

Questions

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Photographs: Cover, Argonne National Laboratory; p. 258, Dravo Corporation; p. 259, U. S. Army; p. 263, U. S. Navy; p. 272, Bakelite Company.

TECHNOLOGY

Bolivian Tin Smelter

➤ **AMERICA'S TIN** refinery in Texas, a war-time project sponsored by the federal government, may find itself without ore to handle in the relatively near future.

Built to refine concentrates from Bolivian mines, the refinery now faces a loss of its raw materials with a recent decision of Bolivia to construct a refinery in that country.

If there are any important tin deposits in the United States, they are well hidden and so far have escaped detection. A few tons a year are all that are produced in the United States, while 100 tons a year are produced in Alaska. This country, which consumes about one-half the tin mined in the world, needs approximately 70,000 tons of new tin annually.

Bolivia has the only large deposits of tin yet discovered in the western hemisphere. Principal tin producers of the world are Malaya and other Far East countries. The Belgian Congo and Nigeria, Africa, produce much lesser amounts.

Shipping lanes from these distant countries, however, could be easily cut by an active enemy in another world war, if one should come, and the United States would

be forced to rely largely on Bolivia for a metal that plays a big part in any defense program.

In September, 1952, Bolivia took two notable and unprecedented steps relative to its tin industry, a bulletin from the Malayan Tin Bureau states. These steps, it says, are the Bolivian government announcement that it has decided to nationalize the country's three major tin-mining companies, and that it has signed an agreement with an Argentine financial group for the construction of a smelter in Bolivia to produce 99.9% tin metal.

In nationalizing the mines, the government is hoping for a solution to the many political, social, economic and physical difficulties now faced by the Bolivian tin-mining industry.

The ore is found high in the Andes at altitudes where work is difficult. Again, the ore is in irregular veins and is recovered only by underground mining. The ores are complex and present difficult problems in reduction. Transportation is difficult and costly because of the mountainous terrain and the lack of railways or highways.

Science News Letter, October 25, 1952

DENTISTRY

Straightening Teeth Diet

➤ **SPECIAL RULES** on diet and tooth-brushing for the child or grown-up who is wearing appliances to have his teeth straightened have been set forth by Dr. Sidney I. Kohn of Jersey City, N. J.

Absolutely no sweets or starches should be eaten during the first two weeks after the appliances are put in. The no-sweets rule applies during the second two weeks also, though some starches may be allowed then.

The reason for this rule, Dr. Kohn explained, is that bacteria that act upon carbohydrates—sugars and starches—to form tooth-destroying acid show a marked increase after insertion of appliances. When sugars and starches are omitted from the diet, there is a rapid reduction in the number of these bacteria.

Cakes, pies, pastries, cooked cereals, white bread, preserved fruit, flavored drinks, ice cream, creamed foods and candies should be avoided, particularly during the first two weeks the appliances are in the mouth, Dr. Kohn said.

Detergent foods—such as fresh fruits and vegetables—should be eaten at the end of meals by persons wearing appliances because these foods help remove the carbohydrates in food debris that can accumulate around appliances.

The teeth should be brushed regularly and carefully after meals to remove the remaining food debris around appliances.

These present difficulties in tooth brushing. Neither the type of brushing nor the type of brush usually recommended is satisfactory. Patients wearing appliances should be taught to use the tufts at the end of the brush to clean bands, wires, attachments and enamel.

Dr. Kohn recommended that toothbrushes with bristles of equal length should be trimmed so that the bristles create a plane, inclining from the end of the brush toward the handle. The bristles nearest the handle are shortest, about half their original height, while those at the extreme end retain their original length. This type of brush permits the patient to use the end tufts for cleaning the teeth and appliances, and the full length for supporting structures of the teeth.

Science News Letter, October 25, 1952

BIOCHEMISTRY

Two Pituitary Hormones Separated for First Time

➤ **TWO HORMONES** from the pituitary gland, oxytocin and vasopressin, have been isolated in highly pure form and, for the first time, separated from each other, Dr. Vincent du Vigneaud of Cornell University, New York, announced at the symposium on the occasion of the opening of the biochemistry and virus laboratory of the Uni-

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versity of California in Berkeley, Calif.

Oxytocin causes contraction of the uterus and is used to bring on labor in difficult childbirth cases. Vasopressin raises the blood pressure and cuts down kidney secretion. This double function of the hormone had been suspected, but Dr. du Vigneaud's research gives the first conclusive evidence for this. It is the only remedy doctors have for combating diabetes insipidus.

