NEW DISCOVERIES ALL OVER THE EARTH

How We Got the LUCKY SWASTIKA

Curious Facts About the Emblem Which Has Been Held in Such High Esteem from the Earliest Times by Men of Every Race

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THE SWASTIKA is an emblem or device such as is the Cross or the Crescent. In India it is in common use at the present day, and has been so for ages. It is the emblem of good luck.

The name "Swastika," by which it is known, is a Sanskrit word meaning "good luck." The word is composed of Su, the equivalent of the Greek eu, signifying "well" or "good," and asti (like the Greek esto), signifying "being," while ka is a suffix completing the word as a substantive. "Suasti" or Svasti" occurs frequently in the ancient Sanskrit book—the Veda—and means "hail!" or "well!" and corresponds to the Greek "euesto."

The sign or emblem called Swastika must have existed and been largely used in decoration of temples, images, swords, banners, utensils and personal trinkets of all sorts long before this name was given to it. It is often found more roughly drawn on pottery or cloth. Often the arms of the cross are bent rigidly at right angles, but they are often only curved or curled spirally, when it is called an "ogee." The arms of the Swastika are sometimes bent to the right, and sometimes to the left; but this difference does not appear to have any symbolic significance, but to depend on the fancy of the artist.

The use of the Swastika is common in Japan in both ancient and modern times, also in Korea and in China, where it is called "wan," and was at one time used, when enclosed in a circle, as a character or pictograph to signify the sun. It has been used in China from time immemorial to mark sacred or specially honored works of art, buildings, porcelain, pictures, robes, and is sometimes tattoed on the hands or arms.

In India it is widely used in decoration by both Buddhists and Brahmins; children have it painted on their shaven heads, and it is introduced in various ceremonies. The gigantic carved footprints of Buddha in an Indian temple show several Swastikas on the soles of the feet and on the toes.

One Theory of the Swastika's Development from a Plain Cross and Circle.

In the Near East and in Europe the Swastika is no longer in use, is not, in fact, popularly known. But in ancient and very remote times it was in constant use in these regions, especially by the Mykenaean people and those who came under their influence, and also by the people of the Bronze Age—before the use of iron—in Europe. Specimens of it have been found in Cyprus, Smyrna and the ruins of ancient Troy.

The later Greeks of the great classical period (Hellenes) did not use the Swastika. Nor has it been found on the works of art of the ancient Egyptians, nor in the remains of Babylonia, Assyria or Persia. It, in fact, seems to have belonged especially to that ancient "Minoan" civilization, the remains of which are found in Crete and the other Greek islands. The same culture and the same race is revealed to us by the discoveries of Schliemann at Mykene and other spots in Greece and at Hissarlik, the seat of ancient Troy. The Mykenaean art seems not to have been transmitted to the post-Homeric Greeks nor to Egypt, nor to Babylonia and Assyria. The Swastika seems, like the "flying gallop" of Mykenaean art, to have travelled in very ancient times by a northeastern route to the Far East.

Like the representation of the galloping horse, with hind legs stretched and hoofs turned upward, the Swastika is found in the remarkable metal work discovered in the necropolis of Koban, in the Caucasus, dating from 500 B. C., and probably travelled with it across Asia to China and the Far East, and so eventually to India on the one hand and Japan on the other—thus escaping altogether, as does the pose of the "flying gallop," the Near East and later Greece. This is a very remarkable and interesting association.

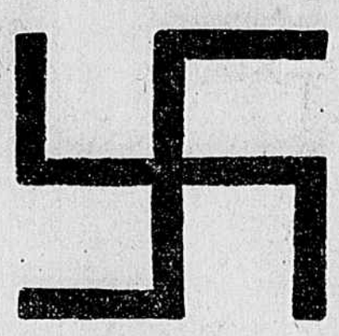
All the Ancient Races Were Fond of Using the Swastika for Decorative Purposes. It Here Appears on (A) a Jeweled Ornament from Crete; (B) a Cup from Smyrna; (C) a Terra Cotta Ball Found in the Ruins of Troy; (D) an Ornament Also from Troy; and (E) a Little Faience Figue from Cyprus.

The Mykenaens and their island relatives obtained the Swastika either from the ancient Bronze-age people of Europe or else gave it to them, since it is very nearly as common as a decoration, or symbol on the bronze swords, spear heads, shields, and other metal work of these prehistoric people of the middle and north of Europe (also occuring in the pottery of the Swiss lake dwellings), as it is in the islands and adjacent lands of the Eastern Meditterranean.

