

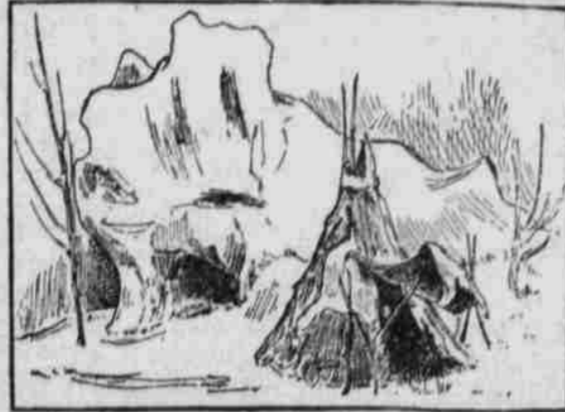
## NEW DISCOVERIES



## ALL OVER THE EARTH

### How MAN'S PROGRESS Is Measured by His HOME

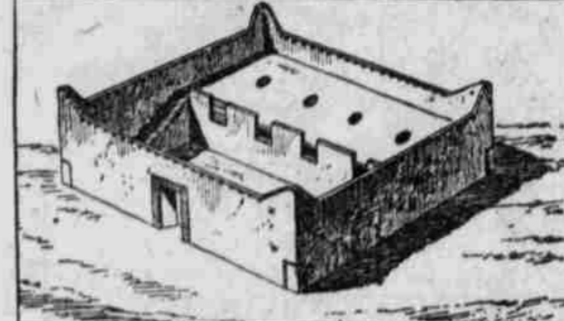
Science Finds the KIND OF DWELLINGS a Nation Has the Surest Index to the State of Its CIVILIZATION



On the Left a Cave Dwelling; on the Right a Hut of the Irish Elk Age—Two of Man's Earliest Habitations.



A Lycian Hut of Wood Built High Upon a Rock for Greater Security.



Model of an Egyptian House. It Was Built of Clay Much as the Adobe Dwellings in Some Western States Are Now.



An Assyrian Stronghold—Very Tall but Containing Only One Floor. The Observatories at the Top of the Towers Were Reached by Stairs Winding up the Outside of the Building.

THE home is the best mark of man's civilization. If he live in a cave or a rude hut he can hardly be credited with having made great strides in the arts. The history of mankind points with unerring finger to the home as the indication of the height of culture of each and every race.

Going back before history began, where we have no written accounts of the lives of men and women, the home becomes most enlightening as to the mode of life and ideas then prevalent.

The very first habitation of man, as far as can be learned, was the natural cave, out of which he may have driven the cave-bear, or the sabre-toothed tiger, but he had not yet learned how to build a house. He took it ready made, hollowed out of the rock by the wearing stream of water, or made accidentally by the upheaval of an earthquake. The next step was to hollow out a cave in some location which seemed best to him, using branches of trees or pieces of stone to dig with.

The oldest of these caves in which men and women lived, as proved by the tools found there, are in France and Germany, and some scientists assert that this was at least a half a million years ago, while the most conservative hold that man has been on earth not less than two hundred and fifty thousand years.

It was when Europe was almost Arctic in climate and the mammoth and the elk and reindeer ranged

over the plains and mountains that the cave was the only safe resort for weak little men and women. When these men had learned to make weapons of flint, they managed to kill the mammoth and even the swift-running deer, and some of them stripped the skins from the elk and built temporary tents, in which they lived.

These elk-tents are found in Ireland, of course, in fragments, but still proving that man lived there in those skin-tents many ages ago.

In the later stone-age men had found out how to put slabs of stone together and build a primitive kind of stone house, and gradually they learned that very elaborate houses might be constructed by shaping and fitting the stones, even though no such thing as mortar was yet

known. Some of these ancient houses are found on the island of Sardinia, and while at first only one story high, the ingenious men of that age soon devised a method of piling the stone symmetrically, in ever decreasing circles, so that they built tower-houses, with two and three stories, stone stairways leading from one to the other.

They were clever enough to roof these towers with branches, held together and made water-tight by a mixture of dried grass and mud, which lasted well and served as protection and fort in one. In building these truncated cone tower-houses the builders were careful to leave niches near the stairways in which the householder might conceal himself and attack any intruder by surprise. These ancient buildings called "Nuraghi" are some of the most interesting proofs of the ingenuity of man of the later stone age.

