

## PLANTS INEFFICIENT; WASTE SUN'S ENERGY

Energy from the sun pours on every acre of ground to the equivalent of 1,476 tons of coal during an average 90-day growing season. Of this wealth of power a crop of wheat yielding 50 bushels to the acre, a very high figure, puts into the bin an energy equivalent of less than two-thirds of a tone of coal. These striking figures are given by Dr. H. A. Spoehr, plant physiologist of the Carnegie Institution Coastal Laboratory at Carmel, California, writing in the forthcoming annual report of the Smithsonian Institution.

But inefficient as plants are, Dr. Spoehr points out, they have been the only means of major importance we have had for capturing solar energy and making it available for man's use. The coal and oil deposits, representing sun power captured during long periods and stored ages ago, are being used thousands of times faster than they were originally made, and we shall soon find ourselves up against the proposition of getting our energy supply from day to day as we need it.

Plants, in Dr. Spoehr's opinion, do not hold much promise of effective usefulness when that time comes. They cannot work fast enough, and besides, plant production must be increasingly used to supply food and little can be spared for fuel. Man must use his ingenuity to duplicate and improve upon the process that plants have used for ages, and devise means for the direct capture of the great quantities of sunlight energy that daily waste themselves around us. Little progress has been made so far, but Dr. Spoehr is confident that when the problem is attacked in earnest by scientists it will eventually be solved.

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## SWEDISH EXCAVATIONS DISCLOSE BRONZE AGE AND VIKING RELICS

Three skeletons of persons who died 4,500 years ago in Sweden are among the many valuable relics of the Stone Age which Swedish archeologists have unearthed this summer in their assiduous efforts to reconstruct Sweden's prehistoric past. Other objects among the new finds now being studied are weapons, tools, and pottery from the Stone Age, funeral urns, bronze axes, swords, etc., from the Bronze Age, remains of workshops in the Iron Age, hoards of gold and silver treasures amassed in the Viking Age, and various relics that shed light on medieval life in Sweden.

Another interesting find made earlier in the summer while excavating in the market-place of the ancient town of Visby were the remains of a workshop in which bone objects had been made. Antlers of moose and deer in various states of manufacture, and various horn objects such as combs, chisels, and punches, were found. These objects, it is said, belong to the latter part of the Iron Age. Relics of medieval times, when Visby was in her prime, are frequently found, the latest being a domestic aquarium, in which, according to custom, fish were preserved alive until the time when they were to be served up in a favorite dish for some merchant prince of the city. Four or five aquariums of this type have previously been found in Visby.

A curious and unique object recently found at Laholm, in the province of Halland, is a flint saw from the Stone Age. And another object of special interest in the study of Stone Age civilization in Sweden is a grindstone for sharpening stone tools and weapons, which has been found this summer near Piteaa, on the Gulf of Bothnia. Piteaa is only about sixty miles south of the Arctic Circle. The curious appearance of this grindstone has led the experts to the theory that it was once used by the Lapps as an idol - a strange elevation in service of a common object that had lost its practical utility at least 3,000 years earlier.

At Laholm were also found interesting relics of the Bronze Age, dating back to 1,500 - 1,000 B.C. The finds include a beautiful bronze sword nearly two feet long, and two exquisitely shaped burial urns, of which one was about one foot in diameter. Bronze Age antiquities of great value will probably be unearthed at Sohoeg, between Trelleborg and Falsterbo, on the most southerly tip of Sweden. Bronze axes were found on this site half a century ago, and excavations begun in earnest have already yielded hundreds of objects. The finds date back to about 1,500 B.C. The prehistoric burial grounds at Sohoeg are believed to be haunted, and it figures in a great number of ghost stories and weird legends that are a part of the folk lore of this region.

Contrasting with the severe and gloomy character of the preceding ages in the civilization of Sweden is the picturesque and romantic Viking Age. The Viking relics found this summer include ornaments, and coins of silver and gold that testify to the far-flung adventure and commerce of the daring seafarers of the ninth and tenth centuries A.D. Thus at Igeloesa, in Skaane, a farmer recently came across a buried treasure of silver money, 2,037 coins in all. He has just delivered the treasure to the government, and, according to law, has received the value of the silver in weight, or about \$86.00, plus one-eighth for the "antiquity value". Most of these coins are English, dated during the reign of Aethelred II, 978 to 986 A.D., and are doubtless part of the tribute money which the Viking raiders of that day exacted from England. The other coins are Irish, German, and Arabic. A lot of Arabic coins of this period have also been found in Ytterenhoerna, in the province of Soedermanland. Between twenty and thirty thousand Arabic coins in all have been found in Sweden and testify to the close commercial relations which the Vikings had with the Near East, as well as with Western Europe.

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#### HOPI INDIANS WORSHIP VENUS, MORNING STAR

Venus, goddess of the ancient Romans, is venerated also by the modern Hopi Indians of the American southwest, though in a guise that would hardly be recognized by her classic votaries. Dr. J. Walter Fewkes, chief of the Bureau of American Ethnology, tells of this interesting cult in his account of the use of idols in Hopi worship, in the forthcoming annual report of the Smithsonian Institution.

She is known to the Indians as Talatumsi, the Elder Sister of the Dawn. Her image, rudely carved of wood, and wrapped in a ceremonial blanket, is enshrined in a hollowed-out boulder with a flat rock, sealed in with clay for a door. This door is removed in November every fourth year, when the idol is taken out and carried to the top of the mesa and rites performed near it. The image is regarded with special reverence, and except for the quadrennial services is kept securely sealed in its shrine.

The image of Talatumsi is only one of the many sacred objects of the Hopi. Unlike the Indians of the eastern United States, who made few images, these natives of the desert make and reverence numerous idols, though they do not regard them as gods but only as images of the gods above the cloud or under the earth. Some of the idols are simple natural objects, like pieces of petrified log or meteoric stones; others are more or less elaborately carved animal or human figures of wood or stone. Many of the stone images are very old, and are held in especial awe.

Dr. Fewkes is of the opinion that the custom of carving was not much developed until after the coming of the Spanish padres. Though the Indians declined to