

SCIENCE NEWS

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EARTHQUAKE IN THE IMPERIAL VALLEY

THE earthquake in the Imperial Valley, with damage estimated at \$2,500,000, rates as sixth in property destruction among recorded American earthquakes, according to seismologists of the U. S. Coast and Geodetic Survey. Serious as it was, it is dwarfed by such catastrophes as the San Francisco shock of 1906 and the Long Beach earthquake of 1933. The San Francisco disaster accounted for \$24,000,000 loss from direct effect of the earthquake and \$400,000,000 that went up in the fire. The Long Beach quake smashed down property worth \$41,000,000.

Other costly earthquakes in this country have included: Santa Barbara, Calif., 1925, \$6,250,000; Charleston, S. C., 1886, \$5,500,000; Helena, Mont., 1935, \$3,500,000. There have been several quakes of far greater intensity than any of these, for sheer power of earth movement, but they happened in desert or sparsely settled regions and so caused little or no loss of life or damage to property.

The Imperial Valley earthquake apparently resulted from a shift in deeply buried rock fissures that are a southward continuation of the San Andreas fault, which was responsible for San Francisco's ruin a generation ago. This is one of the most actively seismic faults in this country and has been responsible for literally hundreds of earthquakes, some of them quite serious. The exact location of the fault as it runs under the Imperial Valley is not known because it is covered deeply by loose earth and gravel. This unconsolidated material transmits the earthquake movement from the rocks beneath in a way that is extremely destructive to weak buildings, but less damaging to good steel frame and sound reinforced concrete structures.

The last severe earthquake in the Imperial Valley region occurred in 1934 and was centered south of the Mexican border near the head of the Gulf of California. In 1937 an earthquake was felt in the valley, but it originated in the mountains outside, and caused little disturbance. A heavy quake occurred in the valley on January 1, 1927, and was followed by hundreds of after-shocks during the year.

Sunday's shock was recorded on many seismographs all over the United States and Canada. Among them were instruments designed for use at Boulder Dam, now set up for testing in the laboratories of the Coast and Geodetic Survey. The shock was also recorded by instruments of the magnetic observatory at Cheltenham, Md., which are not intended for earthquake study at all.

Two investigators from the San Francisco office of the U. S. Coast and Geodetic Survey, Frank T. Ulrich and Marion Gilmore, arrived in the stricken region early on Monday. Examination of the records of a strong-motion instrument, which had been set up at El Centro, indicated a disturbance of considerable intensity. The automatic pen was thrown off the paper in both directions. Intensity was apparently of violence 9-plus, on a scale of 12 grades of intensity. Records wired to Science Service and interpreted by Coast and Geodetic Survey seismologists indicate that the epicenter was not far from Brawley.

FURTHER PAPERS PRESENTED TO THE AMERICAN SCIENTIFIC CONGRESS

DESTRUCTIVE land uses, like over-grazing and toleration of soil erosion, reach into rivers and lakes to the ruin of fish life. Any plans made for land improvement must include consideration of their possible effects on the nation's fish resources, valued alike for recreational and commercial uses, declared Elmer Higgins, chief of the division of scientific inquiry, U. S. Bureau of Fisheries, speaking recently before the Eighth American Scientific Congress. Exposure of land to rapid erosion, through over-cutting of timber, over-cultivation of sloping areas, over-grazing of pastures, changes rivers from clear to turbid, from cool to warm, and brings on silting-up of lakes. These changes make the waters less fit for habitation by desirable fish like trout and bass and reduce them to the level of "water slums" inhabited only by such fish as carp and mud-cat. Industrial abuses of the waters, especially the discharge of factory wastes and the acid-water outpourings of mines, have made many rivers in this country unable to support even carp. They are not even water slums; they are aquatic deserts. Other misuses of water resources mentioned by Mr. Higgins include neglect to screen irrigation ditch outlets, excessive canalization of rivers, construction of dams with no provision for the passage of fish, drainage of swamps and shallow lakes that afterwards turn out to be unsuited to agriculture, and too-rapid changes in level of lakes backed up by irrigation and power dams. He suggested a program of correction that would permit reasonable use of waters without killing off the fish.

