SCIENCE NEWS

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SAMOS

SAMOS is an ancient Greek island with an honorable history going back long before the birth of Christ. It has passed through many vicissitudes and under many rulers, but its people have always at heart remained loyal to Greece. Up until 1912, when it was annexed to Greece, it had been for many years a possession of Turkey. However, since 1835 it has held an advantageous position, being in fact self-governing, though tributary to the Turkish Empire. Its people have remained for generations members of the Greek Orthodox church.

The Dodecanese Islands, in which Samos is not included, were annexed by Italy the same year that Greece annexed Samos. All these islands, relatively near the Turkish coast line and formerly Turkish possessions, are close to the shipping route from Cyprus and the eastern Mediterranean to the Dardanelles. They are, however, approximately 150 miles across the Aegean from Athens on the mainland of Greece.

Samos extends east and west a distance of about 27 miles, and is one half that distance from north to south. It contains approximately 300 square miles of territory, most of which is fertile farm land. A mountain range extends the length of the island, with one peak near the western end over 4,700 feet high. It has several good harbors. Its principal crops are from its vineyards. Oil, silk, cotton, tobacco and raisins are also grown. Cigarette making is an important industry.

Historians will remember that Samos was the birthplace of the philosopher Pythagoras, whose name and image appeared on coins of Samos in ancient times. The island was the home of a school of sculptors with which Rhoecus, the architect of the Samian Temple of Hera, was associated. Rhoecus and Theodorus, both of this school, are credited with inventing the art of casting statues in bronze.

THE USE OF FLUORIDES IN INDUSTRY

THAT the increasing use of fluorine compounds in industry may bring a new industrial health problem was pointed out by Dr. Robert A. Kehoe and Edward J. Largent, of the Kettering Laboratory of the University of Cincinnati, at the Pittsburgh meeting of the Industrial Hygiene Foundation.

"Since 1940, the annual industrial consumption of fluorine compounds has exceeded 500,000,000 pounds. Production of steel, hydrofluoric acid, glass and enamel has accounted for almost all the compounds used. Although acute poisoning by fluorides is not uncommon in the home, in industry acute injuries have occurred infrequently and have almost always resulted from accidents involving hydrofluoric acid."

Injury has been reported from prolonged exposure in industry to air contaminated by dusts containing fluorine salts. Little has been reported concerning the effects of gaseous fluorite. The injury reported in chronic intoxication was in the nature of an abnormal hardening of the bones which was detected by x-ray examinations.

Although fluorine compounds are employed in at least twenty-five industrial processes, the hazards involved have not been reported. Workmen in some industries excrete an elevated amount of fluorine. Study of one person indicates that when abnormally large amounts of fluorine are being absorbed, the excretion gives an indication of the rate at which fluorine is being stored in the bones. However, the time interval required for injury to result from this bone storage has not been determined.

Fluorine has received considerable attention in another connection, that of its effect on human teeth. Small amounts in drinking water cause the disfiguring condition, mottled enamel, while much smaller amounts seem to protect the teeth from decay.—JANE STAFFORD.

THE PRE-BIRTH PERIOD IN FUR-BEARING ANIMALS

EXPERIMENTS conducted at Swarthmore College by Professor Robert K. Enders and Oliver P. Pearson have demonstrated that the long and uncertain period of gestation in certain fur-bearing animals of the weasel family may be materially shortened by the use of artificial light. Fur farmers, now doing their utmost to increase the supply of furs for aviation and arctic-alpine uniforms, are keenly interested. The research was carried out in collaboration with the U. S. Fish and Wildlife Service.

The success of Professor Enders and Mr. Pearson in shortening the time of waiting for the young to be born is based on certain basic facts in embryology. In all mammals, the union of male and female sex cells after mating is followed by an initial period of rapid cell division, at the end of which the early embryo consists of a hollow sphere of cells, called the blastocyst. At this point, the blastocyst attaches itself to the wall of the mother's uterus, from which it will draw nourishment until birth takes place. This process is known as implantation.

It was found that in some fur-bearers of the weasel tribe, the embryo develops as far as the blastocyst stage, and then stops, often for many weeks, before implantation and further growth take place. This is notably the case with the marten, which mates in July and August and normally does not give birth until April.

Shortening of three or four months in the pre-birth period was attained by artificially lengthening the lighted hours in the female martens' quarters with electric lamps. The delay in implantation was eliminated, and the young were born late in December.

Somewhat similar results were obtained with mink. The period of gestation in this animal is very variable, lasting from 41 to 76 days. This variation is thought to be due also to a delayed implantation of the early embryo. By artificially increasing the length of day, the gestation period in the mink was shortened an average of about three days.

It is suggested that the long pause in embryonic development in these animals under natural conditions results from the shortening of daylight hours in the autumn,

and that implantation and completion of the pre-birth process is stimulated by the lengthening of the daylight periods in spring.

