

ENGINEERING

World's Largest Power Equipment Taking Shape

BECAUSE of the size of the 1,850,000 horsepower Boulder Dam power project, its generators and equipment are the largest and most powerful ever built.

Already taking form at the Schenectady plant of the General Electric Company are the first two of the seventeen power units to be installed eventually. Each is capable of producing 110,800 horsepower, and each exceeds in size and capacity any similar machine now in operation.

Other large generators include Soviet 104,000 horsepower and Niagara Falls 82,000 horsepower units.

When all 17 generators are installed in the power house below the dam, the muddy waters of the Colorado River will be converting a total of nearly 2,000,000 horsepower into electricity.

Since the total developed water power in the United States in 1933 was estimated at 15,817,941 horsepower by the U. S. Geological Survey, Boulder Dam will be turning out an equivalent of about 12 per cent. of the power now manufactured by 3,337 different electric plants.

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RADIO

Radio Picks Out Selected Programs; Acts As Alarm

DEVELOPMENT of a robot radio which tunes on and off different stations was announced recently by A. Atwater Kent, radio engineer and manufacturer. The device starts and stops automatically, changing programs over a twelve-hour period.

Once set, the device (christened the tuneomatic radio) provides for any combination of programs. It will even turn itself off at night and come back on the next morning to serve as an alarm clock.

It is believed that the apparatus will add to the pleasure and comfort of the radio by enabling a person to pick up a newspaper, select his entertainment for the evening and then forget about dialling for the rest of the time.

The first model shown by Mr. Kent resembles any large all-wave radio except that an electric clock is set in the

front panel. Around the edge of the clock's face are a series of small holes which serve as connecting channels between the time clock mechanism and the tuning circuit of the set.

The latter consists of sixteen outlets in the form of miniature telephone switchboards cords. There are two cords for each of seven stations so that fourteen different programs are provided for. Two extra cords serve for intermission periods.

When the cords are plugged into the holes corresponding to the selected program periods the radio operates automatically, shifting from station to station, program to program and starting and stopping all on schedule. If the self-tuning mechanism is not turned on the set operates like any other.

The device is expected to remove the bother of frequent tuning of the radio and the keeping track of time to make sure that a desired program will not be overlooked.

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ZOOLOGY

Whales Keep on the Move, Lest Water Enter Lungs

THE REASON why whales usually are seen bobbing up and down when they come to the surface of the sea for the purpose of breathing is because they can only breathe with safety when their blow-holes are at some height above the surface of the water. R. W. Gray of Exmouth, England, who has made a special study of the behavior of whales, writes to the British scientific periodical, *Nature*, that only exceptionally, when the sea is very smooth, as in the ice, can one see whales breathe while lying motionless at the surface.

Owing to their shape, writes Mr. Gray, whales usually can only bring their blow-holes into a favorable position for breathing by coming up to the surface obliquely at some speed; as they only get time to take a single breath, they have to repeat the performance again and again. The interval between the reappearances is very short, the animals diving only to a slight depth and progressing quite rapidly, usually in a straight line.

Narwhals are sometimes seen breathing while motionless, particularly in very fine weather. Unlike the whales, they are provided with a subcutaneous chamber connected with their single blow-hole, which may help to prevent water from reaching their lungs.

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IN SCIEN

ZOOLOGY

Crying Baby Bear Sounds Like Human

RANGER Ben C. Miller of the Walton District in Glacier National Park was all set to be a hero when he heard anguished cries coming across Ole Creek as he passed along a nearby trail. After using his binoculars in an effort to locate the person in distress, he was just starting over to investigate fully when the cause of the cry appeared in the open.

An old mother bear came up the trail, accompanied by her two cubs. One was twice as big as the other and could keep up with the mother. The little one was tagging along about fifty feet behind, and every ten feet or so he would emit a tremendous squall, evidently an appeal in bear language for her to slow up.

Even after Ranger Miller discovered the source of the tragic sounds he contends that they sounded like the cries of a person in great pain calling for help. He adds: "Although I'm not real sure, through the glasses it looked to me as if tears as big as baseballs were rolling down his cheeks."

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PHYSICS

Institute Murals Will Shine in Ultraviolet

A GROUP of invisible mural paintings, that cannot be seen until invisible light is turned on them, are now nearing completion in the Franklin Institute Museum, Philadelphia. Charles Bittinger of Washington, D. C., and Duxbury, Mass., is the artist.

When the exhibit is finished, the visitor will enter a small room with apparently plain white walls, and a mantlepiece and empty fireplace at one end. As the white light is extinguished and invisible ultraviolet light is turned on, three paintings in full color will appear.

This will be done by the use of fluorescent pigments.

