet given up a single letter on any printed page to dampness. The letters in a Bible printed four hundred years ago are as black as on the day they were printed. Nor will our friend Carbon yield to the sharper persuasion of any liquids like ether or alcohol, and dissolve in them. And we should be very much obliged to him for the care he takes of our printed records, for you can see how much mischief might be done if books could be so easily altered or defaced.

As for Hydrogen, he is one of the most subtle, penetrating, and airy of sprites. He can slip through paper or leaves of gold or silver. Direct a stream of this gas against one side of such a leaf, and you can set fire to it on the other. Give him a burning taper, and he will instantly blow it out. Let him meet Oxygen, and he strikes fire. And talking of Oxygen, he

is a partner with Hydrogen in all sorts of enterprises; and yet you often find Oxygen, though chained himself, acting as Hydrogen's jailer; and the only way of setting Hydrogen free is to offer his jailer something that he likes better. For instance, Hydrogen is obtained from water by forcing the water through an iron tube, filled with iron shavings, and red-hot. Heat rouses the sleeping Oxygen. He throws off his chains, seizes on the iron, and lets Hydrogen go free.

And now, I dare say, you are wondering what has become of the log of wood that we left behind us. Patience, little friends! Wood, oil, wax, and most other burning material, are made up chiefly of some oxygen and hydrogen and carbon. Now you bring fire to the wood. Fire calls on Oxygen, who on the instant is as lively as the ogre who scented the blood of an Englishman. He smells hydrogen. Carbon he likes, but hydrogen is better. Hydrogen, finding that Fire means to turn him out of the pores of the wood, seizes on a solid particle of Carbon, perhaps as a sort of heavy reserve, but in vain! Oxygen seizes on it, and they come together with a fury that strikes out a white heat. The Carbon, which you can imagine as innumerable little points of charcoal, goes free for a moment, but warmed by the white heat of the battle glows in what we call flame. Meantime Hydrogen is immortal, and Oxygen can not make an end of him; but he can change him into a watery vapor; a spirit of the mist! He does so; and Hydrogen, as fast as he is let loose, floats up the chimney in vapor of water. That done, Oxygen is ready for Carbon; pounces on him, and sends him also up chimney as carbonic acid—a colorless gas; and so on, in turn, till the burning is done.

Now you say the log is burned. The smoke, which is made of little particles of carbon not wholly consumed, has escaped. And there is only left a little ash on the hearth. But are you quite sure of that? Suppose, instead of allowing the smoke and vapors and gases to escape, they were caught and weighed with the ashes. What do you think would be the weight? About half that of the wood? No. Fire has only changed the wood; into very different shapes, it is true, but all its parts are there, and the weight will be greater than that of the log, because oxygen has been added to it. All burning is simply change. Remember that, and you will more easily understand how the destroying Fire is in reality a builder and manufacturer.

In examining our book of the earth we find water bringing lime to the sea-dwellers, who built it up in their cities. I have already told you how the Pyrenees, among many other mountains, were built under the ancient seas; and our own peninsula of Florida was raised almost wholly by the coral-builders, to whom the Mississippi brought lime from the lime deposits of the Western States. But water never makes lime. You find sandstone rock, brought together by running water, from grains of sand.

But water never manufactures sand. There are great beds of clay piled up by water; but where did it find the clay? And there are rocks, like granite, that were never built up in layers, and with which water has never meddled at all. What produced them? Here is a new handwriting, and we must look for a new worker.

If there were only one man in the country who knew how to manufacture a watch, when you saw a watch you would say at once that it was made by him. Just so we say that here is the work of Fire, because he is the only mineral-maker now. There is a metal called "calcium." It is very abundant (though always hidden in what are called its ores), and somewhat resembles lead. You remember that all burning is change. You must remember, also, that the change is not always into gases and vapors. Fire changes this yellowish white substance into lime—common quick-lime. There is another substance, called "silicon," also very abundant; and Fire changes this silicon into one of the hardest solids known, and makes out of it quartz, rock-crystal, agate, jasper, opal, and many other minerals; and their grains make sand. You know what a large proportion of lime there is in our book, and the different sorts of silica make up one-half of its leaves. There is a metal called "aluminum." It is brilliantly white, and in the fire sends out a vivid light. Out of this aluminum Fire brings sapphires and rubies. Emery is a rougher form of it. Unite now silica and aluminum and you get clay. There is another element called "potassium," so light that it will swim on water, and so fiercely eager for oxygen that it will break the bolts and bars that shut up oxygen in water and burst into flame. Fire turns potash, alumina, and silica into a mineral called feldspar, or into another named mica, according to the proportions in which you mix them. And now jumble quartz, feldspar, and mica together, and Fire will transform them into the different varieties of granite rock.