The Swastika is also found abundantly on the work of the Etruscans, but disappeared from general use in Italy, as it did from the rest of Europe, before historic times, although occasionally used as in the decoration of the walls of a house at Pompeii. All over Germany, Scandinavia and France and Britain it is found on objects of the bronze period—sometimes on stone as well as on bronze utensils, ornaments and weapons. A few objects of Anglo-Saxon age are ornamented with it — especially remarkable is a vase of that age from Norfolk.

Gigantic Carved Footprints of Buddha, from an Indian Temple, Showing Swastikas on the Soles and Toes.

Above, Three of the Various forms of the Swastika Often Found on Ancient Pottery and Cloth; and, on the Right, the Swastika in Its Most Correct Form.



The history of the "Swastika" would be remarkable enough if it ended here with the disappearance of its use in Europe in prehistoric times and its continued use in the Far East and India. But the most curious fact about it is that we find it as a very common and favorite decoration and device among the native tribes in North America and Mexico. It is found in use among the Indians of Kansas and other tribes—as a device in pottery, in bead-work, patch-work, quill-embroidery and other decorative fabrics. The Indians called Sacs, Kickapoos and Pottawattomies, who worship the sun (which is associated with the Swastika in China), call it by a native name signifying "the luck." It is also found as a decorative design in the most ancient remains of man in America, dating (so far as can be guessed) from a thousand years or more before Columbus.

It is generally held that the Swastika must have been introduced into America in prehistoric times with early redskin immigrants from Asia. The question has been raised as to whether this introduction was before or after the worship of Buddha in Asia. It is only among Buddhists that the Swastika has a religious or sacred character. Elsewhere it seems to have been merely a mark or sign carrying "good luck." A representation of a sitting human figure incised on shell has been found in a prehistoric burial mound in Tennessee, which has remarkable resemblance to the Asiatic statues of the Buddha. Shell ornaments were also found here decorated with sharply-cut Swastikas, and in a mound in Ohio thin plates of copper were found cut into simple Swastika shapes four inches across. Modern Mexican Indians make brooches of gold and turquoise in the form of the Swastika, and it is a favorite device among the Indians of neighboring territory. Swastikas occur as decorations or lucky marks on the small terra-cotta "fig leaf," which was worn by the women of the aboriginal tribes of Brazil suspended from the waist, and have also been found on native pottery from the Paraguay River.

Some students of this subject have held the opinion that the "Swastika" has been invented independently at different times in different parts of the world. It is a fairly simple device, it is true; but the view which is accepted at present is that it has spread from one centre—probably European in the late Stone period—through the Mykenaeans, across Asia, and so with early immigrants across the Pacific into the American Continent.

Apart from this problem there is an interesting question as to how the device probably took its origin. The "Swastika" is sometimes called the "gammadion," because it may be regarded as four individuals of the Greek letter gamma joined at right angles to one another. The old English name for it, dating from Anglo-Saxon times, was Fylfot—an old Norse word, meaning "many-footed"; but the term has no currency at the present day.

A favorite notion as to the origin of the "Swastika" is that we had first of all a circle with a cross drawn within it. Then the circle is rubbed out or cut away at four corresponding points where the arms of the cross touch the circle. Then by the straightening of the curved pieces we get the correct rectangular Swastika.

DICTOGRAPHS Listening to ALL YOU SAY

WHEREVER you go nowadays there's very likely to be a dictograph listening to every word you say and transmitting the sound of your voice to somebody whose ears perhaps you don't care at all about having your conversation reach. In New York City it is said that fifty dictographs are purchased every week by jealous husbands and wives but the number of these devices used for such doubtful domestic purposes is small compared with those which are being installed for commercial purposes in offices, stores and factories.

The use of the dictograph to secure evidence in a number of sensational criminal cases has made the public quite familiar with the methods by which it makes widespread eavesdropping possible. The transmitter is a little disk so small that only a careful search will reveal it when put in place behind a picture or somewhere else on the wall. This transmitter is so sensitive that it will carry every sound uttered in a room for long distances. Carefully concealed wires connect it with the receiving end of the apparatus which is often disguised as a paper weight or hidden away in a desk.

The work of paying tellers in many large banks is greatly simplified by the use of the dictograph. When a depositor calls to withdraw a large amount the teller may not be sure that the account shows a sufficient balance to cover the withdrawal but he does not like to offend by stating his doubts.