Although these two hormones had previously been partially separated by Dr. Oli-

ver Kamm of Parke-Davis and Co., Detroit, the separation had not been complete and some scientists thought vasopressin was an essential part of oxytocin.

Both hormones, Dr. du Vigneaud reported, are polypeptides made of amino groups with apparently eight amino groups in each. Six of these are identical in both.

Ultimate aim of the research by Dr. du Vigneaud and his colleague, Dr. John G. Pierce, is to synthesize the two hormones.

Science News Letter, October 25, 1952

SURGERY

New Noses From Steers

Cartilage cut from the end of a steer's breastbone has been used successfully in 144 operations during the last four years.

► NEW NOSES, chins, foreheads or other human features can be made from the breastbone cartilage of young steers. The xiphisternal cartilage for this purpose is prepared by Armour Laboratories in Chicago, according to a method developed by Sir Harold K. Gillies, British plastic surgeon.

The breastbone cartilage has been used by Sir Harold in 144 operations during the last four years and also by American surgeons. It is equal, they report, to any human or synthetic implants now in use.

The cartilage is removed from the end of the steer's breastbone immediately after the animal is slaughtered. It is dropped into a sterile solution and next is carefully stripped of all adherent tissues. It emerges from this process as a soft, rubbery, white

half-moon about four by two inches in area and up to a third of an inch thick. After further special treatment, it is packed in a sterile solution in a glass jar ready for use.

The surgeon cuts off as much as he needs to mend a damaged nose or other feature, carves the piece to fit, and leaves the rest of the cartilage for the next operation.

The material does not set up foreign body reactions in the host, takes well, resists absorption and does not curl or warp. Another advantage of the material is its relatively low cost, achieved through elimination of preliminary surgery on the patient or donor to get material for grafting, and also of the hospital cartilage bank for keeping such material from humans.

Science News Letter, October 25, 1952

PHYSICS

Nature Outdoes Bomb

► THE ENERGY in a thunderstorm is equal to 50 Hiroshima-type A-bombs.

The work done against the atmosphere by an average thunderstorm cell has been measured for the first time by Dr. Roscoe R. Braham, meteorologist with the University of Chicago. He finds that one thunder-

storm cell does work equal to 260,000,000,000,000 calories. There are about four to six cells in one thunderstorm. The Hiroshima A-bomb released energy equal to about 20,000,000,000,000 calories.

Nevertheless, Dr. Braham finds, the thunderstorm is a rather inefficient way of making rain. Only about 10% of all the moisture a thunderstorm gathers in from the surrounding atmosphere usually falls to the ground as rain. About half the total moisture never leaves the vapor stage to become water. About 20% which becomes water is re-evaporated in the down-draft of the storm. About 20% is dissipated when the storm breaks up. That leaves only 10% to become rain.

The tremendous amount of energy of the thunderstorm is used to accumulate all this moisture from the atmosphere and to carry it up in an up-draft inside the storm. Fifty A-bombs could not do the same thing, if touched off together, because their energy is dissipated so suddenly. The storm's en-

ergy is dissipated over a period of several hours, thus it has a chance to go to work on the atmosphere.

Dr. Braham's calculations of the energy of a thunderstorm were based on work done under the Thunderstorm Research Project sponsored by the University of Chicago and the U. S. Weather Bureau. They are reported in the *Journal of Meteorology* (Aug.).

Science News Letter, October 25, 1952

Do You Know?

Deaths from tuberculosis cut off an estimated 1,500,000 potential years of life annually.

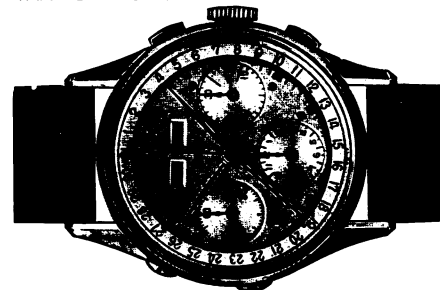
An ordinary wrist watch ticks about 157,680,000 times a year.

A new sugar-free ginger ale is sweetened with a synthetic that is non-fattening.

Except for a close relative in western Mexico, the Gila monster is the only poisonous lizard in the world.

Dry cells can be carried loose in a car's glove compartment or in metal tool boxes without being short-circuited if their positive poles are coated with fingernail polish.

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