With increasing mentality came the development from the stone to the bronze age, when men learned how to extract copper from the earth, smelt it, and mould it into spear heads, tools and implements of

every kind. The soil was tilled now with stone and copper plows, and better and safer houses were needed. They were too far from the mountains to utilize natural or artificial caves, and there was little stone to be found.

They sought water in the fine lakes of Switzerland, and with their stone and bronze implements having learned how to cut down and shape logs, they began to build real houses. It seemed safer to build these out in the lakes, so the platforms of logs were placed upon piles, and the houses built on these. It was far easier to defend the narrow bridges against animal-foes or other savage tribes than it would have been to guard a hut in the woods.

The Lake-Dwellers, as they were called, developed to a high state of civilization, learning how to weave, make pottery and more elaborate metal utensils.

Further advance was marked by the conquest of iron, the iron age always following the bronze age in all parts of the world. The still higher state of culture led to better social organization, and with tribes and chiefs came the early forms of religion and special modes of disposing of the dead. Burial even in a cave was no longer sufficiently advanced, but burning upon a funeral pyre was necessary to the great chief of the iron age.

While this development was going on in Europe special advancement had taken place in Babylonia and Egypt, where human beings were found very early in pre-historic times. In Mesopotamia there was no stone, and so clay and wood became the material for house building. At first the bricks were only dried in the sun, but with the discovery of the hardening effect of fire, they were afterward baked as well as we now bake them.

The first type of house was, however, that made of trees and logs. The forest, with its shade, suggested naturally the earliest shelter, and in imitation of it, trees were cut off, and then roofed over, or corner-

posts were placed in position and logs piled up to make homes for men, women and children.

In Egypt, clay houses were the earliest forms made, resembling more or less the adobe dwellings found in the western part of the United States. In later ages wood was more extensively used, but this could come only after tools had been perfected and architectural ideas had grown.

The ancient Hebrews, both in their original home in Babylonia and in Canaan, also built houses largely of clay-bricks, using unbaked bricks on the inside and baked on the outside only.

In Phoenicia, where there was more rock to be found, the earliest homes seem to have been hewn out of the mountain-sides, just as in Europe.

In Lycia we find remains of houses built of stone or wood, as the material most easily secured, and sometimes a hut is built of wood, high up on a rock, for greater security. The Phrygian house was like an American log-cabin, while in Persia they might build houses of clay or wood, and gorgeous palaces later, but the nomads still live in tents made of skins, like the Irish of the earliest ages.

### Most Men's WIVES ARE ONLY LOANED to Them

UNLESS you married a motherless girl you know the domestic status of a mother-in-law. Before your marriage you knew her only through stock-jokes, cartoons and musical comedies. Just at present there is an agreeable dearth of mother-in-law humor on the market. But the lady is still doing business at the same old stand.

There are some men who divide matrimony into two parts, of which their wives' mothers are the greater. This appears strange, since when each of these became a husband it seemed mutually understood that he was at least one "better half."

The law, it seems, put a "joker" in the marriage contract.

But these same men will tell you their mothers-in-law are no jokes. And if, at this psychological moment, you chance to let your face slip out of its usual contour they either suppress a desire to slay you without warning, or pray fervently you will not marry an orphan.

Now it is a strange thing that the world will often find much humor in what to others are very tragic situations. When a man commits a somersault into the centre of a perfectly muddy puddle, passing humanity is very likely to smile. The only difference here between tragedy and comedy is a wet pair of breeches. It all depends on who has to wear them. Likewise, though the metaphor is mixed, the same thing might apply to one's mother-in-law.

There must be something behind it all. Why do some men bear such

malice toward their first maternal ancestor-by-law? Whose fault is it—the mother-in-law's, or the man's? And, to approach the issue more generally, why is a mother-in-law, anyway? The marriage bureaus never mention her. The marriage ceremony doesn't include her. And certainly you didn't agree to marry her, too.

Bolled down, the residue seems to assume this consistency: In the first place, your wife is always her mother's daughter. That is a natural law which no marriage contract can annul.

Your mother-in-law did not give you her daughter; she merely loaned her to you with certain obligations on your part, including interest both moral and financial. If, perchance, you do not quite ful-

fill her ideas of these obligations, then the mother-of-pearl has been cast before swine, and your gold coin of conjugal happiness has rolled down a rat-hole. This, it seems, is the first real cloud that darkens a mother-in-law's face.

