

PHYSICS

Science Fights Crime With New Inventions

FROM a prison in Illinois, a radio laboratory in Connecticut and a lock firm in Chicago come the newest aids in crime prevention and detection.

Gun smuggling at Illinois State Penitentiary has reached a new low since the latest magnetic detector has been installed to "search" convicts and visitors alike as they pass through normal-looking but highly sensitive doorways.

All manner of metals like iron, steel or nickel which have magnetic properties change the invisible but ever present magnetic field of the concealed apparatus and ring a warning bell if present. Two installations are now being tested; one in a special doorway through which all visitors must pass and a second within a commonplace-looking table on which all packages are laid.

Caught a Buttonhook

First victim of the device was Thaddeus Johnson, negro trusty who "happened to have" a buttonhook within the lining of his jacket.

The Paul W. Koch Company of Chicago, who make the device, point out other applications of the apparatus. Candy, for example, can be inspected at the factory for the rare possibility of a bit of metal inside a piece. Expensive lawsuits resulting from people who claim to have broken teeth in this way may be headed off at the source.

Other uses, it is claimed, might include the device as a signal of the approach of an automobile at a filling station. Or an estate might be guarded by detecting a motor car coming up the private highway. Similarly the lighting system of a roadway sign could be controlled by the mechanism. Late at night when automobile travel is infrequent the illumination of the sign would be off. As a motor car approached, however, its magnetic presence would turn on the lighting system until it passed.

The radio home-guarding device is an application of what was once a nuisance to the early users of radio sets. Remember how a program would often fade when the hand or body came near the multitude of dials? The fading was caused by the electrical capacity of the

body which changed the tuning characteristics of the set.

Using this principle, radio engineers at New Haven, Conn., have just developed an "electrical curtain" which can create a sensitive zone around a home, detect the presence of any unwanted intruders and thus prevent crimes of the character of the Lindbergh kidnaping.

The heart of this kidnap alarm system is a radio set which, when turned on, creates a radio field around its antennae, or aerials. This field is sensitive to the approach of the human body.

When a person gets within a certain distance of the aerials—and that distance can be regulated within a certain margin, a circuit is broken, an alarm sounds, and flood lights make the yard and walls of the house as bright as day.

The aerials go from the central mechanism to all of the apertures to be protected. They are passed around the sills of windows and around doorways.

Two of the biggest problems of the inventors were overcoming the effects

of lightning and rain, but they claim they have done it. They worked out the differences between the disturbances caused by rain, lightning, and the human body, and adjusted their device so that only the human body would affect it. A St. Bernard or Great Dane dog might, however, set the thing off.

Methods were developed to hide the controlling switch, to make it possible for occupants of a house to open their windows without disturbing the alarm, and if home owners fear their power lines might be cut, the system will work on an auxiliary storage battery.

Insurable Lock

Latest of the burglar-proof locks comes from Chicago, where tests at the Underwriters Laboratories and the Cook County Jail disclose that the lock is also drill, force, and grip-proof. Moreover, its key is said to be copy-proof. Lloyd's of London will give you a \$100 insurance policy with one.

The lock is four times as complicated as ordinary locks, for its key has four wavy edges to activate four sets of tumblers instead of one as in ordinary locks.

Every purchaser of the lock is registered and only by forwarding a registry card can a duplicate key be obtained.

Automobile manufacturers are investigating the new lock possibilities to prevent auto thefts. Criminals easily



PICK-PROOF LOCK

Officials of Chicago's Cook County Jail watch Ed Stanley, inmate, pick sample locks with a professional "jigger gun." A new lock just invented and insured by Lloyd's of London for \$100 was the only one which stumped Cook County's lock-picking experts. Tested by the Underwriters Laboratories, the new lock is found to be drill-proof, grip-proof, force-proof and has a key which is copy-proof.

obtain code numbers and get duplicate keys on motor cars. A copy-proof lock whose keys can be obtained from a central manufacturer after scrutiny of credentials should, it is hoped, reduce crime. While figures vary, police officials have good reason to feel that a majority of burglaries are committed with the aid of stolen cars.

