

SCIENCE AND NEAR-SCIENCE UP-TO-DATE

You May Not Know

STEEL hooks carried on a revolving drum pulverize the soil to a considerable depth below a gasoline-driven plow that has been invented in France.

GOVERNMENT veterinarians in the Philippines have found that cattle can be immunized against rinderpest with a loss of less than 1 per cent of the animals.

MOTION pictures of a bullet passing through wood show that it penetrated completely and was well on its way before the wood began to splinter and fall apart.

PROMISING results with the cure of cancer have been obtained in Germany by using dead cultures of a species of fungus grown in malignant tumors of certain animals.

TO ENABLE two persons to ride on a motorcycle seated side by side a New York man has invented a double seat and supports that enable them to maintain their balance.

ALONG and high English railroad bridge is equipped with automatic wind gauges, which set danger signals against trains should the wind blow at a dangerous velocity.

FOR the convenience of men there has been invented a chair the back of which is formed to hold a coat and vest, while a shoe polishing outfit is contained in the seat.

Gold Not Most Precious Metal

GOLD is generally looked upon as the last word in costliness, but, as a matter of fact, there are more metals dearer than gold than there are cheaper. There are over seventy.

Iridium, for instance, of which a big find was made recently in Austria, is three times as expensive as gold. Gold is worth nearly \$20 an ounce. Iridium is worth some \$62, though the price will probably come down now.

Osmium is another metal that is worth \$50 an ounce. It is by far the heaviest of all known substances, being more than twenty times as heavy as water. If pennies were made of osmium it would tax one's strength to carry the change of half a dollar. This metal has the peculiar property of being able to stand the most intense heat known without melting.

There's Nothing New in Toyland

THAT there is "nothing new under the sun" might especially be said about toys. Nothing with which man has had to do in the progress and development of the human race has changed as little as the playthings of children.

Infantile Egypt, ages and ages ago, played with dolls, boats, balls, dishes, wagons, miniature horses and other animals. Much the same playthings amused the little Greeks and Romans, but in addition they possessed a rattle, kindly invented by a wise Grecian gentleman.

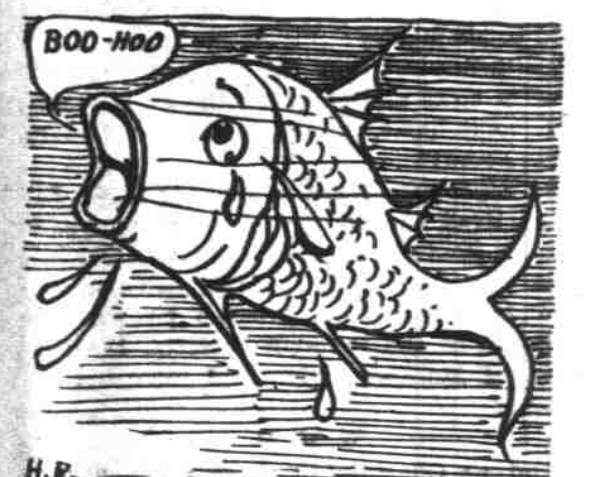
Now You May See by Phone

SEEING as many miles as you phone is soon to be a tangible reality. Dr. George Rignoux, a French inventor, has been engaged in this experiment of television at La Rochelle for many months.

"I have already succeeded in making rudimentary transmission of the picture exposed to a 3,000 candle power light. I have also succeeded in throwing letters of the alphabet on a screen of two yards of intervening space. I am now at work trying to transmit faces or complicated pictures," says the inventor.

The principle of the apparatus is the utilization of a metal called selenium. This is a wonderful conductor of electricity. The apparatus is a large metal plate coated with sixty-four selenium cells. The inventor hopes to make a plate large enough to bear thousands of cells, which will help to transmit large and complicated pictures.

Fish Suffer From Homesickness



IT is hard to think that anybody suffers from homesickness but young boys and romantic girls. Recent experiments with fish, however, show that they have

Is Heredity or Environment Most Powerful Factor for Success?



Environment May Point a Straight Path for Success, but Hereditary Instincts May Lead as Inevitably to Failure.

By MRS. PATRICK CAMPBELL.

WHETHER environment means more than heredity in the life of individuals is a question that has occupied much time and thought of scientists interested in biology and philosophy.

