

## ENGINEERING

**Coal Pipeline Tests Termed "Promising"**

► A PIPELINE for transporting coal over long distances has been successfully tested and found promising, George E. MacDonald New York engineer, told the American Society of Civil Engineers meeting in New York.

Coal was crushed finely, immersed in water and pumped through the line in tests completed by the Pittsburgh Consolidation Coal Co. It was estimated that such a line linking Cadiz, Ohio, to Lake Erie, more than 100 miles away, might deliver coal \$1.00 a ton less than the \$2.75 per ton it now costs to ship the fuel the same distance by rail.

Mr. MacDonald pointed out that "big-inch" oil pipelines were the engineer's answer to the problem of finding more economical means of mass oil transportation. In their few short years of existence, oil pipelines have probed through the earth until now they form a network of 163,000 miles. Another 10,000 miles are slated to go into operation this year.

Pipelines for natural gas also have grown rapidly. From 1936 to 1951, total gas-pipeline mileage jumped from 55,000 to 118,000.

Science News Letter, October 31, 1953

## TECHNOLOGY

**Auto Oil Cleanses Sludge From Engines**

► AN OIL to keep automobile engines free of damaging sludge, carbon deposits and varnish has been developed by engineers of The Texas Company.

It has a special built-in "detergent" action aimed at clearing materials from moving engine parts that would scar them, and shorten their life. The oil is said to promote efficient operation of some of the new valve-lifting devices now installed in modern auto engines.

The Gulf Oil Company in Pittsburgh has reported that it has developed a new oil for motorists whose cars balk at starting in 30-degree-below-zero weather.

Designed to work where temperatures hover below 10 degrees Fahrenheit, the new oil's improved viscosity permits the engine to turn over easily on cold winter mornings, reducing the electrical drain on the battery.

The oil is said to be fortified against evaporation on warmer days or during hard winter driving. This has been the chief drawback of many lightweight oils used to date in the frigid areas of Montana, the Dakotas, New England states and Canada. Evaporated oil leaves the engine unprotected against heavy wear.

In general, producing oils for use in cold climates is done by dewaxing the oil at a very low temperature. The oil is first diluted, then refrigerated. Wax crystals form in the cold lubricant and can be filtered out.

Additives also are used to keep wax from

forming large crystals, although small crystals will form. Small crystals, however, are not as objectionable as large ones.

Solvent refining provides petroleum engineers with another tool for making cold-weather oil. In this process, the elements in the oil that become gummy at cold temperatures are removed, leaving that part of the oil which is not sharply affected by the temperature.

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## MEDICINE

**Radioactive Gold Helps Heart Complication**

► GOOD RESULTS in the first reported use of radioactive gold injections for cancer patients whose hearts are affected by the disease are announced by Drs. William B. Seaman, Alfred I. Sherman and MacDonald Bonebrake of Washington University School of Medicine, St. Louis, in the *Journal of the American Medical Association* (Oct. 17).

In this particular complication of late cancer, fluid accumulates in the sac containing the heart. In one of the patients reported, this had resulted in an enlarged heart with poor pulsations, blue skin, distended veins and such disturbed breathing that the patient had to sit up all the time.

Within a week after injection of the radioactive gold, the patient had improved enough to leave the hospital. Reexamination 10 weeks later showed her heart had returned to normal size and was functioning well. She had no more of the breathing trouble except a mild amount of breathlessness when exerting herself physically. Ankle swellings had gone away. Four and a half months later she had held this improvement.

The radioactive gold treatment also gives relief of symptoms in about three-fourths of late cancer patients troubled with fluid accumulations in the chest and abdomen. In reporting their cases, the St. Louis doctors point out that the treatment is not a cure for the cancer, that not every patient with fluid accumulations (dropsy in lay language) is a candidate for the treatment, and that it must be given in the hospital where radiation hazards can be guarded against.

Science News Letter, October 31, 1953

## SAFETY ENGINEERING

**Safety Engineering Fails To Pace Technical Gains**

► PROGRESS IN engineering safety has lagged far behind the 20th century's progress in technology, John J. Ahern, Illinois Institute of Technology, told the National Safety Congress meeting in Chicago.

He said advances in the field of safety research lag the farthest behind progress made in other engineering fields.

Colleges should stimulate safety-consciousness in engineering students to help raise safety standards in industry. Each new technological advance, he said, brings on more safety problems.

