

## TECHNOLOGY

# Dial 'F' for Future

**Talk with a computer, direct-dial anywhere in the world, answer your phone from the other end of the house, dial instructions to your phone to transfer all your calls to another number.**

► Imagine picking up your phone, pushing a few buttons and chatting with a person in Madagascar who cannot speak your language. Yet you hear him in English and he hears you in Malagasy.

Or imagine Congressmen seeing and hearing the action on the floor of the House as it happens—and even voting on issues—without leaving their home states.

And how about carrying on a conversation using brain waves that are transmitted and received by telephone faster than you can form words to express the thoughts?

These are only a few examples of the outlandish thinking going on among communications engineers—and, they say, it is all possible.

Some exciting—though less fantastic—ideas in telephones will soon be used by all of us.

Already a television-telephone hook-up is operating between New York and Washington. (Rate: \$16 for three minutes.) Chicago is also on this hook-up.

## Pushbutton Phones

Telephones with pushbuttons instead of dials are gaining popularity, especially in Europe. You can also buy a telephone with a loudspeaker, through which groups of people may talk and listen.

Frequently called numbers can be put on punch cards and inserted into a time-saving gadget which dials them automatically. Still in the experimental stage is a system that allows you to answer the phone even if you are rooms away from it. The system consists of a fixed stand which holds the main phone, a lever to raise and lower the phone buttons, and a cordless pocket-size extension carried by the user.

When the telephone rings, the user's device buzzes. He switches on the remote unit, which activates the fixed phone, enabling the user to communicate with his own telephone by radio.

The device has a range of up to two miles. For longer ranges, such as those required by the police or the military, other versions have ranges of up to 25 miles.

In cases where still greater distances are needed, a person will be able to link the device into mobile phones, which already are on the market.

Advances in switching systems have been remarkable. In 1915 it often took more than five minutes to complete a call; today a call, including dialing, goes through in less than half a minute.

The latest electronic switching system, now being tested, offers the following new services:

**ABBREVIATED DIALING**—You can reach frequently called local or long-distance numbers by dialing two to four digits instead of the usual seven or ten digits.

**DIAL CONFERENCES**—You can set up a telephone conference by simply dialing the other conferees one after another.

**ADD ON'S**—You can bring a third party into a conversation by just dialing him.

**VARIABLE CALL TRANSFERS**—If you must leave your phone, you can dial a code and the number of another nearby phone. This will cause incoming calls to be transferred to the second phone.

**FIXED CALL TRANSFERS**—You can arrange to have all incoming calls switched to an alternate nearby telephone.

**CALL WAITINGS**—The system can signal while you are using your telephone to let you know that another call is trying to get through to you.

This switching system is being installed on a limited basis in New York City, Washington, D.C., and Norfolk, Va. By the year 2000 it is expected that it will replace all electromechanical systems.

The result of 10 years of research and development, the No. 1 Electronic Switching System (ESS) has the flexibility for future additional services not even dreamed of yet.

The new system uses "stored program control," by which instructions for providing services and processing telephone calls are stored in computers with large-capacity magnetic memories.

New services can be provided by simply removing magnetic memory cards and rewriting the information on them. To make such changes in present-day electromechanical switching systems, electrical circuits often must be rewired and equipment changed.

In addition to the new No. 1 Electronic Switching System, intended for use in central telephone offices, the Bell System has also introduced No. 101 ESS, a smaller system designed to serve businesses as private branch exchanges.

The smaller systems are now in service in Florida, Illinois and New York City.