It is such a large question that it would be audacious for the actor to consider it at all, were it not that the question presents itself in one of Shaw's recent plays.

I suppose most scientists contend that heredity counts for more with most individuals than environment. But I am of the opinion that usually environment means

more than heredity. We have many brilliant examples of this in history and in everyday life where men and women have commenced life in the meanest and humblest conditions and, through a fortunate change of environment, have developed their powers and gained real culture.

Lady Hamilton is one of these brilliant examples; her life began under the most unfortunate and dire surroundings. Through her beauty and tact she won notice and attention; by the time she became acquainted with Lord Nelson she was recognized everywhere for her cultivation and lovely manners, as well as for her splendid beauty. The question of how "to turn a person inside out" is not always easy. I think correct speech is one of the gauges that marks or should mark social classes, and should distinguish a cultivated man and woman from those lacking culture.

Of course this must be the standard set by the country or the section in which you live; for English spoken in England is different from English spoken in this country no less than is English spoken in different sections of your own country.

Manners is another great divide. And here arises the important question of what constitutes good manners. Shaw thinks it is not so much a question of having good or bad manners, but having the same manners for everybody. I prefer to take the standard that it is treating everybody with that self-respect one demands. In short, not to treat a flower girl as a duchess, but treat a duchess as you do the flower girl.

The question still remains, Is it wise to take men and women who are happy in one social class and put them in another, in a reckless fashion? I think it is

Why Should You Fear 'Nerves'?

WE OFTEN hear the remark, "That man (or woman) is a bundle of nerves."

Suppose they are; what difference does it make as long as they have their nerves under good control? It is the big bundle of nerves within the skull and the smaller set of nerves in the spine that are the real motive power of the human body. There are thousands of millions of nerve cells and many thousands of nerve branches. It is these that give man consciousness and power of purposeful action. All the organs vital to life are managed by the nerves and by a most complicated network of nerve cells and nerve fibers.

Though the lungs, the heart and the digestive organs are all needed in the human body, it is the will that commands, and a whole army of nerves sets the muscles in action. Although we are not conscious of the set of muscles that control a certain act, the nerve cells do.

The intricacy and complexity of the nervous and muscular systems are so beautifully adjusted as to be beyond our conception.

When Paderewski plays or Pavlova dances there are millions of cells at work and millions of messages are flashing between nerve centers in the brain and the body. In general arrangement our nervous systems are wonderfully alike. The great difference in skill is due to the variation of the nervous system.

These are differences in sensitiveness or "affectability," as it is called; differences in force, and differences in precision of purposeful action.

All great men seem to have abnormal "affectability," but the will has the nerve centers so well in hand that they can hold in their ebullient energy. Though they deplete their nerve force rapidly a little rest restores the nerve cells to their original vigor.

not unwise. It may be well to test this principle theoretically and even use certain instances for laboratory experiments.

Still, in real life we should be very careful. Many men and women may be happy and leading useful lives where they are. By transplanting them to another environment we may make them very miserable.

Because they were useful where they began and were made useless by being transplanted into social conditions where they felt they have little in common with those about them. It is not so much a question of having culture or lacking culture as it is to be happy and useful.

How to Recognize Fresh Eggs

HOW can I be sure that the eggs I buy are fresh?

This question, frequently asked by the housewife, is answered in an egg candling chart issued by the bureau of chemistry of the United States Department of Agriculture.

Eggs are carefully examined in the wholesale markets, but retail dealers do not always have facilities for examining eggs, and, therefore, are often innocent victims themselves.

But to explain how to determine a stale egg:

Eggs may be held before a candle, gas or electric light with no other apparatus, but it would assist greatly in determining the quality of the eggs if a piece of heavy cardboard were taken and a hole cut in it similar to the shape of an egg and slightly smaller.

Hold this cardboard below the light

Of French invention is a boat propeller with the blades extending far forward and back of the hub and so shaped that the water is churned and no vacuum is caused around the hub.

Some New Facts

FROM the speed at which earthquake waves travel through the earth an English scientist has constructed a theory that the world has a dense central core, which may be measured in time.

AN ILLINOIS woman has patented a screw hook that is made of a single piece of wire and so shaped as to serve both as a shade roller bracket and a curtain pole holder at the same time.