CORN, America's greatest single contribution to world agriculture, has been a botanical riddle ever since its first discovery by Columbus. Its origin is shrouded in mystery; nobody has ever seen a plant that might be its wild ancestor. A widely held hypothesis, that corn is the hybrid offspring between two corn-like grasses, teosinte and gama grass, was disputed before the congress by Professor P. C. Mangelsdorf, of the Texas Agricultural Experiment Station. Teosinte could not be the ancestor of corn, he said, because corn was more probably one of the ancestors of teosinte. In a study of the chromosomes of all three plants he has discovered strong evidence that a primitive type of corn and gama grass formed a natural hybrid, which is teosinte. Distribution of the "wild" teosinte suggests that this happened where the cultivated range of corn came into contact with the natural range of the wild gama grass. The original corn plant, whatever it was, almost certainly grew in the Andean region, in the Texas geneticist's opinion. Indians found it good for food in its wild state, better after they had cultivated and improved it. From the South American highlands it spread from tribe to tribe, until it was grown in practically all parts of the Western Hemisphere where soil and climate would support it.

SOUTH and Central America, original homes of the potato, have lately been combed for new varieties to be bred with European and American stocks already in use, for the

production of better-quality hybrids, according to Edward K. Balls, leader of an expedition sent out under the auspices of the Imperial Agricultural Bureau of London. The work of the expedition was confined mainly to the western slopes of the Andes, through Colombia, Ecuador, Peru, Bolivia and northern Argentina. Best hunting was found around Lake Titicaca in southern Peru and northern Bolivia, where about 200 forms were obtained, many of which were known to Indians long before the coming of white men. In all, planting material representing about 500 different species, forms and varieties was brought out by the expedition.

DR. HENRY K. SVENSON, of the Brooklyn Botanic Garden, stated that plants of the Galapagos Islands are mainly of South American mainland origin, despite earlier beliefs that they were endemic, or as peculiar to the islands as the giant tortoises and sea-going lizards that fascinated Darwin a century ago. The islands have only a single genus, a woody relative of the daisies and sunflowers, that is not found in any other part of the world. All the rest of the plants have kindred elsewhere. Three modes of transportation have been used by plants in clothing the islands, which are geologically relatively new, with vegetation. Some may have drifted in by sea, borne on the Humboldt current which sweeps over from the western shore of South America. Spores of ferns and mosses, and the lighter kinds of seeds, could come in by air. Finally, of very late date, came the introduction of plants by human agency, either of cultivated plants that have escaped and run wild or of weeds brought in unintentionally.—FRANK THONE and JANE STAFFORD.

VITAMINS

VITAMIN K, which is saving desperately sick adults and new-born babies from bleeding to death, may go in the next "U. S. Pharmacopoeia." This book is sometimes called the druggists' Bible. It is the legal standard for drugs in the United States. If a drug or a vitamin or a hormone is labeled U.S.P., it must conform to the standards of preparation, purity and strength set by the Pharmacopoeia. Preparations for the twelfth "U. S. Pharmacopoeia" (they are issued every 10 years), are being made.

Riboflavin, a member of the large family of B vitamins and recently reported effective in treating the sometimes blinding eye disease, keratitis, may also be included in the next edition. Some of the new sex hormones also are likely to be included. A strong note of international cooperation was sounded as the convention got under way in the midst of renewed war activity in Europe. Dr. E. Fullerton Cook, chairman of the Revision Committee for the decade 1930-1940, pointed out that the "Pharmacopoeia" must be planned to meet the needs of people in all parts of the world. This has been done to some extent already, as in the case of chaulmoogra oil, used in treating epilepsy, which was introduced into the "Pharmacopoeia" to meet the needs of the Philippines and other Oriental countries. Other nations have their own pharmacopoeias and a dozen or so of these were on display, including the German, the Dutch, the Finnish, the Russian and one from far-off Thailand.

