well be the most fruitful proving ground of public opinion for new body design.

Science News Letter, June 3, 1939

"Dope" Diesel Fuels

ENGINEERS and scientists are studying the increased performance of Diesel engine fuel when it is "doped" with acetone peroxide and ethyl nitrate.

The Dutch scientists J. J. Broeze and J. O. Hinze of the Royal Dutch Shell Laboratories showed that the addition of small quantities of these "dopes" makes the firing of the heavy oil in airplane Diesel engines easier. The molecules of the chemical dopes are easily activated and make the combustion of the charge of fuel in the cylinders occur more easily. Aim of the investigation is to retain the safety features of a heavy Diesel fuel and yet raise its firing characteristics.

Science News Letter, June 3, 1939

MEDICINE

Use Television Techniques To Detect Heart Ailments

A NEW kind of electrocardiograph machine using television principles, which will enable doctors to see the record of the patient's heart action instantaneously without waiting as is now necessary for a photographic film to be developed, has been devised by Dr. George Walker of the University of Kansas School of Medicine.

The familiar wavy line record is traced in bright green by a bright moving dot on a screen which is both phosphorescent and fluorescent. The moving dot comes from a stream of electrons from a cathode ray tube.

The machine is expected to save both time and money in getting records of heart action, important for diagnosing about 40 heart conditions.

It can be operated from any electric light socket in either hospital, office or home. It is not yet available commercially. The principle of this new machine has been adapted to use with the standard electrocardiograph machines now in use. This phase of the work was done by Dr. Graham Asher of the University of Kansas.

The exhibit of these machines, shown by Drs. Asher, Walker and Frank Hoecker, at St. Louis, was awarded a certificate of merit by the American Medical Association.

Science News Letter, June 3, 1939

Portugal rules colonies totaling 26 times its own area.

PHYSICS

Metal of the Future Has Extraordinary Stiffness

Beryllium, Now Very Scarce, Would Revolutionize Industry and Aviation If Ever Found in Large Quantity

WRITE this down in your future book: a metal not one person in ten thousand will ever see in pure form outside a museum and whose name you may never have heard is promising to improve the machines of our industries during the next decade.

Speedier, sturdier and safer airplanes driven by far more powerful motors; cheaper and safer machine tools; longer-lasting springs—these and hundreds of other boons may soon be conferred on twentieth century civilization by this metal.

Its name is beryllium. Though its commercial exploitation goes back not many years and its intensive study in the laboratory dates but to the post-war period, already it has aroused man's cupidity and a bitter international battle for its control, with ramifications reaching into the governments of a half dozen major powers.

It is being put into alloys whose performance makes beryllium a strategic material in the World War that has not yet begun, even though the amounts of beryllium in use must still be measured in pounds instead of tons.

A watch made of two alloys containing beryllium was dropped from an airplane 3,000 feet up. Only the crystal broke; the watch continued to run. Properly used springs made of one of the alloys have never broken or worn out from fatigue. Engine parts made of it can operate consistently at temperatures that would ruin the temper and shorten the life of any material now in use.

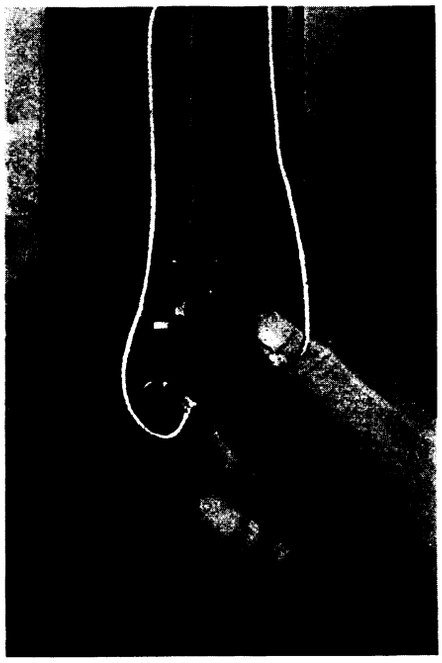
Beryllium is light and exceedingly hard. Added to other metals, it confers on them hardness and strength, turns soft copper into a ruddy alloy as hard as tool steel, with nickel makes an alloy as tough as the toughest steel and much harder. Some beryllium alloys laugh at corrosion as well; they are more rust-resistant than stainless steel.

A Frenchman, Vauquelin, found beryllium in 1798, but because it is difficult to extract from its ore, it remained a curiosity for a century and only the dreamer ever imagined it would some day become an object of painstaking attention. A decade ago, its price was more than $100 per pound of beryllium in the form of a master alloy with copper. Today the four per cent. beryllium master alloy sells for $15 a pound of beryllium—actually about 25 pounds of metal.

Beryllium is the fourth lightest element, only the gases hydrogen and helium, and a still lighter metal whose violent reactions with water make it unusable, lithium, coming before it in the periodic table. Though it is hard and takes a high polish and melts only at a high temperature, it is extremely brittle.

Beryllium copper, containing two per cent. of the new metal and, in some cases, a small percentage of nickel, is the beryllium alloy most widely used so far in the United States.

But in Germany, the giant Siemens-Halske firm has made an alloy of two per cent. beryllium and the rest nickel.



STRENGTH TEST

Beryllium is submitted to tests of tensile strength at the National Bureau of Standards. It is strong, but so little is available that even test samples are below standard in size.