Diplomatic relations having thus been broken, your wife must now assume the role of mediator and arbitrator. If the embassies of both feudal families happen unfortunately to be installed in the same house, then the situation is even more strained. No long notes are written, but emphatic demands and ultimata are issued and received through the medium of the diplomatic corps represented by your wife.

She, too, occupies a very precarious position. Now she is neutral,

now pro-husband, and again pro-mother. As the controversy progresses, each of the warring factions recognizes that the balance of power rests entirely in the hands of the wife-daughter. Great care must be taken not to antagonize her in any way that might make her fly over to the enemy's camp. That, of course, would mean disaster for the deserted party.

How soon you may obtain a treaty of peace, and on what terms, will all depend on circumstances. Possibly you may see fit to evacuate your domestic citadel, bearing wife; again you may decide to remain and throw up intrenchments. But unless your wife joins moral forces with you, or is a born diplomat, you may expect to endure a long siege.

### DON'T BE ALARMED If You See COLORED RATS

DON'T feel too alarmed if you chance to see a red, blue, pink, green or yellow rat. Such a sight is not necessarily a sign that there is something wrong with your eyesight or your brain, for there are many rats with coats of these colors scurrying about some of our large cities.

In the effort to collect information about rats that will aid in their extermination, scientists connected with the government health service are painting them. The different colors given them aid in identifying the rats later on and in ascertaining how far they have travelled and what their habits of life are.

The experiment was first tried in Seattle. A lot of rats were dyed red, yellow, blue, pink and green and then turned loose, the chief idea being to find out how far they would wander. Advertisements were published, offering \$2 apiece for the painted rats, dead or alive, with information about the places where they were caught.

One fact that has been ascertained about rats by these novel experiments is that they are attracted by the shining of phosphorus in the dark, and that this is why they have the habit of gnawing matches. It is a very unfortunate trick of theirs, causing many fires. Not a few of the most costly fires in New York and other cities are started in this way.

Another thing about rats, of which people generally are unaware, is that they are robbers—not of food merely, but of small valuables. Sometimes they carry off articles of jewelry (perhaps attracted by the glitter) and hide them in the walls or other places where no search can discover them. Many a domestic servant, unjustly suspected, has suffered dismissal for an act of thievery actually committed by a rat.

The housewives of New Orleans, about a year ago, were dismayed by an alarming increase of mice. There was quite a plague of them. "What on earth can be the cause of it?" they asked one another. But nobody could guess.

It might have been easily explained, however. The cause of the affliction (happily temporary) was the wholesale rat-catching

operations of the Public Health Service.

To quell an epidemic of bubonic plague, and prevent future trouble of the sort, the health authorities had set about the business of exterminating the rats of New Orleans by trapping and poisoning—these rodents being the carriers of the disease. It gave the mice a fine chance to multiply, because their chief enemies are rats.

In truth, it is the rat, and not the cat, that is the worst foe of the mouse. Mice can scarce survive in a place where there are rats.

The most important work accomplished by the Public Health Service at New Orleans, however, was the rat-proofing of all dwellings and other buildings. As a result, the city was eventually made mouse-proof as well as rat-proof, and so the plague of mice soon came to an end.

It is interesting to know that the rat has some usefulness to mankind, if only as a mouse-killer.

There is another use that has been found for the animal, which (with the possible exception of the

house fly) is man's greatest enemy. Its hide is converted into a delicate leather, for book-bindings, purses and certain other purposes.

Up to the present time this industry is restricted to the city of Calcutta, which is one of the most rat-infested places on the face of the globe. It was started only half a dozen years ago, but the annual value of its manufactured output already is said to be \$300,000.

During the Russo-Japanese war tens of thousands of Japanese soldiers, campaigning in the cold climate of Manchuria, were provided with ear muffs made of rat-skins.

Attempts have been made, in France and elsewhere, to utilize rat skins in the manufacture of gloves. They have not been successful, because the pelts are too small, and also for the reason that they are too delicate and easily torn. It has been found impracticable even to use them for glove-thumbs.

The common brown rat is a ground dweller, and may be kept out of any building by concrete flooring and brick or concrete walls two feet above ground and two feet below it. But this sort of protection will not exclude the black rat, which is a climber. It will gain entrance to a house by way of vines or telephone wires, through windows or through open ventilators in the roof. To slung an elevator rope is no feat at all for a black rat.

