



APPROACHES SPEED OF LIGHT

This new electron accelerator in its glass doughnut-shaped vacuum tube, gives electrons a speed approaching that of light. Dr. D. W. Kerst, of the General Electric Research Laboratory, designer of the instrument, is shown using an electroscop to measure the intensity of the radiation produced.

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Reports from Finland suggested that there may be a fourth series of elements that disintegrate like radium.

A heavy isotope of sulfur, making up about four per cent of ordinary sulfur, was isolated in pure form for the first time.

Elements 93 and 94, heavier than uranium, formerly supposed to have the heaviest possible atoms, were obtained in the laboratory, one of which, it was reported, lasted for several days, while the other decomposed with greater rapidity.

Carbon isotope 14, of which half decays in 1000 years, was obtained by exposing ammonium nitrate to the rays of a cyclotron; it may prove important in biology because of its long life.

Liquids obtained from wood were seen as the raw material for a new chemical industry.

As had happened several times previously, the discovery of element No. 85 was announced, though it was not accepted by chemists, pending further confirmation.

New uses were found for nylon, among them photographic film and cords in tires.

A new plant was opened for the large scale synthetic manufacture of phenol, or carbolic

acid, important chemical of the plastics industry.

A method was discovered by which coal and oil can be made in the laboratory from plant carbohydrates, thus accomplishing in a few hours what has taken nature millions of years.

Glycerine was made from petroleum by a new process.

EARTH SCIENCES

Many Earthquakes Occurred Rumanian Shock was Worst

A severe earthquake caused widespread death and destruction in Rumania on Nov. 10; during the year there were 37 other quakes sufficiently severe to register themselves on distant seismographs.

The U. S. Weather Bureau initiated the making and broadcasting of five-day weather forecasts, based largely on air mass analyses.

U. S. Coast Guard cutters served as "weather ships," taking observations at sea to replace those formerly sent by merchant ships now silencing their radios because of the war.

A violent snowstorm that suddenly struck the

upper Mississippi valley and the Lake states in mid-November caused the death of many duck hunters and sailors and seriously disrupted traffic.

The most severe magnetic storm since 1921 occurred on Easter Sunday, seriously interfering with wire and radio communications.

The nearly complete fossil skeleton of a Uintatherium, giant six-horned beast of 30 million years ago, was discovered in Wyoming.

The practically complete skeleton of a young elephant of Pliocene date was unearthed in Siberia.

Wormholes in fossil wood, a great geological rarity, were discovered in a petrified forest in China.

Great Smoky Mountains National Park was dedicated by President Roosevelt on Labor Day.

ENGINEERING AND TECHNOLOGY

Three-Month Predictions Will Aid Broadcasting

It was found possible to predict three months in advance the best frequencies to use for dependable radio transmission.

Recorded music of orchestra, organ and choir was reproduced with its original tonal range and spatial sense, and a tenfold greater range of loudness.

Coastal-harbor radio stations opened at Wilmington, Charleston, Tampa and Galveston make radio telephone service available to small waterfront along the entire ocean and Gulf coast of the United States.

Direct radio telephone channels from the United States were established during 1940 to LaPaz, Berlin, Berne and Madrid.

The VU, a new unit of sound volume for electrical circuits, was adopted by telephone engineers, broadcasters, and instrument manufacturers.

The Federal Communications Commission permitted the high-fidelity frequency modulated radio to go into use, but held up authorization of commercial television until there was more agreement concerning standards.

Television by radio in natural color, using a single channel, was accomplished.

A television program covering the Republican convention in Philadelphia was transmitted over the coaxial telephone cable to New York and then broadcast by radio.

Simple television apparatus was introduced, making it possible for radio amateurs to experiment in this field.

Television views were transmitted from an airplane to the ground.

New dustless and sliverless copper was developed to reduce short circuits in electric wiring.

New dams in the Pacific northwest gave that part of America the cheapest commercial electric power.

The Pennsylvania turnpike, a 160-mile road without crossroads, was opened between Harrisburg and Pittsburgh.

The biggest steam turbine made since 1930, capable of 80,000 kilowatts, was completed.

New values of the viscosity of steam at high pressures and temperatures were made available.

The largest conveyor belt system carried 1,100 tons of gravel, sand and crushed rock per hour a distance of 9.6 miles to Shasta Dam.

A new electric phonograph was introduced in which reproduction is accomplished with a dancing light beam.

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