

## ENGINEERING

# Atomic Pipe Cleaner

► WHEN A pipe-cleaning "pig" was recently stuck in a new oil pipe-line being constructed in southern Ontario, atomic energy in the form of cobalt 60, a radioactive isotope, was used to free the metal object, adding a new atomic energy use.

A pipe-cleaning pig is a metal and rubber spool, which looks like an axle with two rubber covered wheels. It is the diameter of the pipe which it is cleaning and it is sent on its way through the pipe by liquid or air pressure. Its travel through the pipe-line clears away obstructions. When stuck in a long pipe-line laid underground, it is hard to locate and costly to free.

In building the pipe-line near London, Ontario, numerous "pigs" became stuck in the pipe, but one caused special difficulty. It had been fitted with a metal chain to which was attached a clanking cowbell, so that engineers on the surface could follow its travel as air pressure forced it along underground. When after four days they could not find it, they called on the Canadian government for some cobalt 60, being made at Canada's atomic energy plant at Chalk River, Ontario.

A vial of cobalt 60, the size of a .300 bullet, was sealed in one end of a metal "pig" and the "pig" was shot through the pipe with air pressure. On the surface, engineers followed it with Geiger counter and scintillometer. The air pressure developed in front of the "pig" with the cobalt 60 vial forced the first "pig" to start on its way. Engineers heard the unmusical clanging of the cowbell beneath their feet. Then both "pigs" became stuck, as noted by the Geiger counter and scintillometer. Air valves in front and behind the stuck "pigs" were closed till pressure was built up to 100 pounds. Then all valves were opened. The two "pigs" covered the remaining three and a quarter miles in six minutes, just under 30 miles an hour. They came hurtling out of the pipe-line, the "pig" with the cowbell landing 60 feet away from the terminal, the "pig" with the cobalt 60 soaring to a height of 50 feet and ending its flight out of the pipe 200 yards away. The cobalt 60 vial was still located in the second "pig" and was returned to the Chalk River plant, its job completed.

Science News Letter, November 1, 1952

## PHYSICS

# Synchro-Cyclotron Patent

► A PATENT has been granted for the synchro-cyclotron, one of the most powerful of atom-smashers. The inventor is Dr. Edwin M. McMillan, professor of physics at the University of California.

The synchro-cyclotron gets around Einstein's theory of relativity which works to slow down the particles hurled at atoms once they have achieved high energies.

The patent was granted despite acknowledgment by Dr. McMillan of an independent development of the synchro-cyclotron by a Russian scientist, V. Veksler. News of the Russian development appeared in a letter by Dr. Veksler in the American Physical Review, early in 1946.

The patent was apparently granted because no specific description of the Russian synchro-cyclotron had appeared in any publication available to the Patent Office prior to Dr. McMillan's application.

The University of California, back in 1946, set to work building a 300 million electron volt synchro-cyclotron with the cooperation of the Manhattan District, fore-runner of the Atomic Energy Commission. Dr. Veksler had announced that Russia was building one with only 30 million electron volts of power.

As the energy of particles in an ordinary cyclotron increases, their mass also increases, in accordance with the theory of relativity, and they tend to slow down. This gets them out of phase with the regularly-spaced, high-frequency electrical

pushes they get and thus they slow down even more.

Dr. McMillan discovered that, by increasing the magnetic field of the machine's electromagnet as the particles reach higher energies, he can jerk lagging projectiles up to the acceleration point exactly in time to receive a new push.

With the synchro-cyclotron, speeds of particles approaching the speed of light have already been achieved.

Dr. McMillan received patent number 2,615,129, which he assigned to the Atomic Energy Commission.

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## PATHOLOGY

## Finding Death Clue May Require Pathologist

► THE ONLY key to solution of a mystery shooting may be the evidence found in the victim's body by the doctor trained in pathology, Dr. Lester Adelson of Cleveland declared at the meeting of the American Society of Clinical Pathology in Chicago.

Dr. Adelson is a pathologist in the office of the Cuyahoga County, Ohio, coroner's office.

A complete autopsy, or post mortem examination, must be done in gunshot cases, he said. Bullets can and do perform erratically, he explained. Examination of entrance and exit wounds is not enough for

reconstructing the direction of fire or assuming the probable cause of death. The whole track of the bullet through the body must be explored to see if there is alteration or deflection in its course and the injuries that caused death must be seen.

Some other wounds, such as icepick stabs, often resemble bullet wounds. Home-made guns may produce bizarre effects that will deceive anybody but a careful, experienced observer. For these reasons, Dr. Adelson said, the pathologist is needed to determine whether death was due to gunshot injuries as well as whether the victim was dead of other causes when he was shot.

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