SCIENCE NEWS

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THE MEDITERRANEAN EARTHQUAKE

THE earthquake which early on June 27 shook the island of Crete and other parts of the Mediterranean Sea, may have damaged priceless archeological collections, if the Archeological Museum of Candia, Crete, was destroyed as reported.

In this museum were preserved many of the most important remains of a civilization that flourished long before Tutankhamen in Egypt, for Sir Arthur Evans, an English archeologist who has made the study of Crete his specialty, dated the earliest history at 3400 B. C.

Crete played a prominent part in the mythology of the ancients, for, according to the Greeks, it was the place both of birth and death of Zeus himself, and there Theseus, the great hero, slayed the mythical monster the Minotaur. It was at Crete also that the pioneer aviator, Daedalus, attached wings to his arms with wax and was able to fly, but his son, Icarus, when he sought to follow the paternal example, suffered the first accident in aviation, for he flew too near the sun and the wax that supported the wings was melted!

But regardless of the legends, Crete was the scene of a remarkable civilization, the chief architectural production being the great Palace of Cnossus, situated about four miles from the modern town of Candia, which suffered the greatest damage in the recent earthquake.

The Palace of Cnossus was built principally during what scientists refer to as the Middle Minoan Period, which extends from 2100 to 1580 B. C., but some parts undoubtedly date from much earlier. There is also evidence in the ruins of later rebuilding and also of damage by previous earthquakes as well as by fire. The palace is in the shape of a square, about 450 feet on a side, and contains the remains of many rooms, with beautiful paintings on the walls.

The entire palace was splendidly built with broad stairways, rooms for the storage of valuable objects in huge earthen jars, in which the forty thieves could have hidden with ease, and even a very effective system of plumbing and drainage. Of this, Sir Arthur Evans writes, "As an anticipation of scientific methods of sanitation, the system of which we have here the record has been attained by few nations even at the present day."

Among the remains are many small figures representing the snake goddess which they worshipped and her votaries. Many shells have also been found among these sacred objects, for they were a sea-faring people, and they recognized this by strewing their altars with sea shells and pebbles. Scientists throughout the world now hope that the earthquake has not completely destroyed these numerous collections or the yet unexcavated buildings.

THE DISTRIBUTION OF EARTHQUAKES

"RECENT seismic activity, as demonstrated by the numerous earthquakes that have been recorded on seismographs in all parts of the world, indicate that we are now passing through a period of widespread earthquake distribution." This is the opinion of Commander N. H. Heck, chief of the bureau of terrestrial magnetism and seismology of the U. S. Coast and Geodetic Survey, expressed in a statement to Science Service.

"All this activity," he said, "indicates a very general relief of strain in many parts of the earth. It is not impossible that in some cases there is a relation, as for example, a passing earthquake wave may act as a trigger to set off an earthquake which is about ready to occur at some distance from the original quake. Seismologists are not entirely agreed on this possibility.

"Reports of activity have been exceptionally numerous and this has complicated the recording of instrumental results. The reports received by Science Service from seismograph stations at Cheltenham, Md.; West Bromwich, England; Fordham, N. Y.; Georgetown, D. C.; Ottawa, Canada; Sitka, Alaska, and Victoria, B. C., of the Eastern Mediterranean earthquake of June 26 placed the epicenter near the island of Crete. The exact epicenter, or point of greatest activity, can best be determined by near-by European instruments.

"The Sumatra earthquake of June 27 was reported only by Georgetown. The distance agreed with the position of the island of Sumatra.

"The earthquake of 9:27 A. M., Eastern Standard Time, June 29, was reported by Georgetown and Honolulu. These records indicate that this earthquake occurred in the China Sea, at latitude 30 degrees North and longitude 127 degrees East. There seems little doubt that this is entirely distinct from the earthquakes in the East Indies.

"The other earthquakes that have been reported are local in character and have not made records at many stations. In most cases local damage has served the purpose of adequately locating the earthquake."

MALARIA IN PALESTINE

MALARIA in the Holy Land is giving way before onslaughts on the mosquito. The Malaria Commission of the Health Organization of the League of Nations attributes the high degree of success in its anti-malarial campaign in Palestine very largely to its efforts in exterminating the fever-bearing mosquito larvae.

Swamp draining and oiling and Paris green have been the principal agents of death to the young wigglers in the intensive war which has been waged by the commission since 1918 when the malarial incidence, even under normal circumstances bad enough, ran unusually high, due to the unsettled abnormal conditions brought about by the war.

Quinine treatment of school children and a general return to more normal conditions have all contributed to the current decline of the disease, but anti-larval mea-

sures have been the chief factors according to the Malarial Commission's report to the League of Nations.