THE NEW CHEMICAL DE-SALTER

A NEW chemical that takes the salt out of sea water in 20 minutes and permits a flier to carry the makings of a 14-day supply of life-sustaining drinking water in his rubber life-raft has been recommended by the Naval Medical Research Institute, and is already in production, climaxing more than a year of all-out research in which innumerable de-salting devices have been invented and demonstrated. The new chemical de-salter, which weighs only 3½ pounds and converts more than 14 pints of sea water into drinking water, was designed to prevent death from thirst and tissue dehydration among fliers drifting on rubber life-rafts.

At least a dozen methods of distilling or chemically de-salting sea water for fliers have been tested by Naval Medical Research Institute chemists and physicians but were rejected because of awkwardness, poor yield, excess weight or harmful reactions. A small can is the only water supply which downed fliers have been taking aboard their life-rafts.

The new chemical, which is carried in the form of briquets the size of a small candy bar, is the result of many months of research on the part of the Permutit Company of New York. When dropped into a plastic bag filled with sea water, the chemical quickly absorbs the dissolved salts, permitting them to be filtered out as the flier sucks the water through a plastic tube. Each briquet weighs only one-sixth as much as the drinking water it produces and takes up only one-tenth as much space, thus keeping within all-important plane-loading limits.

As a result of original tests made by the Navy Department and later corroborated by the American Airlines, officials of the American Airlines announced that they had adopted this sea water de-salting process for all over-water cargo and passenger flights and had recommended it to other airlines operating flights under the Air Transport Command. At a "shipwreck demonstration" in the Atlantic Ocean off Long Island, sea water was scooped up in the transparent bag and a briquet was dropped in. The bag was sealed and shaken and the chemical absorbed. Salts were retained by a cloth filter as the water was sucked out.

Chemical methods of converting sea water to drinkable water have been sought for centuries. Attention has been focused on the problem of water-supply for life-rafts by the vast amount of over-water flying and fighting, especially in the Pacific war zones where two- and three-week raft "squattings" have become commonplace. The Rickenbacker and Doxon-Aldrich-Pastula sagas, describing the tortures of thirst aboard life rafts, showed that lucky catches of fish, birds and rain-water were all that prevented their deaths from thirst. Medical opinion holds that water is more important than food in sustaining life, for dehydration of tissues is usually fatal.

ITEMS

PREVENTION or cure of seasickness can be achieved in three out of four cases by pink pills developed by the Royal Canadian Navy. The formula for the remedy, which appears to be equally effective in air sickness, is a military and naval secret. The remedy has no harmful effects and does not reduce fighting efficiency. The pink capsules are now being manufactured in quantity and will shortly be issued to ships for general use at sea. They will probably not be available for civilian use till after the war. The new remedy was developed after extensive research, for a medicine to keep naval personnel at top efficiency, particularly during the first two days of a voyage when seasickness is most likely to occur, and to protect invasion troops from being so disabled by seasickness that they can not fight when landed. Surgeon Captain C. H. Best, R.C.N.V.R., co-discoverer of insulin, and Dr. Wilder Penfield, of the Montreal Neurological Institute, head the group of investigators who produced the remedy.

THAT parachuting British medical units to care for the wounded in the advance line of action proved successful in the Tunisian campaign, is reported by the London correspondent of the *Journal* of the American Medical Association. This revolutionary advance in army medical service may lead to the adoption of air-borne medical units on a large scale by the British army. At present only the air corps is equipped to land surgeons and ambulance units by parachute and glider. A medical unit consisting of ten men, including a surgeon lieutenant, was dropped by parachute close to the line of battle in the Tunisian campaign. During one day alone this unit attended 162 wounded. Due to the medical attention made immediately available by this means, the lives of all but one man were saved. The unit arrived complete with full dressing station equipment, operating apparatus and instruments, anesthetics, sterilizers, medicines and dressings. Normally an air-borne medical unit can assemble its operating equipment within ten minutes of landing. Sufficient medical supplies and food are carried with the unit to last for several days without supplementary supplies.

THE best storage place for fabrics is not the traditional attic but a dark storage closet on a lower floor, according to results of a four-year test conducted by textile experts of the U. S. Department of Agriculture. Most attics become very hot in the summer, and heat has been found to cause deterioration of stored fabrics. Tests were made of both new and desized cotton sheets and degreased woolen samples stored at 102 degrees Fahrenheit, the average attic temperature, and at room temperature. Changes in these fabrics were not enough to make them unserviceable, but they were found to deteriorate more in hot-storage. The fabrics became weak and tender, and cottons and linens yellowed. Linen stood up better than other fabrics under the tests. Greater chemical deterioration was caused when light reached the stored fabrics, light damaging linen more than high temperature.