These, and many more changes that I have not time even to name, the chemist can compel Fire to work to-day. And though here is a very small specimen of Fire's manufactures presented to you, you can imagine that as the chemist calls his working-room his laboratory, so when God commanded Fire to lay the foundations of the earth, he made the world his laboratory. We can not tell how God created the metals and minerals, the gases and vapors, of which the earth is composed. But we must suppose, seeing how his servants Fire and Water work now on the earth, that he brought them together in a heat so great that solids like iron flowed liquid as water, and that the vast quantity of water now gathered into oceans floated as fine vapor. Fire to-day will bring you out of lumps of coal-light for your cities, beautiful dyes for your silks, that wax-like substance called paraffine, and the grimy coal-tar with which we pitch our roofs. What could not Fire have wrought then? Diamonds, sil-

ver, gold, opals, rock-stuff, the granite ribs and foundations of the world, whatever the wisdom of God foresaw that we needed. But in these days Fire and Water work together, from the building of our fires to the turning of every wheel and the dragging of every railroad train in the land. And if we are correct in our world-making it seems likely that Fire and Water worked together then also. If this burning mass revolved among the planets, as the earth does now, after a time it would begin to cool. The atmosphere around our earth is a sort of blanket which prevents us from losing all our heat. Beyond this there is nothing like what we call air in the spaces between the planets. Heat there would be lost in space, and the cold must be greater than any thing we can conceive.

Chilled, then, by this cold, the water would in time draw together in drops and fall in rain. And though the glowing earth might at first send it back in steam, you can see, as the earth cooled more and more, the waters would prevail more and more, till the ocean finally covered the whole great furnace, where Fire had been manufacturing on such a monstrous scale. And then would commence the work of Fire, and Water, and gigantic disturbances, to the signs of which we are come in our book.

The leaves of which we have been talking are arranged one above the other in very nearly the same order all over the world—in some places laid out smoothly, in others wrinkled and bent as if some monstrous hand had suddenly crumpled them together and shut the book. In some places they are in waves; in others the lower leaves are pushed quite through the upper ones. There are great forests buried under slime and shells of the sea. Sea bottoms and rocks laid by Fire on the very foundations of the world raised on the tops of the highest mountains. You recollect that these leaves are layers of solid rock that cover hundreds and thousands of miles. To have been so crumpled and bent the earth must have been shaken and torn. To have been raised and lowered whole countries must have been lifted from the waves, and other countries must have sunk below them; and I dare say that seems to you impossible. But let us see if any thing of the sort is being done in our day.

It is difficult to believe that the firm earth's surface should be altered, or that such a mass as a mountain can be raised suddenly and at once; but in one night the coast of Chili, and of course the Andes with it, was raised from two to four feet! (What do you think of the power which could lift the Andes four feet?) And the fishermen thought that the ocean had retired, because acres of flat land that was always under water was now laid bare, covered with dead shell-fish, and beds of dead mussels were found ten feet above high-water-mark. In the interior the whole country was raised from five to seven feet, as much land as the half of France being thus moved upward in one night.

In one of the Canary Islands, in the year 1730, the earth split open suddenly, and a great hill was thrown up in one night. A stream of lava followed, and a monstrous rock, thrown up with a noise like thunder. The disturbance thus commenced lasted five years. A high hill was thrown up and fell back, and from three new openings poured out sand, ashes, and horrible vapors which suffocated the cattle. The lava poured out into the sea with a dreadful roar, so that the water was covered with dead and dying fish, and a new island was formed, and the flourishing town of St. Catalina was buried under hills four hundred feet in height.