### How Many POOR Spellers There Are

SEVEN out of every 100 third-grade public school children cannot spell the word "has." This and other curious evidences of the special problems which have to be solved in the teaching of spelling are brought out by Dr. Leonard P. Ayres, of the Russell Sage Foundation, as the result of a long series of investigations.

As a result of combining the four most extensive studies that have been made to identify the words commonly used in different sorts of English writing, Dr. Ayres has selected the 1,000 words that constitute 90 per cent of the language ordinarily used. This selection was made from various English authors, from four Sunday newspapers of Buffalo, N. Y., and from the business and family correspondence of over 2,000 adults. The object was to "develop a scale for measuring attainment in the spelling of common words on the part of school children."

Co-operating with the city superintendents in eighty-four cities of the United States, Dr. Ayres had the 1,000 commonest words tested by an aggregate of 1,400,000 spellings, secured from 70,000 public school children. The result, according to Dr. Ayres, made it possible to accurately measure spelling ability, and to compute the amount of improvement in spelling the same words from grade to grade.

By a scale arrangement, extending on a line from 0 to 100, "spelling ability" is easily and scientifically determined. For example, nine words of most frequent use, viz.: "the," "in," "so," "no," "now," "man," "ten," "bed," "top," revealed that second grade pupils, on an average, spelled correctly 94 per cent of these words. At the other extreme of the scale the words "judgment," "recommend" and "allege" were found to be spelled correctly by just 50 per cent of eighth-grade pupils. Percentages above and below these would indicate variations from the normal in spelling.

Dr. Ayres finds that "intellectual abilities are distributed in much the same way among people as are physical traits. Just as there are few dwarfs, many people of medium height and very few giants, so there are very few exceedingly poor spellers, many medium ones and very few exceptional ones.

"Few words do most of our work when we write. Fifty words constitute, with their repetitions, one-half of the words written. The child who masters the 1,000 words on the scale given will make no spelling errors in nine-tenths of his writing."

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### SCIENCE NOW KNOWS—

**What a Year's Snow and Rain Weigh**  
It is estimated that the annual fall of snow and rain in the United States weighs in the neighborhood of 6,000,000,000 tons.

**Sewer Pipe from Lava**  
SEWER pipes and bricks may soon be made from the molten lava flowing from the active volcano Kilauea, in the Hawaiian Islands, if the ideas of an Ohio pipe manufacturer who recently visited the islands are followed out. With proper machinery, he declares, pipes could be molded from the lava precisely as pipes are now molded from molten materials in foundries. Endless bucket conveyors of special material capable of withstanding heat up to 2,000 degrees F. would be used to bear the volcano's product from the pit.

**Electrified Pants**  
PANTS warmed by electricity is the latest war invention. It is the idea of an Innsbruck professor who is at present serving in the German army. Max Beck by name, and the well-known Vienna professor of medicine, Von Schroter. Besides the comfort this garment would be to men in the trenches in Winter, it is pointed out that electrical pants and, likewise, an electric arm-warmer, might be profitably used in airships. The pants are made with extremely supple electrical warming wires, woven in with the cloth, which is itself made specially with a view to insulation. The pants are put on like any other, and fed by cables at a distance of a hundred yards and more. The wearer can himself cut out and disconnect the heat conductor. The expense of keeping the pants supplied with an electric current is about two cents an hour.



This Is the Odd-Looking Contrivance that Is Proving Effective in Preventing Dock Rats from Running Along a Hawser Onto a Ship.

### YOU MIGHT TRY—

- To Clean Mica.**  
To clean the mica in stove doors rub with a soft cloth dipped in equal parts of vinegar and cold water.
- What Ammonia Will Do.**  
AMMONIA in warm water will revive faded colors, and it will remove grease spots on rugs and carpets like magic.
- When Enclosing Stamps.**  
WHEN enclosing stamps do not stick one corner to the letter. Put them in loose. They can't get out of a sealed envelope.
- Packing Flowers.**  
FLOWERS that are sent long distances will arrive in perfect condition if wrapped in a wet newspaper with a few pieces of ice enclosed.
- A Fire Preventive.**  
WHEN the chimney takes fire throw three or four handfuls of salt on the fire. A better preventive is to employ the services of a chimney-sweep once every year.
- A Safe Match Holder.**  
DO not leave matches in the box in which they came from the store, but put them in a glass jar with a screw top. You will then be sure that there is no danger.