

## PHYSICS

**Radio Waves Accurate For Time Signals**

➤ RADIO WAVES can be used as a standard of time accurate to one part in 1,000,000,000, three scientists reveal in *Nature* (Nov. 13).

This is 200 times more accurate than the presently used system, which also depends on radio waves, but those that are in the high frequency range.

The more accurate method, so far only experimental, uses a 60-kilocycle wave. This is reported by Dr. J. A. Pierce of Harvard University, Cambridge, Mass., Dr. H. T. Mitchell of the Radio Experimental and Development Laboratory, Post Office Engineering Department, London, and Dr. L. Essen of the National Physical Laboratory, Middlesex.

The 60-kilocycle wave, although broadcast with only 10 kilowatts of power from Rugby, was picked up by scientists at Harvard University.

Results of their research, the three scientists state, "are clearly of significance in problems of frequency control, international frequency and time standardization and navigational aids based on phase comparison," and are probably of interest in a much wider field.

Science News Letter, December 4, 1954

## ICHTHYOLOGY

**Second Fish of Its Kind In 100 Years, Found**

➤ A REDISCOVERED hybrid fish was reported in the Columbia River, almost 100 years after the first and only other of its kind was found.

A soft-finned, fresh water fish belonging to the family that includes carps, shiners, chubs and goldfishes, the hybrid has no common name. It has been identified as a cross between a Columbia River chub, *Mylocheilus caurinum*, and a red-sided bream, *Richardsonius balteatus balteatus*.

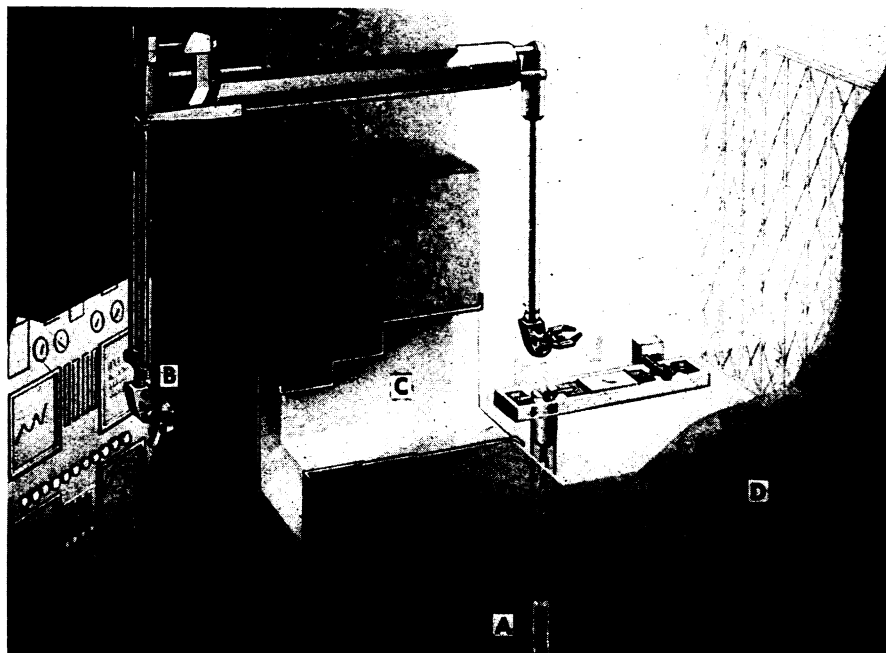
The rediscovered hybrid is described in *Copeia* (Oct. 29) by Dr. George F. Weisel, professor of zoology at Montana State University, who stated that the specimen was caught in the summer of 1952 in the upper reaches of the Columbia River.

The first hybrid was found by a naturalist at Fort Vancouver on the Columbia River during the explorations and surveys made in 1853 to 1855 to find the most practicable route for a railroad to the Pacific.

Dr. Weisel reported that this fish was originally named *Cheonda cooperi*, but upon later examination by scientists it was identified as a unique hybrid. The 100-year-old fish is now deposited in the U. S. National Museum in Washington.

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The apple, now growing over a larger area of the world than any other fruit, is related to the rose, blackberry and strawberry.



**RADIATION LABORATORY "CAVE"**—This artist's sketch shows how the "hot" laboratory of the Esso Research Center will look when completed. "A" pinpoints location of radioactive cobalt "pipe" at bottom of storage well. "B" spots one of the two arms of the mechanical hands that scientists will operate from this area. The lead-glass window, "C", is over three feet thick, while the concrete walls such as at "D" are more than four feet thick.

## PHYSICAL CHEMISTRY

**Make New Polymers**

➤ BY BORROWING chemical energy from radioactive cobalt, one of the most powerful isotopes known to man, polymers may be built up that will revolutionize the way in which petroleum is split for various industrial uses.

Gasoline, once the most important petroleum product, now competes for usefulness with petrochemicals of many kinds.

New petrochemicals were forecast when the Standard Oil Development Company, announcing its new radiation laboratory, stated that polymerization studies would be carried on in the radioactive "cave" of the new building.

Cobalt that has been made radioactive in the reactor of the Brookhaven National Laboratory, Upton, N. Y., will be placed in a pit at the bottom of this cave. It will give off rays up to 4,000 times as powerful as those from a gram of radium.

One gram of radium was, about 30 years ago, the world's total supply of purified and concentrated radioactive material.

Such materials as synthetic rubber, plastics and lubricants are expected to result from action of these radioactive rays on petroleum chemicals. Energy supplied to these chemicals makes them combine into large molecules of the type now being used in the materials for modern living.

No danger from using this strong source of radiation is anticipated, officials of the

Standard Oil Development Company state, because exceptional precautions have been taken to shield personnel, to handle the radiation source by remote control, and to sink the radioactive material below heavy lead shielding when it is not in use.

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## GENERAL SCIENCE

**Dr. Linus Pauling Given Passport**

➤ DR. LINUS Pauling, California Institute of Technology chemist, will be able to go to Stockholm to receive the 1954 Nobel Prize in chemistry. (See SNL, Nov. 13, p. 307.)

The Department of State validated a passport for him and his wife to travel around the world, visiting India and Japan after the presentation of the Nobel Prize in chemistry on Dec. 10.

Dr. and Mrs. Pauling will fly direct to Stockholm from Los Angeles via the polar route. The visits to India and Japan are in response to invitations from fellow scientists, repeated in the case of India because Dr. Pauling could not get Department of State permission to make a trip there last year.

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