Science News Letter, October 31, 1953

**IN SCIEN**

## BIOCHEMISTRY

**Antibiotics Make Silkworms Grow, Too**

► SOME OF the antibiotics, so-called mold remedies for germ diseases, can make silkworms grow faster, just as they speed growth of cattle, chickens, and pigs.

However, the faster-growing worms produce less silk. Silk production can be speeded along with growth, however, if enough extra nitrogen from a high quality source, such as the milk protein, casein, is fed with the antibiotic.

Experiments showing this are reported by Drs. M. R. Venkatchala Murthy and M. Sreenivasaya of the Indian Institute of Science, Bangalore, in *Nature* (Oct. 10).

Aureomycin and chloromycetin, they found, stimulated silkworm growth but terramycin, either alone or with amino-acid mixtures to supply nitrogen, did not show any effect on growth or silk production.

Science News Letter, October 31, 1953

## MEDICINE

**New-Old Drug Helps In Pregnancy Toxemia**

► A NEW-OLD drug gives promise of helping control toxemias in expectant mothers, Dr. Edward Meilman of Beth Israel Hospital and Harvard Medical School reports to the *Journal of the American Medical Association* (Oct. 10).

The drug is protoveratrine, an alkaloidal chemical from *Veratrum album*, or the white hellebore plant. A crude preparation from the green hellebore, or *Veratrum viride*, was one of the oldest agents used to treat this pregnancy complication, Dr. Meilman points out. Difficulties in preparing reproducible extracts, among other things, led to the drug being almost abandoned for this use.

Now, however, chemicals from the plant can be obtained in crystalline form, making them more reliable for use.

Dr. Meilman used this new form of the old drug in treating 17 patients suffering from various forms of toxemia of pregnancy. In all cases, he reports, there was prompt control of headaches and eye disturbances, pain in the stomach region, convulsions and high blood pressure.

The drug does not replace such standard forms of treatment as rest in bed and restriction of salt, or sodium. Neither does it attack the cause of the condition. But by reducing blood pressure and relieving other symptoms, it helps keep the mother in condition to carry her baby until it is big enough to have a fair chance of surviving.

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# CE FIELDS

## EVOLUTION

### 300,000,000-Year-Old Animal Gets First Study

► FOR 300,000,000 years the horseshoe crab has been neglected by evolution and zoologists.

One of the most common of living fossils, animals which have resisted evolutionary change for millions of years, its shell is seen by almost every beginning zoology student. Yet no zoologist has ever seriously studied it.

Carl N. Shuster Jr., a zoology instructor at Rutgers University, New Brunswick, N. J., decided five years ago that if evolution wouldn't help the horseshoe crab he would.

Struck by the scientific neglect, the young zoologist set out to trace the natural history and development of *Limulus polyphemus* during his summer vacations and after his classes.

His investigation has not turned out to be easy. At every step he discovers new gaps in the story to be filled by patient scientific study.

The horseshoe crab, incidentally, is not a crab at all. It is more closely related to spiders and scorpions than to its underwater neighbors. It is a frightening sight at first glance with a heavy armored shell, spear-like tail and six pairs of clawed legs. This, however, is mostly window-dressing since the tail is not an effective weapon and the claws are smooth and very weak.

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## NUTRITION

### Protein-Rich Food Out of Cottonseed

► THE LOWLY but protein-rich cottonseed may one day make the grade as a main course at the dinner table . . . at least it will if meat's hard to get.

Tasty recipes using cottonseed as a main ingredient are the result of work at the Chemurgic Research Laboratory of Texas A. and M. College, College Station, Dr. W. W. Meinke reports. Ground to a meal and then fermented with parched wheat, cottonseed turns into a meat-flavored sauce. Passed through a salt solution process and mixed with lactic acid, the seeds yield a cheese-like whey. Roasted like nuts, the kernels become the chief ingredient in cottonseed candy.

Cottonseed is high in protein. With the nation's population increasing and its land reserves decreasing, the use of all plant protein sources becomes highly desirable. Only 40% to 50% of the available protein in plant life is converted in meat consumption. On the other hand, the direct release of plant proteins retains from 80% to 90% of

the available protein for the nation's food supply.