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INVENTION

Razor Blade That Lasts Six Months Shown

A RAZOR blade that lasts six months, a piano an invalid can play in bed and radio for the deaf are the features of this year's British Industries Fair now in progress at London's two largest exhibition arenas—"Olympia" and the "White City."

The razor blade which lasts six months is exhibited by an American, Alfred Schmidt of New York City. Its blade consists of five feet of stainless steel ribbon wound up like a watch spring. A twist of the knob brings a new section into place for shaving.

The "invalid" piano makes it possible for a bedridden person to play the instrument providing he or she can be propped up just a little. Secret of the device is a highly-extensible and adaptable keyboard which comes out over the bed to the hands of the patient.

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COSMOLOGY

Man Just an Accident Says Sir Arthur Eddington

THE universe was apparently designed for other purposes than man, Sir Arthur Eddington, Cambridge astronomer, concludes in his latest book (*New Pathways in Science*—Cambridge U. Press).

Admitting that the scientific picture of the universe misses the point in that it does not include the senses, beauty, morality, the presence of God, etc., Sir Arthur nevertheless emphasizes the idea that man is an accident.

Matter normally collects in big masses with excessively high temperatures, but, he said, "by a trifling hitch not of serious consequence in the development of the universe some lumps of matter of the wrong size have occasionally been formed."

PHYSICS

Scientists May be Searching Vainly for Negative Proton

ALTHOUGH perhaps vainly, because they live in the wrong part of the universe, scientists are hunting for another fundamental particle—the negative proton—out of which atoms, and hence all matter, may be constructed. To explain and simplify present concepts of how the cores of atoms are composed which need protons, electrons and neutrons to fill the picture, scientists hope to find the negatively charged counterpart of the positively charged protons.

This, in substance, is the conclusion of Prof. George Gamow, world-famous Russian scientist, now visiting professor of theoretical physics at George Washington University, Washington, D. C.

Dr. Gamow who first predicted the levels of energy now found within the atom nucleus also predicted such negative protons still to be found.

Asked at the meeting of the Chemical Society of Washington why the negative proton is still unfound in spite of sensitive experiments to find it, Dr. Gamow said:

"The search for the negative proton is difficult because man and the planet

on which he lives may be in the wrong part of the universe. We live in a world where protons and electrons exist. Yet if the universe as a whole is electrically neutral there must be other regions and worlds where the opposite is true; regions where negative protons and the newly-discovered positrons make up atoms.

"One can think," he continued, "of the splitting of some giant star into two parts. One component might be like our sun and its planet earth. The other half might have charges of the opposite sign. The first part would be a region like that found on earth where protons and electrons predominate. The latter might be the negative proton world."

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PSYCHOLOGY

Long Radio Blurbs Hard to Remember

HOPE for radio listeners who are bored by long detailed advertising announcements comes in the report of Drs. F. H. Lumley and C. H. Calhoun, of Ohio State University, that short radio talks with few ideas are remembered best.

Long lists of addresses, prices, telephone numbers and facts about merchandise cannot be remembered by the average listener and speaking slowly will not help much to "put them over," experiments conducted with 946 grade and high school children revealed. The results are disclosed in the current issue of the *Journal of Applied Psychology*.

Most familiar words were used in the tests, and memory was tested immediately after presentation. The average number recalled by each child ranged from 2.1 words for third graders to 4.7 for high school seniors. They remembered the same number of words from a list of six and from a list of ten, it was found.

If radio messages are to be remembered, it appears to be more important for the advertiser to limit the number of ideas included than it is for the announcer to speak slowly. Slow speech seemed to make memory easier for the

These lumps, one of which is the earth, lack "the purifying protection of intense heat or equally efficacious cold of space."

"Man is one of the gruesome results of this occasional failure of antiseptic precautions," Sir Arthur said.

The universe will end in "one stupendous broadcast" and will come when all matter is dissolved.

"About every 1500 million years this ball of radio waves," Sir Arthur explained, "will double its diameter and will go on expanding forever. I may describe the end of the physical world as one stupendous broadcast."

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