So the teller presses a button to signal a bookkeeper to put his ear to the other end of the dictograph system, whose transmitter is concealed in the teller's counter. Then the teller picks up the check and remarks casually but distinctly enough for the dictograph to carry his words: "Two thousand dollars. How will you have it, Mr. Blank?"

This question is the signal for the bookkeeper to turn to the ledger and see if Mr. Blank's account is good for $2,000. If it is he quickly signals the teller by ringing a buzzer once; if it is not, he gives two rings.

In large safety deposit concerns much tiresome running back and forth is saved by having the clerks in the vaults and the bookkeepers in the offices work with dictograph receivers fastened to their ears and transmitters on their chests. The wires connecting them run down their trousers legs and trail along the floor.

Claim agents of many corporations find the dictograph of service in detecting fraudulent claims for damages. Each claimant and his witnesses are made to wait for a few minutes in a very completely "dictographed" room. If the claim is fraudulent they are likely to take this opportunity to rehearse their stories and agree on the testimony they are going to give. But their every whisper is heard and taken down by a stenographer in an inner office, and the best laid plans are often thus exposed by the conspirators themselves.

NEW SURGERY for WATER MAINS

HOW to slice a sixteen-inch water main in two without shutting off the flow of water was the problem which engineers in Woodhaven, N. Y., recently solved for the first time. It was a problem as difficult as that which would confront a surgeon if called upon to remove a section of a man's leg without interfering in any way with the flow of blood through the veins and arteries.

The main was laid twenty-seven years ago by engineers who had no dreams about the future growth of Woodhaven. They simply put down the pipes in sections and let it go at that, being content to let future generations shut off the water supply in case it was found necessary to cut in gates at any time.

But when it became necessary to instal gates it was found impracticable to turn off the water even for a few hours, since more than 40,000 consumers depend upon this main for their supply.

This almost superhuman task was finally accomplished with the aid of a machine which was invented fifteen years, but had never been successfully operated. The engineers in charge of the work induced the company which holds the patents to make one of the machines and try it out on slicing out a section of the big Woodhaven main.

The machine is made of steel. It weighs several tons and has four cutters inside.

After an excavation was made the machine was placed over the pipe. A section of the main was cut out and raised into a hood or bonnet. A slide valve was closed to keep the water from running up into the hood.

The cut out section of the main was then removed, the machine was closed, a slide valve opened and the gate valve was lowered into position. Rubber gaskets and packing were used to hold the water pressure while the machine was taken out.

The actual cutting out of a section of water pipe was accomplished in forty-five minutes, although the entire work lasted from 8 A. M. until 6.20 P. M. During that time 3,000,000 gallons of water passed through the main.

It's TOO MUCH FAT That Makes HENS STOP LAYING in Winter

ALTHOUGH in perfect health and housed under the most sanitary conditions, hens generally become sluggish toward the end of Winter, and either stop laying entirely for a time or lay so few eggs that the cost of each one is enormously increased. This is a serious matter, for it raises the cost of living for several months every year and forces many families during that time to depend upon cold storage eggs.

French scientists who have been studying the problem believe that the annual slackening of a hen's laying activities is due to the fowl's getting too much food during the Winter and not enough exercise. The hen's body becomes so loaded down with superfluous fat that she is able to produce no eggs at all or a greatly reduced number. Autopsies performed on a number of hens which had stopped laying showed them to be absolutely incapable of producing eggs on account of the thick layers of fat which had accumulated in their heart, liver and other organs.

A hen's body is a very delicately balanced combination of organs, and just a small amount of energy more than is actually needed is sufficient to throw it out of kilter. At other seasons of the year, when a hen gets more exercise, she is able to burn up or transform into eggs all the food she will eat. This becomes impossible, however, after months of confinement in quarters that are often not large enough, and a scarcity of eggs is the result.

The obvious remedy for this condition is to give hens less food as soon as they show signs of stopping laying. But this is a remedy which must be applied with care, for hens naturally need plenty of food for egg production, and those which have the best appetites are always the most prolific of eggs.

To avoid the horns of this dilemma, Prof. Brochemin advises a careful selection of rations, with strict limitation of starchy substances, such as maize, rice and barley, while giving an abundance of green food, such as cabbage, boiled clover, sorrel, etc. These act as stimulants of the liver, and thus are an excellent preventive of fat formation. Finally he advises that the fowls be induced to take exercise, by giving them ample yard room and by mixing their food with straw, etc., so that they will have to exercsie when feeding.