Professor N. L. Swelengrebel, of the medical faculty of the University of Amsterdam, and member of the commission, states that the International Health Board of the Rockefeller Foundation and various Jewish organizations have been of great assistance in the general process of putting into practice the engineering feat of ditching and oiling Palestine.

FUNGI AS A CAUSE OF TROPICAL DISEASE

FUNGI, the type of parasitic plant growth that makes little scabs on fruit and leaves of trees, are an important cause of disease in human beings. It has become so usual to think of bacteria as the principal source of infections that it is rather surprising to learn that over 20 per cent. of the maladies of the tropics are due to fungous growths, according to a statement by Dr. Aldo Castellani, an international authority on tropical disease, in a recent lecture before the College of Medicine at the University of Illinois.

Ringworm was one of the first afflictions shown to be caused by a fungus and it is now known that similar parasitism may attack any system of the body, the skin being the most frequently invaded and the nerves the least. Many bronchial troubles and diseases of the tonsils, as well, may be traced to such a source.

Dr. Castellani makes a strong appeal for more cooperation between medical science and the botanical specialists who study fungi and the diseases they produce in higher plants. Such cooperative research is one of the objectives of the department of tropical medicine at Tulane University at New Orleans where Dr. Castellani is now stationed as professor of tropical hygiene.

THE WINTER SAP OF EVERGREENS

WHY do the leaves of evergreens hang on all winter long, when by rights they should be frozen and drop off? According to researches of Dr. Floyd W. Gail, of the University of Idaho, to be reported on in the next issue of *The Botanical Gazette*, they stick because in winter their sap becomes too thick to freeze.

Dr. Gail gathered leaves from pine trees and from broad-leaved evergreen shrubs once every month through three years, crushed out the sap and tested it for its freezing point. He found that during the summer when the weather is warm and the sap flows freely it is relatively thin and could be frozen easily if there were any frost to freeze it. But as fall comes the starch in the leaves is converted into sugars and oil, changing the sap from a thin and watery fluid into a sort of sirupy emulsion, very difficult to freeze. He found that the greatest density of the sap was reached during late January and February, when the most severe freezing weather occurs. Deciduous trees, that lose their leaves in autumn, show some thickening up of the sap, but apparently the sugars are transferred into the tree before the leaves drop off, for Dr. Gail found that the sap pressed from leaves that had just fallen was easily frozen, whereas sap from leaves not quite ready to fall resisted the effects of considerably lower temperatures.

THE PANTOGRAVER

A NEW method of engraving charts and maps in metal has been devised by the U. S. Hydrographic Office of the Navy Department. This process, the invention of J. H. Larrabee and T. Peter Lampe, engineers of that office, results in increased accuracy and a considerable saving in time, as its operation permits the engineers to compile charts and maps directly on metal printing plates without the necessity of preparing a finished drawing. This machine, named the pantograver by its inventors, produces a chart plate from which charts are made which contain oceanographic and topographic features necessary to navigation, these plates being approximately 90 per cent. complete when they leave the machine.

As partial evidence of the value of this machine, Mr. Larrabee said, one of its attachments, for engraving soundings, can easily engrave 4,500 figures in a day, whereas a skilled hand-engraver can engrave only about 300.

Laying an acid-proof etching ground on a highly polished copper plate, the operator sets the instrument for the required reduction and compensation, to make allowance for any distortion of the tracing original, due to paper shrinkage, moisture or other causes. Carefully following the design on the data print, the operator transfers the design by the pantograph principle to the copper plate by means of a diamond point, varying the depth and width of the lines by weights supported by this engraving tool.

Although there are a few symbols which the machine can not insert, it was pointed out, such as bluffs and sanded beaches, it is possible to attain absolute uniformity in the various symbols used in navigation as well as in the lettering, another of its ingenious devices being a method of inserting lettering on a curved line.

TUNG OIL

AMERICAN-GROWN tung oil may soon add to the farmers' income in the south and at the same time free the United States from the control of another foreign monopoly of an essential raw material.

According to C. C. Concannon, chief, and G. H. Priest, of the chemical division of the U. S. Department of Commerce, more than two hundred thousand Chinese tung oil trees have already been planted in and around Gainesville, Florida, and their flourishing growth is arousing interest in other southern states as well.

Chinese wood oil or tung oil is the most important constituent of waterproof varnishes and paint liquids and linoleum. Manufacturers in the United States import about 100,000,000 pounds annually. It has replaced linseed oil in the manufacture of high-grade products because it is a rapidly-drying oil and gives a higher gloss and a more water-resisting finish than any other material of this kind.

All the tung oil now on the world market comes from China. Because of the many political upheavals that have taken place there in recent years, the amounts that have been shipped out from the interior where it is produced have fluctuated greatly. American manufacturers, who are the greatest purchasers, have had to take what they

could get and at the prices asked. The general uncertainty also enabled speculators to manipulate the market to their benefit.