In Java there was a mountain covered with trees and vines. All about it were fertile plains and swarming villages, not in the least afraid of their neighbor the mountain, for the oldest man among them had never heard that it was a volcano. But in July, in the year 1822, suddenly streamed up from it columns of hot water, boiling mud, burning brimstone, and ashes. The rivers were choked with hot water and mud, and overflowed, carrying away people and cattle. Streams of bluish mud overflowed the villages; the whole face of the mountain was changed; two rivers were turned out of their course; and new hills and valleys were formed. Four thousand people and one hundred and fourteen villages were destroyed.

Here are three accounts, which I have taken almost at random from the long and dreadful list of earthquakes. In them you have a whole range of mountains and a considerable country raised in one night; hills made, valleys opened, rivers turned aside; men and cattle buried in mud, in which now their bones might be found; layers of ashes, lava, and sand laid over a fertile country of fields and vineyards; rocks made by Fire deep in the earth thrown up; islands formed, and cities buried under great hills; and the work of change continuing for years—all the work of three earthquakes, by no means the most remarkable that have occurred. In these disturbances the land was raised; but in many other earthquakes towns and large tracts of land have suddenly disappeared, and been replaced by water. In a violent earthquake in the Delta of the Indus the eastern channel of that river, which had been fordable, was deepened so much that there was eighteen feet of water at low-water. The fort and village of Sindree sank in the water to the tops of the houses, while about five miles away rose up suddenly out of a level plain a mound of clay, filled with shells, which they called the Mound of God. Then again in Jamaica, in 1692, the ground swelled and rolled like the sea, and bursting open in awful cracks, people sank through, and were caught in the middle or by the head as the earth closed again. The store-houses on the harbor side sunk, and afterward their roofs could be seen from boats which sailed over them. One thousand acres of land about the town went down, and the sea rolled in; and in the north of the island plantations

disappeared under lakes, which, on drying up, left nothing but sand and gravel. Here are but five examples, all told, out of many hundreds; but I think you can begin to understand how it is that men find forests under the dried beds of seas and lakes, and the bones of fishes on mountain-peaks.

I think it is as difficult to believe also that the earth is raised or lowered gradually, and without any help from earthquake or volcano; perhaps more difficult. Yet such is actually the case in many places. For instance;

Near Puzzuoli, in the year 1750, there was discovered, almost hidden under bushes and soil, a splendid temple, supposed to have been built in honor of Jupiter. The pavement was still preserved, and it was supported by forty-six columns. These columns were cut from a single block of marble, and were forty-two feet high; and on these columns was written a wonderful story. It said that this temple, which of course had been built by men on the land, and which now stood twenty-three feet above the level of the sea, had also at one time been sunk below the waves. This story was written over about nine feet of each column, and the letters were small pear-shaped holes, which a shell-fish, called the *lithodomus*, had bored for itself. In these holes were also many little shells, such as are commonly found in the holes of the *lithodomi*, and it was plain that the temple had remained some time under water; for as the *lithodomus* grows larger it enlarges its house. The temple had been lowered under the sea and raised again, if you are to believe the little sea-workers on the columns. But this is not all. An artist named Nicolini used to visit the temple in 1807, and remain there all day to sketch; and at that time the pavement was never overflowed except when the south wind blew violently. But coming back there, sixteen years later, he found the pavement overflowed by the tide twice a day, and caught fish where in calm weather there never was a drop of water. Since the beginning of our century the ground on which the temple stood had been lowered two feet.

On the other hand, the country of Sweden and Norway is rising, and the story is told as plainly as the story on the columns of the temple of Jupiter. All along the coast is a thick fringe of many rocky islands. Between these islands and the main land boats and little vessels make their voyages; and as the channels wind in and out among these rocks, you will see that the stout old sailors must know by heart every rock and turn to voyage in safety. Now these channels and islands are constantly changing. Rocks which were only seen through the clear water are now bare. What were dangerous, sunken reefs are only half covered at high tide; and these rocks grow in height and breadth. What was only a smooth, round hump grows into a ledge, thick with sea-fowl. The ledge stretches into an island, with a few mosses and blades of grass, and from that it grows into a plain cov-

ered with fir-trees—all within the memory of men who are living now. Artificial marks prove also that the land is rising or the sea is lowering, whichever way you choose to put it.