All the newest discoveries have established the principle that not only hens, but all animals which are kept for their working abilities, must not be allowed to get fat. Excess of fat is even more injurious, and therefore expensive, in the case of animals kept for breeding purposes. For it has been proved indisputably that invasion by an excess of fatty tissue leads to the degeneration of the organs of reproduction.

Never Mind MOON When Planting

THE old-fashioned farmer who governed his planting by the movements of the moon will receive a jolt from a bulletin just issued by the Department of Agriculture declaring that neither the moon nor the planets have the slightest effect on weather conditions, and, therefore, cannot have any effect on planting. "Plant your corn in the full of the moon"—a rule regarded as little short of sacred in many rural communities, is entirely disproven, according to this bulletin.

"All weather changes depend on temperature differences," the bulletin says. "The temperature constitutes of itself a most important weather factor. Another and equally important factor is rainfall. But to obtain rain it is necessary first to evaporate water from the surface of the earth, and this, as every one knows, requires heat.

"Still another important factor is the direction and force of the wind, and this, too, requires heat, for the winds will not blow unless the temperature is different at one place from what it is at another, any more than the air will draw up a chimney when there is no fire in it.

"Since the heating of the earth and its atmosphere to different temperatures is the real cause of the winds and weather changes, it follows that the moon and the planets can affect the weather only as they supply heat.

"The amount of heat sent to the earth by all the planets and the moon is insignificant in comparison to the amount from the sun. Hence we could not expect the moon or the planets to appreciably affect the weather since they supply little heat.

Why BLUE EYES Are ADMIRED

ALMOST everybody admires blue eyes, particularly those whose own are of some other color. The chief reason for this is that blue eyes are comparatively rare. Fully 97 per cent of the earth's inhabitants are brown-eyed, and only a few of the most northern and blond races have a high as 15 or 20 per cent of blue eyes.

Poets and others are fond of attributing to human eyes almost as wide a variety of colors as the rainbow, but in reality there are only two colors of eyes, light and dark.

Nearly a third of the eyes which we describe as "snappy black" are actually grey, and at least 10 per cent of all dark eyes are violet blue. A rich seal brown or mahogany is the darkest tint of which the human eye is capable. What gives eyes the appearance of coal-blackness is the size of the pupils, which, of course, always appear black. This is accentuated by the black eyelashes and eyebrows and by the contrast between them and a milk-white complexion.

What seem to be the blackest eyes are dark brown with extremely wide pupils; the next blackest are gray, flecked with brown, and the next are pure steely gray.

The color of an eye depends solely upon the amount of brownish-yellow pigment in the iris. When the iris has none of this pigment at all the red blood in the blood vessels shows through and makes the eye look pink. Bonny blue, green, gray, yellow and light brown are produced in the order named by larger and larger amounts of the pigment. When the iris is as full of pigment as it can hold the eyes are dark brown or, as we call them, black.

Although they don't appear so, no parts of the human body are more nearly alike in size and shape in different persons than the eyes. Careful measurements show that the differences are only illusions, due to the depth or shallowness at which eyes are set in the head, and still more to the size of the opening between the eyelids.

According to Dr. Woods Hutchinson, the common cause of homeliness or unattractiveness in the eyes is redness, either of the eyeballs themselves or of the lids. This is what biologists call an acquired, not an inherited, condition, and is caused either by the presence of disease and filth germs or by eye strain. The trouble can be prevented by absolute cleanliness and by fitting the eyes with proper glasses.

DIAMONDS from SUGAR

ALTHOUGH at first thought the statement seems incredible, it is perfectly true that a lump of sugar may be converted into diamonds.

Not all the substance of the sugar, of course, will enter into the composition of the diamond, but only the carbon that it contains. Sugar consists of carbon united with oxygen and hydrogen.

It is an easy matter to separate out the carbon, and in certain experiments for the production of diamonds this sugar carbon has been employed.

The diamonds so produced were, of course, very small, and destitute of commercial value, but still they were real diamonds and the chemical result achieved would be no greater intrinsically if they were as big as the Cullinan.

Scientists have often expressed the hope that an improvement in the process of manufacturing diamonds may be effected whereby the necessity of dissolving the carbon in molten iron may be dispensed with, and the required combination of great pressure with great heat may be brought about by some such operations as squeezing the carbon between red-hot metal plates.

How GERMANY'S Fighting Men FORTIFY THEIR STOMACHS

"The bread eaten by the German Armies in a week would make a loaf more than half as high as New York's tallest skyscraper and weighing more than 60,000,000 pounds."