Cottonseed oil has long been used in the manufacture of oleomargarine and shortenings, and small amounts of cottonseed flour are used in bread, cookies and cakes. However, use of cottonseed as an edible product has always been restricted to small amounts because it contains a toxic ingredient called gossypol. Also, the cottonseed meats were affected by a purple discoloration. Now Dr. Meinke has developed methods by which to make the cottonseed thoroughly fit for large-scale consumption.

The final tests of the cottonseed products, of course, will be made only when the public has had a sample of them for judgment.

Science News Letter, October 31, 1953

## BIOCHEMISTRY

### Human Blood Fraction Dissolves Blood Clots

► A NEWLY-ISOLATED fraction of human blood can be used to dissolve dangerous blood clots within the veins, Drs. Eugene E. Clifton and Carlos E. Grossi and Miss Dolly Cannamela of Memorial Center for Cancer and Allied Diseases, New York, reported at the meeting of the American College of Surgeons in Chicago.

The blood fraction is called plasminogen. In trials on dogs, cats, white rabbits and monkeys it rapidly dissolved clots in the veins when the enzymes, streptokinase, streptodornase and trypsin, had failed.

Fear that the dissolution of the clots would free particles that would travel into the blood stream and block the lung veins was not borne out, they said.

The material, thus far, has been tried on human patients only as a local application for cleaning up the debris of wounds and ulcers.

Science News Letter, October 31, 1953

## PHYSICS

### Too Many Electrons Showering Down on Us

► TOO MANY electrons are showering down on us. At least there are too many of these tiny units of electrical charge to be explained by present theories, which hold that electrons are produced by cosmic rays smashing into the atmosphere high above the earth.

"Unknown particles or processes" must be involved, Prof. Kurt Sitte of Syracuse University, Syracuse, N. Y., says. His conclusion is based on studies made this summer at altitudes of 10,000 to 14,000 feet in Colorado.

Dr. Sitte is now a visiting professor at the University of Sao Paulo in Brazil. From January to March of next year, at Chacaltaya, Bolivia, 18,000 feet above sea level, he plans to try to find out just what particles or processes produce the electrons that cannot be accounted for by present theories.

Science News Letter, October 31, 1953

## ENTOMOLOGY

### Grasshoppers Damage Oklahoma Fall Wheat

► GRASSHOPPERS are still causing extensive damage. Fall wheat and alfalfa crops in Oklahoma are being attacked.

In addition, heavy and damaging populations of grasshoppers are reported in New Mexico, Utah and Oregon. The damage in Oregon so far this year has been light.

Reports to the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture show other insects damaging crops throughout the country include the southern masked chafer, *Cyclocephala im-maculata*, a grub worm, which has destroyed some early planted wheat in several Kansas counties.

In Georgia and north Florida, the grass-worm, *Mocis repanda*, has attacked small grain crops, grasses and lawns. The pecan weevil, *Curculio caryae*, has brought crop losses between 50% and 90% to early pecan varieties in Oklahoma. Damage to later varieties is estimated at 10% to 20%.

Arizona vegetable growers are erecting aluminum foil barriers around their fields in an attempt to halt the migration of the salt-marsh caterpillar, *Estigmene acrea*, across the fields. Some damage to castor beans by this insect is also reported near Stillwater, Okla.

Science News Letter, October 31, 1953

## PHYSICS

### Water, Other Liquids, "Torn Apart" by Sound

► SOUND IS being used to "tear apart" water and other liquids at the University of California at Los Angeles.

In a study of the tensile strength of liquids, William Galloway of the physics department induces sound into a fluid-filled glass sphere with a vibrator tuned to the resonance of the sphere. The sounds literally split the liquid apart, causing a cavity or giant bubble in the fluid.

Great pressures are generated around the cavity and when the sound is shut off the "walls" of water around the cavity collapse with tremendous force. Small microphones used in the experiment within the sphere are shattered by the force.

A similar phenomenon occurs from vibrations created by propellers of big ocean liners. The cavities collapse with such force that they make holes in propellers. After prolonged use propellers assume a spongy appearance from this effect.

The process by which the liquids are torn asunder isn't understood. Apparently it is related to the tensile properties of the fluids. It may be that a tiny, invisible air bubble is the basis of the process. When the water is expanded by the sound wave agitation, the air bubble may act like a pinpoint hole in rubber when the rubber is stretched.

In addition to water, benzene and salt solutions have been used in the study.

Science News Letter, October 31, 1953