Furthermore, the Chinese method of extracting the oil from the nuts of the tung oil tree is very crude, and the product is oftentimes inferior and impure. This fact and the uncertainty as to supply have stimulated growers in the United States. Climatic conditions in north central Florida and some of the gulf states are very similar to those of the Yang-tze River Valley in China where nine tenths of all the tung oil of commerce is produced.

The contention of Chinese growers that America will never be able to produce the oil commercially in competition with China, because of high labor costs in the United States, does not discourage American growers. They do not believe that the labor problem will ever be serious. The nuts fall to the ground when ripe and can lie for months without spoiling, and can therefore be gathered when labor is available. The trees require little attention and are almost entirely free from insect pests.

Extraction of the oil from the nuts will be done at a central plant and by means of modern machine methods a much better grade of oil is expected to be produced. In China the nuts are gathered before they are perfectly ripe and are placed in large iron pans and parched until the husks open and the seeds come out. Or else the nuts are piled in heaps and fermentation sets in, decomposing the husks, and separating the seeds. They are then crushed under heavy stone rollers drawn by buffalo or cow power. Then they are heated, made into cakes and the oil squeezed out in presses.

Although the tung nuts contain about 53 per cent. of oil, the amount obtained by this method is only about 40 per cent., and one fourth of all the oil is therefore being wasted. The heating is difficult to regulate and when it is carried too far the oil becomes dark and less marketable. A large amount of free acid also develops, making an inferior product.

By means of modern machinery in the United States, it is planned to extract the oil more efficiently and to produce a purer product. Experimental work done on Chinese nuts, imported for this purpose, shows that it is possible. Horticulturists are studying the different varieties of tung oil trees and the best producers and highest oil-bearing nuts only will be propagated. The American oil, it is believed, will create an immediate demand on the market. A steady supply is expected to enable manufacturers to expand industries using the product.

The history of the rubber industry in the early twentieth century may repeat itself with tung oil. Before that time almost all the world's supply of rubber came from the jungles of Brazil and was smoked and coagulated by crude native methods. Trees were ruined by unscientific tapping, the "black gold" was impure and the supply unreliable. Then plantations were established in the Orient by the English and Dutch and scientific methods produced a large and steady supply of pure rubber. Prices fell and many new lines of economic development became possible. But for plantation rubber, automobile tires would be too expensive to buy. A large and steady supply of American tung oil may have its effect on civilization and may mark the beginning of new industrial growth in a number of directions.

ITEMS

WHY do some bacteria start to grow later than others when placed in a different but favorable environment? However much scientists argue over the reasons, this unaccounted-for fact is of very great importance. For this property, which is called dormancy, plays an important part in the body's resistance to infectious disease. It has been suggested variously by bacteriologists that some individuals do not recover from the shock of being transferred to strange environment, that some have thicker walls than others, and that some cells suffer from what is technically known as "heat inhibition" when transplanted to a new medium for growth. In a paper in the *Journal of Infectious Diseases* Victor Burke and two collaborators at the State College of Washington cover the situation by saying that dormancy is probably due to a combination of all these factors. This temperamental behavior on the part of some bacteria, the paper continues, is of importance to man because it cuts down the chances of infection by reducing the number of organisms that would otherwise start growing in the body all at once. Since the bacterial cells begin to multiply at different times the body has an opportunity to initiate defensive reactions before the cells all develop. If enough of them remain dormant a sufficiently long time they will be excluded by the white corpuscles before serious development takes place.

S. PRENTISS BALDWIN, well known ornithologist, and his assistants are investigating the life history of house wrens at his farm at Gate's Mills, Ohio. Plenty of food, water and bird houses, as well as complete protection, attract large numbers of wrens each year. Each house is carefully watched and the eggs and young birds are weighed, measured every day and tagged with an identification mark as carefully as the babies in the nursery of an ultramodern hospital. Mr. Baldwin says that while a few eggs have been broken not a single young bird has been lost by handling. Important data about the nesting habits, period of incubation and daily life of wrens generally have come to light. By his investigations Mr. Baldwin hopes to solve some of the questions of migrations that have been puzzling ornithologists since the days of Audubon.

THE ills of the old need as much attention as those of the very young, is the contention of the Czech Medical Faculty at Prague, where a clinic that treats exclusively the diseases of old age has just been opened. Professor R. Eiselt, of the Medical Faculty of the University of Prague, who is in charge of the clinic, stated in his introductory lecture that two groups of diseases would be studied, those that are peculiar to the old, and those that present a different aspect when they occur during old age. This clinic is of particular interest to the republic of Czechoslovakia on account of the system of old age and invalidity insurance that went into effect on July 1.