MILITARY experts placed little faith in the numerous rumors during the first days of the war to the effect that the German armies were suffering for lack of food: The reason why they doubted these reports was because it was hard to believe that a commissary department so well equipped as Germany's would fail in its work so early in a struggle for which preparations have been going on for years.

All civilized nations have long recognized that food supplies may play as important a part in the winning or losing of batties as ammuition, marksmanship and personal bravery. With the thoroughness which is so characteristic of their nation, the Germans have for years made the feeding of their soldiers a matter of scientific study. Their commissary department is under the direction of a group of dietetic specialists who are admitted to have no superiors and few equals.

The daily ration which they have prescribed as the best fortification for a German fighting man's stomach includes twenty-six ounces of fresh bread, or seventeen ounces of biscuit; thirteen ounces of fresh meat, or seven ounces of smoked meat; four ounces of rice, or eight ounces of flour, or fifty-two ounces of potatoes; nearly an ounce of salt; nearly an ounce of roasted coffee, or one-tenth of an ounce of tea, and half an ounce of sugar.

The amount of bread eaten in a week by the German soldiers now in the field would make a loaf 393 feet high and weighing 60,130,000 pounds. Meat eaten in the same time would make a side of bacon 180 feet long and weighing 16,030,000 pounds. A week's supply of potatoes would make a tuber 188 feet high and weighing 120,330,000 pounds.

The figures given are for the standard ration, which is probably a very different thing from that actually being consumed along the great battle formation, where there is a great flexibility as to the food to be used. It is possible that pemmican (a condensed meat product) is entering into the ration very largely. The Kaiser has always expressed a lively interest in his soldiers' food, and he has not infrequently ridden up to the field bakeries and sampled the product of their ovens.

Some idea of the enormous expense of the war will be gained from the fact that the daily cost of provisions for the combined armies would be $12,500,000, without the expense of transportation, which would be $4,200,000 more each day. These figures were based on the prices of some years ago, so that 15 per cent could be added to the cost of the food, making the cost to-day $18,750,000 or $22,950,000 "delivered" at the place of consumption.

'A hugh tuber 33 feet higher than the Statue of Liberty and weighing over 120,000,000 pounds would make only a week's supply of potatoes for the Kaiser's fighting men"

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SCIENCE NOW KNOWS

AUTOS NOT SAFE DURING THUNDER STORMS.

THE popular belief that an automobile is one of the safest places during a severe thunder storm seems to be a fallacy. The idea that the rubber tires will act as an effectual bar to the passage of the electrical discharge may be exploded by any one with the courage to stand beside a car and place one finger upon the top of a spark plug with the motor running. The high tension current readily finds a path to the ground regardless of the tires. There is no reason whatever why a bolt of lightning should not find a similar path.

NEW FACTS ABOUT MICROBES.

IT has just been discovered that the sudden cooling of the atmosphere has the effect of transporting microbes and localizing them in certain regions. The cool surfaces attract them from a distance almost instantaneously, the smaller being transported farther than the large ones. These discoveries throw light upon the origin of certain epidemics, and may be useful in helping us to decide what climates are the most healthful.

STREETS CAN BE PAVED WITH GLASS.

A NEW use for the glass dust that collects in glass works has recently been discovered in Berlin. The dust is gathered up and placed in a furnace where it is reduced to molten "lava." The lava is then molded into glass bricks which are as hard as granite and eminently adapted for paving.

HOW MUCH WORK YOUR WATCH DOES.

IN the average watch the balance wheel vibrates 300 times a minute, 18,000 times each hour, 432,000 times a day and 157,788,000 times a year. As each vibration covers about one and a half revolutions, the shaft on which the balance wheel is mounted makes 236,682,000 revolutions in its bearings each year. A modern locomotive with 7-foot drivers would have to run 985,824 miles to make an equal number of revolutions. Running at the rate of a mile a minute, without stopping, it would take 683 days, or nearly two years for the axle of the drive wheel of the locomotive to make as many revolutions as the balance wheel shaft of the watch does in one year, and it would cover a distance of over thirty-nine times around the world.

A BETTER FLASHLIGHT POWDER.

EUROPEAN scientists have devised a new and better flashlight powder. It is made of peroxide of lanthanium, to which are added substances similar to those used in gas lamp mantles. It gives an excellent light and produces less than one-tenth of the smoke and fumes which make other powders so disagreeable and often dangerous to use.