The care and the work involved in determining standards for U.S.P. products appeared in the story of the standardization of cod-liver oil. The work began with one of the scientists personally selecting the fish livers from the cod fish catch to be used in preparing the oil. Here is a new phrase picked up at the convention for those addicted to talking about their operation: "Chorda Chirurgicalis U.S.P." Translation is "surgical gut" or "surgical catgut." This means that for the first time the surgeon can sew up wounds with a U.S.P. product, because standards for surgical sutures have now been included in the "Pharmacopoeia."—JANE STAFFORD.

PARKINSON'S DISEASE

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REMARKABLE changes in patients suffering from Parkinson's disease treated with Vitamin B₆ administered intravenously, effective within a few minutes after the treatment, were reported by Dr. Tom D. Spies, of Hillman Hospital, Birmingham, Ala., at the 100th annual meeting of the Illinois State Medical Society.

Parkinson's disease, called also paralysis agitans, is a shaking palsy, marked by muscular weakness, stiffness and pain. Its treatment has hitherto been considered more or less hopeless. Dr. Spies and his colleague, Dr. William B. Bean, treated 11 cases of at least four years' duration, eight of which were arteriosclerotic and three of which were post-encephalitic. Upon the cases following encephalitis vitamin B₆ produced the most remarkable results. A few minutes after the injection there was marked improvement. Tremor and rigidity decreased. The patients were able to walk without customary stiffness. Two of the arteriosclerotic patients showed definite improvement, five were unchanged and one was considerably worse.

Dr. Spies also reported that Dr. Norman Jolliffe, of the New York University College of Medicine, in a personal communication has stated that he has obtained similar results following administration of vitamin B₆ to patients with Parkinson's disease.

Temporary relief of neuromuscular symptoms, roaring sensations in the ears, anorexia and insomnia in selected persons with malnutrition was obtained through use of another synthetic vitamin, alpha-tocopherol, or vitamin E, the so-called fertility vitamin, was also reported by Dr. Spies. These patients were badly nourished but gave no evidence of pellagra, beriberi or riboflavin deficiencies.

Last year Dr. Spies reported that vitamin B₆, then newly synthesized, produced dramatic, 24-hour recoveries of patients with pellagra and beriberi that recurred when they lived on their old inadequate diets.

SEVENTEEN-YEAR LOCUST

BILLIONS of 17-year cicadas, longest-lived of all insects, will be emerging from the earth soon over the greater part of the country between the Mississippi and the Atlantic coast, to fill the warm air with their shrillings throughout the month of June. They have lived underground for 17 years, sucking juices from the roots. Those emerging now will mate, produce their eggs and die, and the tiny grubs that hatch from the eggs later in

the summer will dig into the earth to repeat the same strange, hidden life cycle.

The heaviest outbreaks this season are expected in the Tennessee and upper Ohio valleys, with outlying groups ranging from northern Illinois to Cape Cod, and south along the Appalachians into the northern counties of Georgia. This year's crop of 13-year cicadas, southern cousins of the 17-year species, probably will be exceedingly scanty.

There are 17 broods of the 17-year cicada and 13 broods of the 13-year kin-bug, so that every year there are some of them in one part or another of the country east of the Great Plains area. Some of these broods are large and widely distributed, as in the case this year; others are few and scattered, as will be the case in 1941, 1942 and 1943.

The periodical cicada is an insect with a body about the size of the end joint of your little finger, and large, thin, transparent, prominently-veined wings. Near the tip of each wing is a brilliantly orange-colored marking shaped like the letter W, which local prophets always interpret as a sure sign of war. This year's broods come as rather tardy prophets.

Cicadas can neither sting nor bite, so that it is perfectly safe to catch and handle them. The male insects (which are the only ones that sing) will even oblige with a solo as you hold them: you can see the little tympani in the sides of their bodies vibrating rapidly.

The insects are practically harmless to vegetation, since their mouthparts are so feebly developed that they can not feed. The adults live on food stored in their bodies, mostly in the form of fat, during their month or so of above-ground life.