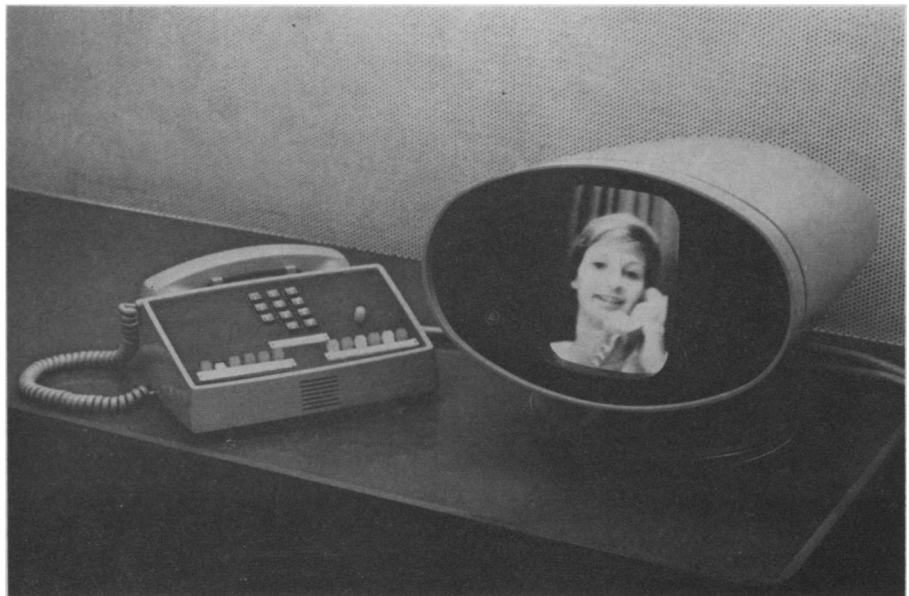
## Wrist Phone

Work is also going on to miniaturize the phone itself—perhaps so much that someday you will be able to strap it to your wrist, Dick Tracy style, and make calls anywhere—no wires attached.

By the year 2000, distinctions between local and long-distance dialing will disappear. You will be able to dial directly any of the world's telephones, which are estimated to reach 1.2 billion by the end of this century.

Use of data communications by telephone will increase. For example, you may someday do your banking by telephone. Checks

*(Continued on p. 142)*



American Telephone and Telegraph

**TO BE SEEN OR NOT**—The experimental PICTUREPHONE system has a control console with buttons to make calls and to control the video screen. A person using the new system can control whether he wants to be seen, whether he wants to see himself or the other person, or whether he wants a darkened screen.

## Dial 'F' for Future

(Continued from p. 134)

could be written in magnetic ink, to be read by machines, which in turn would immediately make the necessary adjustments to your bank records.

The filling of store inventories by Dataphone will be commonplace by the end of the century, predicts Frederick R. Kappel, chairman of the board of American Telephone and Telegraph Company.

He foresees machines taking inventory at the close of business each day and calling another machine at the warehouse. A truckload of the needed goods could be on its way the same night.

A housewife could lift a can of tomatoes from a store shelf, and simultaneously, through a series of machines, someone—or some machine—somewhere would plant a tomato seed.

## Dial the Oven

Your telephone may serve as a master control for your house to answer the door or to control appliances, Mr. Kappel believes. You could cook food or turn on the lawn sprinkler or coffee pot even from miles away. You would simply dial your home, speak a code, and the standing rib roast would be underway.

Work on the laser holds great promise for telephone-type communications. Enor-

mous amounts of information in the form of electrical pulses can be sent on a single beam of intensified light over astounding distances.

Dozens of improvements and innovations on the laser have poured from research laboratories, but much research and development stands between today's laser and its ultimate potential.

The big job is to find how to control the laser itself. Communications would require adequate means of putting telephone, television or data signals on the carrier, or light beam.

Also needed is a way to amplify the signals. This means finding efficient modulators, detectors and amplifiers to operate at the extremely high frequencies characteristic of the laser.

Another problem to be solved is how to transmit light beams over long distances and still get clear signals. It is especially difficult to do this through rain, snow and fog.

There have been some strides in these directions. Researchers have found materials that are sensitive enough to be useful in modulators and detectors. They have discovered ways to increase the power of the laser. And they are studying ways to transmit a laser beam inside a shielding tube so the beam will not be seriously affected by the earth's atmosphere.

European telephone systems regularly supply customers with unseen interpreters if needed, but recent research has shown that the human interpreter could be replaced with a computer that has a human-like voice.

At Bell Telephone's research plant in Murray Hill, N.J., experimenters are learning to make computers talk in life-like fashion.

This knowledge is already being used to

give up-to-the-second stock quotations automatically over a special phone number in New York.

Who knows, some day you may be able to pick up a phone and chat for hours about all manner of things with a computer. That is another of those wild ideas that phone engineers just cannot seem to hang up on.

• Science News Letter, 88:134 August 28, 1965

## Nature Note

### Everglade Kite

► THE DRYING LAKES and marshes of the Everglades in southern Florida are causing possible extinction of another rare bird—the hawklike Everglade kite, *Rosstrhamus sociabilis*.

There are only about 15 of these birds left in the United States, and most of them are at the Loxahatchee National Wildlife Refuge. Here they live almost entirely on a single species of freshwater snail (*Pomacea*, the apple snail).

The kite has an especially adapted long hook on its bill for eating this snail. The bird holds the snail quietly in its talons until the animal comes partly out of its shell, then spears it with the tip of its bill and pulls it all the way out. Since much of the scarce water of that area is diverted to man's use, the snails are dying out and the kites are therefore losing their only source of food.

Everglade kites have wider wings and tails than other kites. They fly steadily at low elevations with their heads at right angles to their bodies, searching the marshes for snails.

