



PEEWEE TEEVEE—Hand-held television camera and back-carried transmitter can serve as reconnaissance eyes and ears for the Army. The 8-pound tactical camera is pointed by Pvt. Craig Heatley of Wading River, N. Y., who carries the 47-pound transmitter on his back, and the walkie-talkie radio is operated by Pvt. James Diestel of Westbury, N. Y. Built-in batteries free the TV cameraman from cumbersome cables. The unit was developed by the Signal Corps Engineering Laboratories, Fort Monmouth, N. J.

MEDICINE

Vaccine Against TB

➤ **NON-LIVING PARTICLES** ground and spun out of live tuberculosis germs have given a new TB vaccine as effective in mice as the B.C.G. live TB germ vaccine.

The new vaccine was developed by Dr. Guy Youmans and his wife, Dr. Anne Youmans, and Dr. Irving Millman of Northwestern University Medical School, Chicago.

Using the vaccine to protect humans against tuberculosis "appears somewhat remote at present," Dr. Guy Youmans pointed out.

"The important thing is that now we may have a key to how immunity to tuberculosis is produced. The substance in the tubercle bacillus that stimulates the body to produce immunity has never been identified, and the nature of the mechanism of immunity to TB is obscure.

"Tuberculosis is still the leading cause of death among infectious diseases, with about 100,000 new cases appearing each year. The death rate has been cut in half, but it still kills 17,000 Americans yearly. It is estimated that 1,200,000 Americans now have tuberculosis, many of them not yet aware that they are sick.

"This new vaccine may give us the tool

we need for learning more about TB and eventually conquering it."

In the new method for producing the vaccine, billions of tuberculosis bacilli were ground up in a sugar solution with powdered glass for 18 hours. This fragmented the membrane cover around the bacteria cells and let the inside contents escape.

The solution of suspended particles then was spun over and over again in an ultracentrifuge at speeds up to 40,000 revolutions per minute. Each time the solution was centrifuged, layers of fluid were separated and removed, until the different sized particles from within the bacteria were isolated in separate fractions.

The tiny particles most successful in producing immunity in the mice were about 50 millimicrons, or 1/500,000 inch, in diameter and were suspended in a solution.

It may be significant, Dr. Youmans said, that the particles have chemical activity similar to some enzymes, and looked and behaved much like mitochondria. Mitochondria are structures inside cells shaped like tiny rods, dots or filaments, and whose functions are important to the metabolism of cells.

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MEDICINE

Foresees Increase in Lung Cancer in Women

➤ A **SIGNIFICANT INCREASE** in lung cancer in women in the next 20 to 25 years was predicted by Dr. Ernest L. Wynder of Sloan-Kettering Institute for Cancer Research, New York, at an American Chemical Society meeting in New York.

At present lung cancer strikes five men for every one woman. This is one of the most striking points about the disease.

In the early 1900's lung cancer was rare and was reported about equal between men and women.

Dr. Wynder studied 105 women with proved lung cancer diagnosed between 1953 and 1955, comparing their smoking habits, occupations and residence with 1,168 non-lung-cancer patients of similar age and background.

Among women with epidermoid lung cancer, 61% were smokers, compared to 29% of the non-lung-cancer patients. The findings, Dr. Wynder said, substantiate findings of certain previous studies that tobacco smoking, particularly cigarette smoking, is the single most important factor associated with lung cancer.

Science News Letter, March 10, 1956

BIOPHYSICS

Cosmic Rays Not Space Flight Bar

➤ **COSMIC RAYS** are not a barrier to space flight, preliminary studies with an atom-smashing cyclotron at the University of California indicate.

They were reported at a Symposium on Space Medicine in Berkeley, Calif.

The suggestion has been made that very heavy cosmic rays, particles as heavy as iron nuclei, in space might cause very significant tissue destruction and present serious hazards to space flying.

Two University of California scientists, Ann Birge and Joseph Sayeg, now at Los Alamos Scientific Laboratory, bombarded yeast cells with particles from the 60-inch cyclotron. Deuterons, nuclei of heavy hydrogen atoms, alpha particles, nuclei of helium atoms, and carbon nuclei were used.

They found that alpha particles with an energy of 3,000,000 electron volts caused the greatest damage, as measured by resulting dead cells. Heavier particles and those with higher energy caused less damage.

Research now underway does not suggest a single heavy particle could cause serious damage by striking a sensitive spot.

The number of heavy particles in cosmic rays is known to be quite small. Heavy nuclei are found mostly above 120,000 feet; at 70,000 feet, they have been broken up by collision with scarce air molecules.

The California scientists believe heavy cosmic ray particles present no hazard to foreseeable space flight.

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