TECHNOLOGY

Tappers Called Ingenious

House investigating committee cannot show some of the devices developed by professional wiretappers. The equipment is similar to secret military devices.

➤ PROFESSIONAL WIRETAPPERS have developed equipment for their trade so advanced and ingenious that some systems are similar to secret military devices.

William Foley, chief counsel for the House Judiciary Subcommittee, now investigating the wiretap problem, said this poses a problem for the congressional investigating group holding open hearings.

Some of the equipment, although developed by the commercial wiretappers, cannot be shown for security reasons.

About half a dozen large professional organizations in the country specialize in wiretapping, he told SCIENCE SERVICE. They have devices that "shocked" Mr. Foley when he saw them perform. These systems defy detection. The station where the conversations are monitored can be as far as a half mile away.

The outfits that use these and other devices that resemble security-cloaked systems do not operate illegally, he pointed out. They do such jobs as inter-office taps requested by the firm.

Organizations that specialize in such work may use ultra-modern equipment, but engineers point out that anybody with a smattering of electronic theory and some knowledge of telephone circuits could make an effective tap. All that is needed is some wire, a condenser, a resistor, an amplifier and earphones. These are common, inexpensive items.

Physical contact between the tap wire and the telephone line is not necessary, they say, since the electric pulses can be picked up by merely placing the tap line close to the telephone wires. Even the crude direct contact taps produce no clicks, phhts or other audible evidence if the tap is done carefully and with the correct equipment.

Physical inspection of the telephone line is the only reliable method of making sure that no one is listening in.

The common places for taps are at the telephone receiver, along the wire that goes from the house to the terminal box outside, the terminal box itself, and the several bridging points where additional lines are added to the cable. At the first three places, the tapper takes a chance of being seen laying his line. But there is not much danger since he can impersonate a repairman to gain access to these points.

To tap a bridging point, where sometimes thousands of individual telephone lines are connected to numbered posts inside the box, he must know the numbers identifying the line he wants. This can be learned by impersonating an employee and calling the telephone repair office for the information.

The theory of tapping is basically simple. Current, pulsing to the sound vibrations of the voice, passes through a pair of wires in a cable that eventually leads to the main telephone office. The tappers must pick up the fluctuations in this current without interfering with its flow. This can be done by connecting his two wires directly to the two from the phone he wishes to tap. In this case a resistor is used in the tapper's line so that it will not draw off too much current. Now he has the same current flowing in his circuit in a weaker form which can easily be amplified and led into earphones.

The inductive tap, in which there is no direct contact between the tapper's wires and the telephone wires, is based on the principle that when one wire is placed near another it picks up fluctuations in current.

In either of these types of taps, the monitor need not be near the house. The conversation can be broadcast over a small radio transmitter from the basement of the house or the terminal box and picked up blocks away. This, however, would be an illegal radiotransmission.

Tapping, in itself, is not a crime, according to the Federal Communications Act of 1934, which stipulates that "no person not being authorized by the sender shall intercept any communication and divulge or publish" it. Thus to convict a person of this violation the prosecution must establish that a tapper told a third party what he heard. Mere tapping is just a misdemeanor in most states, Mr. Foley said.

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AGRICULTURE

Photo Chemical Proves Effective Weed Killer

➤ A LITTLE known darkroom chemical, aminotriazole, has been found to be an effective weed killer.

Previously used in the manufacture of photographic film, preliminary field tests reported show that the chemical is capable of destroying weeds, ranging all the way from quackgrass in corn and Canada thistle in pastures to poison ivy and some oaks.

Non-poisonous to humans and animals, aminotriazole kills weeds by interfering with their chlorophyll supply and starving them to death. In addition to its weed-killing potential, the chemical is equally effective in causing the leaves of cotton plants to drop off to make picking easier.

Discovery of the photographic chemical's use in agriculture was made by William Allen, chief agricultural formulating chemist of the American Chemical Paint Co., Ambler, Pa. The company will market the herbicide this year under an experimental label and the trade name Amizol.

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BOTANY

Diet for Home Plants

➤ PLANTS USED to decorate the home can be made to look better, if they are put on the right light and water diet.

In a series of experiments with 43 popular indoor plants, Dr. O. Wesley Davidson of Rutgers University, New Brunswick, N. J., found that plants can be "trained" to remain attractive when put on a strict water and light diet.

The water training or adaptation, means keeping the soil "moderately" dry, the research specialist in floriculture said. Double pots with moss in between was found to be an effective method of giving the plants only a small amount of water.

The light diet was based on 16 hours of artificial illumination a day. Fluorescent and incandescent light combined give the most desirable results for keeping leaves lustrous and maintaining slow growth.

The 43 plants, all of which were kept on a near-starvation water diet for 20 months, fell into three groups, depending upon the amount of light intensity each needs.

Seventeen plants, termed the hardiest, require from 15 to 25 foot-candles of light. These include Dumb-cane, three varieties of corn plants, two Chinese evergreens, and four kinds of Philodendron vines.

Sixteen other home plants survive looking their best with medium light intensity of from 25 to 50 foot-candles. Included in the second group were three more Chinese evergreens, a Diffenbachia, three varieties of Watermelon Begonias and two more Philodendron vines.

The last ten of the plants tested require from 50 to 100 foot-candles. These include three kinds of Ficus plants, cousins to the fig plants and India rubber plant, and two ivies, English and Maple Queen.

The foot-candle output per watt, it is pointed out, is much higher for fluorescent lights than for incandescent lights. Meters are available for measuring the intensity of artificial illumination in foot-candles.

Dr. Davidson also found that the use of fertilizers for indoor plants should be rationed along with the amount of light and water. No more than one-third the amount of fertilizer for the same plant growing outdoors is required for keeping the indoors inhabitants from becoming ungainly.

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