The adult male is dark gray or black, with a white patch at the base of its square tail. Its feet, eyes and part of its curved beak are red.

The female is brown, heavily streaked with dark lines over its eyes. These birds show surprising tameness.

Kites are members of the Falconiforme order of birds, also known as birds of prey. Birds of this order, which include vultures, hawks, and eagles, are usually skillful flesh-eating predators, built for quick maneuvering with strong wings, a hooked beak, sharp talons and keen eyesight.

• Science News Letter, 88:142 August 28, 1965

## SILICONE HIGH TEMPERATURE PAINT

New one coat High Temperature paint meets household, industrial, automotive needs. Withstands up to 1200° temperature. Won't flake, blister or peel. Stays bright. Insulates. Protects. Made in 5 colors, available in 16 ounce spray container, pints, quarts, gallons and bulk.

For Complete Details and Prices Write:

### R C INDUSTRIES INC.

Box 356, Medina 16, Ohio Phone (216) 725-4144

## YOUR SKIN AND ITS CARE

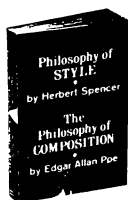
By H. T. Behrman, M.D., and O. L. Levin, M.D. Two dermatologists give you the up-to-date scientific facts. They tell you in detail exactly what to do to beautify and improve your skin, how to avoid or correct skin disorders, and how to deal with many skin problems as: Daily care of the face • allergies • cosmetics • pimples • blackheads • acne • whiteheads • cysts • boils • oily skin • dry skin • chapping • poison ivy • cold sores • hives • superfluous hair • ringworm • moles • birthmarks • scars • warts • tumors • skin cancer • excessive sweating • etc., etc. "Accurate, unvarnished story of practical skin care." Connecticut State Medical Journal. Price \$3.95 Postfree • 5-day Money-Back Guarantee EMERSON BOOKS, Inc., Dept. 545-P, 251 W. 19th Street, New York 11.



Largest Distributors of new Govt. Surplus Balloons in the USA. Inflate with air or gas. Fun at the Beach, Water Sports, etc., Flying Advt. visible for miles. Terrific for attracting crowds at Openings, Fairs, Roadside Stands, Gas Stations, Sports Events. Durable Neoprene Rubber. Guaranteed new. Plus 25¢ hdlg. No C.O.D.

2 ft. (Beach Ball) size	5 for \$1.00
4 ft. size	2 for \$1.00
8 ft. size	\$1.00 each, plus 25¢ hdlg.
16 ft. size	\$3.00 each
24 ft. size	\$5.00 each

NOVEL PROD. CORP. 31 SECOND AVE., Dept. 1018 NEW YORK 3, NEW YORK



## WRITE FOR MONEY!

Enrich your style through Herbert Spencer's and Edgar Allan Poe's classic principles that have influenced many of the world's great authors. Indispensable for writers eager to get published! Send \$1.00 to PAGEANT PRESS, 101 5th AVE., N. Y. 3, Dept. SN.

## LANGUAGES? Easy!

Listen & Learn. Only course designed for travel, everyday life. 3 12" records, full of practical phrases, English & language recorded. Full manual with record text, phonetic transcription. Separate sets: Spanish, French, German, Italian, Russian, Japanese, Portuguese, Greek. \$5.95 each. Money-back guarantee. Dept. SNL, Dover, 180 Varick St., N.Y. 14, N.Y.

## MICRO-ADS

Equipment, supplies and services of special interest to scientists, science teachers and students, science-minded laymen and hobbyists. 25¢ per word, payable in advance. Closing date 3 weeks prior to publication (Saturday). SNL, 1719 N St., N.W., Washington, D.C. 20036

BINDERS FOR SNL—BUFF-COLORED BUCKRAM. Snap-in metal strips hold 52 copies. \$4.00 pp. Send order with remittance to Science News Letter, 1719 N Street, N.W., Washington, D.C. 20036.

BOOKS ON LICHENS, FERNS, MOSSES, COMPREHENSIVE list. Lewis, 2510 Van Ness Ave., San Francisco, Calif. 94109.

GIANT SEQUOIA TREE SEEDS AND PLANTING instructions 25¢; Century, Box 94, Belmont, Calif.

SURPLUS OPTICS-ELECTRONICS CATALOG. 72 pages 20¢. Meshna, Nahant, Mass.

TO SEE AND EXAMINE SOME OF THE NEWEST, unusual starches made from corn, along with corn kernels, ask for Things of Science kit, #297-A on Corn By-Products. Send 75¢ to Science Service, 1719 N St., N.W., Washington, D.C. 20036.