If you ask me how this is being done, I can only tell you what we believe and suppose. The old Greeks had a story of a lame god called Vulcan, who was a blacksmith. They said that his forge was underground, and that the volcanoes were his chimneys. In the same way we imagine that our great worker, Fire, has his work-shop in the centre of the earth. We think so because we find that at a certain distance underground the heat is always the same summer and winter; and, digging below that, that it increases at a wonderful rate: one degree of heat, I think, for every sixty or seventy feet. If this increase of heat goes on it must be so hot at the centre of the earth that the hardest rock and minerals would melt. This, then, would be the work-shop of Fire, and ready at his hand are, as we know, metals, minerals, gases, and large bodies of water, scalding hot, or turned into steam, all packed down under the enormous weight of rock and soil above. You remember how the land is worn away in some places, and how the bed of the sea is piled up in others. If now you had a round ball, and its covering in some places was very much thicker than in others, the thin places after a time would be apt to crack, would they not? That is what seems to happen on the earth. There is a crack in its crust. The land goes down on the heavy side, and up on the light side; and just as water oozes up through a crack in thin ice, the gases and steam burst up, only with a terrible explosion, tearing out rocks, and forcing up through the volcanoes showers of melted earthy matter, sand, and ashes; and, terrible as are often the consequences, you can see that Fire and the earthquake are yet necessary to rebuild the land, and hold it up out of reach of the devouring water.

Here I must tell you good-by. But remember. We have not read the Book of the World—only spelled out a few chapters in its primer.

WILLIAM BRADFORD'S LOVE LIFE.

I.—ALICE CARPENTER.

"ALICE, will you give me your answer? I have traveled many leagues and run no little risk to ask this question."

"And after all may get no answer at all," interposed Alice Carpenter, pouting her pretty lips, and glancing mutinously into the grave face bent toward her.

"Nay, child, be not froward, nor trifle with what is or should be solemn earnest to both of us. I have already told you that this is the only hour I can call mine own while we remain in England. It is true, I accepted the mission with the full intention of seeing you while here; but, having accepted, I must fulfill it, and to-

night's sunset should see me far on the road to London."

"Why wait for sunset, Master Bradford? If your London business is so pressing I marvel that you should delay it for the sake of a silly maiden, who in truth knows not her own mind as yet."

And the spoiled little beauty turned to chase the tiny greyhound who leaped in sport upon her.

William Bradford stood moodily watching the game of play which followed, and making for himself, all unconsciously, a picture of the scene never to be forgotten amidst all the vicissitudes of a stormy life.

It was the garden of an old English manor-house dating from the reign of Elizabeth—a date proven no less by the formal architecture of the latter than the quaint ordering of the former, with its yew-trees sedulously clipped in shape of towers and ships, falcons, peacocks, and rampant lions; with its great beds of roses, cultivated not only for their beauty, but as material for conserves, rose-water, and scent-jars; trailing honey-suckles and sweet-brier ran riot among clumps of heart's-ease, garden lilies, love-lies-bleeding, prince's feather, marigolds, and hollyhocks. The northern limit of the garden, near which William Bradford stood, was defined by a high wall built of the same hard, red bricks as the house, and upon the southern face of this was nailed a long range of espalier fruit—black-heart cherries, peaches, pears, and great golden plums, celebrated throughout the country for their size and flavor. They were ripe just now, and the hot sun brought out a musky odor from their rich clusters, filling the air, and mingling forever in William Bradford's memory with the hum of the bees, the ringing laughter of the girl, and the glowing crimson of the roses at his feet.

Many and many a day, in the dark years that were to come, that garden bloomed and ripened, those rich scents filled the air, and the hum of bees and peals of laughter filled his ears, among the black solitudes of the New England forests, or the cold desolation of the rock-bound coast; and yet, looking upon the scene to-day, he saw it not, heeded it not—thought only of the merry girl, who, suddenly deserting her playmate, stood beside him, and mockingly exclaimed: "What! not gone yet, Master Bradford! Truly the elders of your church did ill to intrust their mission to such a dreamer and laggard as yourself."

But her jesting drew no responsive smile to the face of the young man, as, laying a hand lightly upon her arm, he gravely answered:

"You have had your jest, fair Mistress Alice, and you have taken your time. Now I will pray you to give me a serious answer to my most serious petition. Will you be my wife, and fare with me to Holland, or it may be farther still—for our people are minded to remove to some country over seas where shall be room for all and opportunity for all to thrive by hon-