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CE FIELDS

PALEONTOLOGY

Rare Dinosaur Tracks Found in Pennsylvania

WHERE a dinosaur once trod in Pennsylvania has come to light through blasting for road construction by the Pennsylvania State Highway Department and the observation of Dr. Bradford Willard of the Pennsylvania Topographic and Geologic Survey.

A single dinosaur track in a thin slab of dark red shale of Triassic age was found by Dr. Willard among tons of rock shot down in widening U. S. Highway 111 near New Cumberland. Mud cracks, rain drop impressions and what seem to be impressions of plant stems were found on the same slab.

Last year two other dinosaur tracks were found near Yocumtown, Pa., and one track was found near Gettysburg, Pa. These fossil track discoveries show that dinosaurs lived about 150,000,000 years ago in what is now Pennsylvania.

Dr. Willard has reported his discovery to the scientific journal, *Science*, in the hope that others may watch for similar fossils.

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ARCHAEOLOGY

Cloudbursts Rip Mountain And Reveal Huge Rain God

THREE cloudbursts that ripped the earth from the side of a mountain in the state of Morelos have uncovered a huge carving of the Indian rain god himself in his heavenly home.

Hearing this report from Indians of the region, Senorita Eulalia Guzman, archaeologist at the Mexican National Museum, set off to investigate, and found the story apparently true.

The huge carving of the rain god is nearly 14 feet high and 15 feet wide. It shows a youthful godlike being with garments sprinkled with alternate flowers and raindrops. He sits in a triple vaulted hollow in the sky. Out of this symbolical cave in heaven roll great spirals which may represent loud voices such as those of thunder. From three

banks of cloud overhead come lines of descending rain. Beneath is an alternating pattern of conventionalized raindrops and hieroglyphs standing for "turquoise" or "precious substance."

The carving is part of an archaeological city not heretofore known to scientists. Although the region is Aztec-speaking now, the ancestors of these Indians did not make the carving, for it is in the different art style of Maya-Toltec civilization.

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GENERAL SCIENCE

More Than 7,500 German Intellectuals Are Refugees

SOME 7,500 academic and professional refugees from Nazi Germany are now attempting to create a new existence for themselves in foreign countries, the Emergency Committee in Aid of Displaced German Scholars revealed in summarizing international attempts at rescue. It is declared that "of all classes affected by the National-Socialist revolution in Germany the academic and the professionals have suffered the most."

A High Commission for Refugees Coming from Germany is coordinating the work in various countries. Sixty German scholars have been placed in American institutions of higher learning. More than 1,300 German scholars have been displaced, of whom 600 to 700 have or will shortly emigrate. Between 5,200 to 5,500 professional people have left Germany and 1,500 to 1,600 of the 7,000 German university students forced to quit their studies have sought refuge outside Germany.

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ASTRONOMY

Antarctic Meteor Display Not So Large as October's

COMPARED with usual meteor showers, the display of "shooting stars" on the night of July 12 at 300 per hour reported by radio from Little America, Antarctica, by Dr. Thomas C. Poulter, was remarkable. It did not equal the great shower of October 9 of last year seen from Europe. Then 200 meteors were seen in two minutes by one observer and then the flashes appeared so fast that counting became impossible. Five hundred meteors per minute were seen by another observer.

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CHEMISTRY

New Fadeless Dyes Are Sought By Spectroscopy

NEW DYES, resistant to fading by light and washing are being developed by studies of the colors which they absorb when light is passed through them, Prof. Wallace R. Brode of Ohio State University revealed before the Second International Spectroscopy Conference recently held at Massachusetts Institute of Technology.

By analysing the light absorption of dyes, Prof. Brode is investigating the causes which make dyes decompose. "Apparently it is a photo-chemical reaction," he said.

"We hope to be able to predict from the absorption spectrum of a dye its exact structure. Then we should be able to synthesize dyes and make exactly what we wish," he added.

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ETHNOLOGY

Persia Yields Clues To Cradle of Race

THE LONG sought-for original home of the Indo-European race may have been found through discoveries in Persia by the well-known Swedish archaeologist, Dr. Ture Arne who has returned to Stockholm.

Dr. Arne made extensive excavations at the foot of the Elbrus mountains of Persia, at the Caspian Sea. In an ancient mount at Shah-tepe he found numerous remains of a 5000-year-old town which, probably by a catastrophe or some climatic change, ceased to exist about 2000 B. C.

The town belonged to the Copper age, finely wrought articles of copper such as statuettes, daggers, trinkets, and lamps, having been found by the Swedish expedition. The bulk of the relics, however, consist of beautifully made ceramics painted in bright colors.

About 40 skeletons have been brought back by Dr. Arne. The shape of the craniums of these early inhabitants indicates that they belonged to the earliest Indo-European family.

Human sacrifice evidently was part of the religious rites of the natives of Shah-tepe, and it is thought possible that these discoveries and future excavations in the same district may solve important prehistoric problems.

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