The only mischief they do is to the green twigs of trees, mostly oaks, into which the females thrust their eggs in long rows. Such twigs usually lose their leaves and die, but as a rule cause no permanent injury to the trees. Only when wholesale egg deposition takes place in young orchards or tree nurseries is there any real cause for complaint.

The first white man's observation of 17-year cicadas was recorded in a book printed at Cambridge, Mass., 1669, describing an outbreak that occurred around Plymouth in 1634, as "a numerous company of flies . . . they came up out of little holes in the ground, and did eat up the green things, and made such a constant yelling noise as made all the woods ring of them, and ready to deaf the hearers."—FRANK THONE.

ITEMS

THE advent of low-cost "health" lamps emitting ultra-violet light rays has spurred paint manufacturers to develop paint for walls of rooms which will reflect a large amount of these beneficial radiations. Ordinary paint usually reflects less than ten per cent. of the ultra-violet light which falls on it so that the walls of the ordinary room are merely "traps" for the ultra-violet light which comes from the new lamps. D. F. Wilcock, working in the Basic Science Laboratory of the University of Cincinnati, has developed white interior finishes which now reflect up to 72 per cent. of the ultra-violet light, making it possible to have indirect health ray light for a room.

A SPECIAL ointment to protect the hands of hosiery mill workers without damaging the silk hose they work on was devised by a druggist called in consultation on this industrial health problem. Ordinary ointments or lotions protected the skin of the girls' hands from the strong alkaline solutions with which the raw silks were treated. The fats or oils of these ointments, however, damaged the silk, causing serious losses. The pharmacist, called in consultation by a skin specialist, made up a protective ointment of the vanishing cream type, containing no oil, but with enough acid to neutralize the strong alkaline base used in treating the silk.

IMPROVED ways of dehydrating castor oil so that it can be used as a carrier for paint pigments was reported by F. G. Bessler and J. C. Weaver, of the Sherwin-Williams Company, Cleveland, Ohio, at the Cincinnati meeting of the American Chemical Society. Until recently it was difficult to change the sticky, non-drying castor oil into a pale drying oil by removing part of the water. Drs. Bessler and Weaver reported success in using the dehydrated castor oil to produce rapid drying, high quality finishes without the use of tung oil or perilla oil. Tung oil comes mainly from China and perilla from Manchuria. Excellent color durability is secured by research which seeks to free the United States from the risks of importing much of its paint-drying oils obtained from distant lands now in war zones.

A RECORD of no diphtheria deaths during an entire year has been achieved by thirty-two cities in the United States, according to reports from the local health officers to the American Medical Association. These cities are: Akron, Albany, Canton, Des Moines, Duluth, Elizabeth, Erie, Fort Wayne, Grand Rapids, Kansas City, Kans., Long Beach, Lowell, Lynn, Milwaukee, New Bedford, New Haven, Paterson, Peoria, Portland, Rochester, Scranton, Somerville, South Bend, Springfield, St. Paul, Toledo, Trenton, Utica, Waterbury, Wichita, Yonkers, Youngstown. Some of these cities have had no diphtheria deaths for one or more previous years. Utica, N. Y., leads the honor roll, with no deaths from this cause reported in six years. Decreases in the diphtheria deathrate from all sections of the country are reported and are said to reflect the intensive anti-diphtheria campaigns carried out by health officers with the cooperation of family physicians.

IF sulfanilamide treatment of gonorrhea does not show signs of curing the patient within five days, this chemical remedy should be stopped and another method of treatment started, Dr. P. S. Pelouze, of Philadelphia, declares in a report to the American Medical Association. Sulfanilamide alone "will bring about a prompt cure in from 25 to 40 per cent. of dispensary patients, from 45 to 55 per cent. of office patients and, perhaps, from 75 to 85 per cent. of bed patients," Dr. Pelouze states in his report on treatment of gonorrhea in men. Even in cases it does not cure, sulfanilamide used early in the disease, he said, "almost invariably makes it a milder disease thereafter and enormously reduces the likelihood of serious complications."