NUMEROUS are the uses of a Missouri inventor's door and window guard that consists of upright pickets, connected by short parallel bars that permit it to be extended to various widths.

THE shelves of a New Jersey inventor's bookcase hold two rows of books, one behind the other, the front portions of the shelves dropping down on slides when pulled out.

EXTENSIVE investigation of smoke prevention by the United States geological survey has led to the conclusion that it is mechanically possible and that the best results have been attained by the use of mechanical stokers.

THE government is encouraging experiments in France with a device to protect against hail, essentially a large lightning rod of pure copper, which is said to so affect atmospheric electricity that hailstones cannot form.

Real Sanitation in Air-Towel

AN "AIR-TOWEL" used in the large public lavatory in the District Building at Washington, D. C., is the invention of J. M. Ward, superintendent of the District Building. In appearance it resembles a rectangular box eleven inches by three, set in a sanitary base having twelve-inch legs, with an opening in the top of the case in which the wet hands are held while being dried. The device consists of a blower that forces air through an electric heating element to ducts and deflectors suitably placed for distributing the warmed air to all parts of the hands at the same time, and is operated by a foot lever or pedal, which in turn operates a quick-acting switch, thereby setting the blower in motion. By removing the foot the device is put out of operation. The hands come in contact with no part of the device, thus assuring a perfectly sanitary operation.

How to Create A Vacuum

IF YOU have ever worked in a physical laboratory you probably have seen a vacuum receiver and learned how difficult it is to create a perfect vacuum even with this instrument.

A vacuum can be created in a simple way by using two drinking glasses, a small candle end and a piece of blotting paper. The glasses must be the same size and of the thin glass kind. The candle end is lighted and put into one glass, the blotting paper is well dampened and placed on top of the glass, the other glass inverted and its rim placed exactly over the lower one and pressed down tightly. The candle will burn up all the oxygen in the glass and go out.

The air in the glass being heated will expand and some of it will be forced out from under the moist paper; then as the portion remaining cools it will contract and draw the upper glass on the paper and create an air-tight joint. The upper glass can be taken up and the lower will cling to it.

Women Who Daily Face Death in Horrible Form

YOU no doubt are very well acquainted with army nurses—the part they play in the battles and hospitals of war—but do you know that women also are engaged

actively in the manufacture of deadly targets? Such is the case in this country. Much of the important work in the government arsenal at Frankford, where millions of cartridges are turned out weekly, is in the hands of women.

For instance, there is the fuse shop. Dangerous work is undertaken here, and women are in such demand that two shifts are necessary. The first contingent reports for work at 7 o'clock in the morning, leaving at 3, and those who relieve them are employed until 11 o'clock at night. True, there have been accidents and explosions, but it has been years since any serious ones have occurred at Frankford.

It is a question if one defective cartridge passes the scrutiny of the feminine inspectors. Most of the work done by women is regarded as skilled labor. And why not? There are simple enough jobs, but they would certainly have to be

skilled to carefully inspect 31,500 cartridges a day, the average amount accomplished by each woman.

The average pay is \$10 a week. Some of the more efficient receive more, while others make less. In a few of the shops the pay is \$1.60 a day. An eight-hour day basis is held throughout the plant.

None of the women can afford to handle their work carelessly, for 10 per cent of it is reinspected by government officials every day, and one day a month the entire stock is given a second inspection. This work is kept very secret, and the women never know what particular day's labor has passed into hands as expert as their own.

Those who are employed on the gaging machines are especially expert, and many have been at the arsenal a number of years. There are three girls to a machine, and few realize how much depends on the

efficiency of their work. The slightest defect, one not even to be detected by the inexperienced eye, might mean a premature explosion and the loss of an eye, limb or life to the soldier.

Sunshine Not Essential to Health

THE doctrine that sunshine is necessarily helpful and beneficial to the health is not always true. The Turkish men and women upset this theory completely. Across every window in a Turkish home are lattices to keep out curiosity and sunlight. The Turkish women get as little sunlight outside of their homes as they do inside.

At the age of 12 the Moslem woman takes the veil and she is never seen without it. The only chance she gets to let the wind blow on her face is when she is seated in the courtyard and within the walls of her own home.

In spite of the fact that the men and women get so little exercise and fresh air they are strapping big and hardy peo-



ple. Few Americans can match them in physique or powers of endurance.