TECHNOLOGY

Iron Exhibit Shows Industrial Growth

➤ ELI WHITNEY'S 1808 musket that introduced interchangeable parts manufacture basic to American industry is one of the prime specimens in the new iron and steel exhibit accepted for the government from Bethlehem Steel Company by Dr. Leonard Carmichael, secretary of the Smithsonian Institution.

Iron tools, weapons and household objects found in excavations at Jamestown, Va., links of the massive iron chain placed across the Hudson during the Revolution to bar the British fleet, the original converter of William Kelly that made steel cheap and widely used, and scale models of the Saugus ironworks dating from 1647 are also contained in the exhibit to be seen by the millions who visit Uncle Sam's museum.

Science News Letter, January 21, 1956

TECHNOLOGY

Only Ten Minutes To Master Army Radio

➤ TEN MINUTES is the time needed for a soldier to learn to operate the Army's newest combat radio, designed to replace transmitter-receivers used as recently as the Korean War.

A total beginner, its developers reported, needs to know only which knobs to turn and when. The radio does the rest by automatically tuning itself and its antenna.

Four times more powerful than other models now in use by the Army, the AN/GRC-19, as it is called in military language, can be air-dropped and set up in a matter of minutes to transmit messages from front lines to rear areas over as much as 2,000 miles.

In addition, the radio can:

1. Transmit and receive messages over mountains and other barriers without relay radios.
2. Send and receive at the same time both voice and radio teletype messages.
3. Be remotely controlled from up to 75 feet away.
4. Be repaired simply by removing a defective part and plugging in a new one.
5. Operate in temperatures from minus 40 to plus 149 degrees Fahrenheit, in rain, sleet or snow.

The new radio has seven channels preset as in push-button models. An operator switches to the one he wants, presses his microphone button and talks.

Stability has been so greatly improved, the Army engineers reported, that crystals are no longer needed to keep the set tuned to a channel.

Engineered for reconnaissance cars, tanks and jeeps, the radio was developed by engineers at the Army Signal Corps Engineering Laboratories, Fort Monmouth, N. J., and the Collins Radio Company, Cedar Rapids, Iowa.

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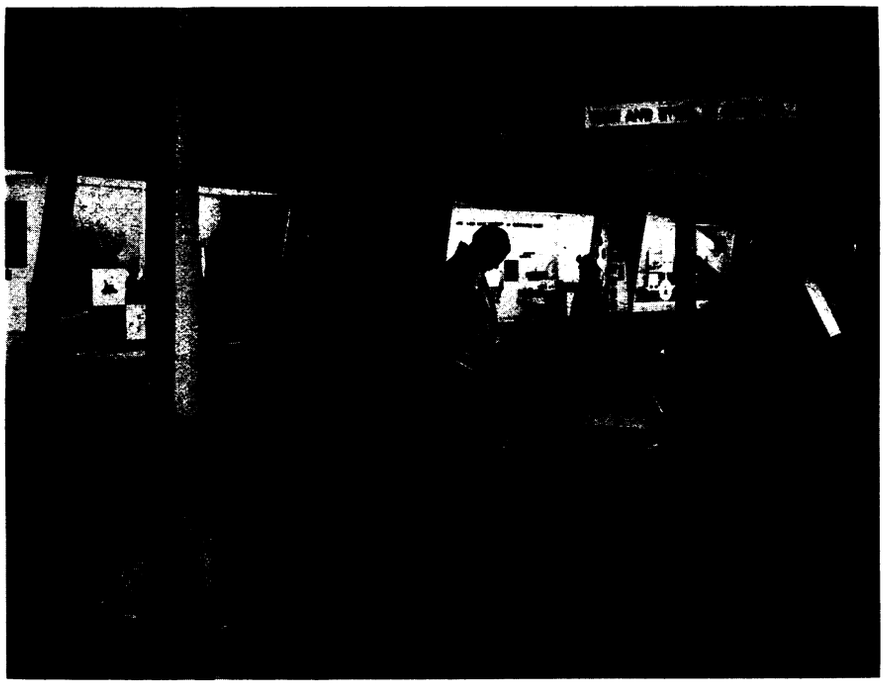

NEW SMITHSONIAN EXHIBIT—The history of iron and steel development in the United States is portrayed in the new exhibit now on display at the Smithsonian Institution. In foreground are links of chain thrown across Hudson River to check the British fleet. In background is the original tilting-type Kelly converter, forerunner of the bessemer process in the U. S.

CYTOLOGY

Photograph "Hot" Proteins

➤ THE FIRST photographic evidence showing how protein, the basic stuff of life, may be manufactured has been obtained by two University of California scientists.

The research required delicate surgery on amoebae, tiny single-celled creatures that measures only one-and-a-half-hundredths of an inch across. Radioactive nuclei, or "hearts," were transplanted from one amoeba to another.

Scientists long have accepted the idea that the nucleus of the individual living cell directs the cell's functions, including the manufacture of proteins. Ultimately, the cell nucleus holds sway over the function of every organism, including man.

Essentially, the Berkeley work strengthened the theory that a complex chemical substance, ribonucleic acid or RNA, is produced in and transmitted from the nucleus into the cell fluid or cytoplasm, where RNA influences the manufacture of protein molecules.

The Berkeley scientists, Drs. Lester Goldstein and Walter S. Plaut, obtained a series of striking photographs using radioactive phosphorus and photographic emulsions.

When amoebae had absorbed radioactive phosphorus and were placed on an emulsion, the location in the amoeba of the "hot" atoms was marked. This is called an autoradiograph.

The work showed radioactive phosphorus had become concentrated in the nucleus and had been incorporated into RNA molecules in the nucleus.

In separate experiments, the scientists performed the surgery. They removed the nucleus, or "heart," of an amoeba, then maneuvered it alongside another amoeba having a radioactive nucleus. The "hot" nucleus was next pushed with a tiny probe into the enucleated cell. This nucleus is about two-and-one-half-thousandths of an inch in diameter, and the operation was perfected only after several months of work.

The scientists found that, when cells were allowed to live for about 12 hours after the operation, "hot" RNA molecules had been transmitted randomly throughout the cell.

Finally, the scientists demonstrated that RNA molecules are not transmitted from the cytoplasm into the nucleus. Moreover, there was no evidence of the "hot" RNA being broken down in the cell fluid, thus indicating it is used in laying down protein molecules.

The work by Drs. Goldstein and Plaut, reported in the *Proceedings of the National Academy of Sciences*, was supported by the American Cancer Society and the U. S. Public Health Service.

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