

## Technology

Ivars Peterson reports from Columbus, Ohio, at The Third National Symposium on Human Factors and Industrial Design in Consumer Products

### A telephone for all people

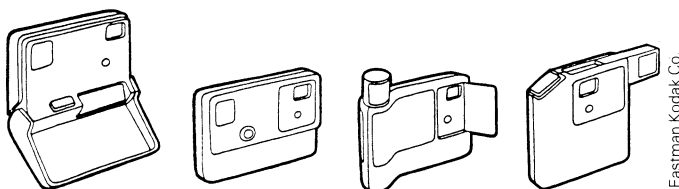
Most people take the telephone for granted, but for some, it is neither convenient nor easy to use. The telephone is one example of a mass-produced product that provides only token accommodation to variations among men, women, the elderly and young. "The human factors and industrial design professions have accepted the idea that a product is well designed if it accommodates 90 percent of the user population," says Thomas G. Cannon, president of Basic Telecommunications Corp. in Fort Collins, Colo. However, "failure to provide for the needs of 10 percent of the consumer population in the design of products works a severe hardship on special populations such as disabled persons and in many cases creates significant safety hazards when individuals who fall outside the accommodated range attempt to use such products."

Cannon's company now produces the first product to use a microprocessor to meet the needs of all severely disabled persons: the AbilityPhone terminal, a programmable telephone matched to the needs of the user. Extensive research into problems encountered by disabled persons in using standard telephones identified necessary and desirable features. One is the desirability of providing for adjustment in display and keyboard angle. Keyboard controls are color-coded and operable by various prosthetic devices, and surface textures minimize glare. The user can select, for example, the amount of time during which the user may press a key more than once but make only one entry (important when involuntary movements like muscle spasms occur), the amount of time that items requiring a user decision remain on the display, and the ring frequency. The terminal can also control lights, electric door locks, and the radio and television. It can even be used as a calculator.

### Factoring in a camera's human element

The disc system of photography, introduced earlier this year by the Eastman Kodak Co., was the result of a four-year development program that included extensive human factors research. The project, aimed at achieving decision-free photography and reducing the number of poor photographs taken, involved 51 experiments, 2,227 subjects and 18 researchers. Initial research looked at when people took pictures and the factors that influenced photograph quality. Camera shake, for example, turned out to be the second most common problem for 110-size camera users. The researchers tested many different camera models to determine the relative importance of camera shape, shutter speed, shutter release location and other factors. One result was an electronic rather than a mechanical shutter release.

A key decision coming out of early research was to use a new glass lens with a short focal length. To record faithfully the small image produced by the lens, a flat, thicker film was required, but it was difficult to roll. A rotating disc carrying the film proved to be the best medium. The camera was designed around this requirement and to avoid problems identified in the human factors research, like "finger-in-front-of-the-lens" (or flash). About 63 different camera configurations were tested. One feature clearly rejected by the study subjects was a pop-up flash. Sophisticated statistical analysis revealed other preferences.



Eastman Kodak Co.

## Behavior

### Scientist disclaims data

The senior scientist on a 10-year-old alcoholism research project has disavowed the research findings, saying that a recent critique of the research (SN: 7/10/82, p. 20) convinced him of its invalidity. The controversial research project, conducted at Patton State Hospital in California, had indicated that alcoholics could be taught with behavioral therapy to become moderate drinkers. But Halmuth Schaefer, who as director of research at Patton had organized the project and co-signed the results, announced last week that he was having his name expunged from all reports on the research. He said that the research, which was conducted under his supervision by psychologists Linda and Mark Sobell, did not provide evidence of successful social drinking by former alcoholics as the reports claimed. Schaefer's turn-about came in the wake of a devastating critique of the Sobells' work published in SCIENCE this summer; that article, written by psychologist Mary Penderly of the University of California at San Diego, said that a follow-up study of the Sobells' subjects had shown none of them to be successful controlled drinkers. Penderly had reported that, based on her evidence, quite the opposite was true: most of the subjects remained uncontrollable alcoholics and were repeatedly rehospitalized—even during the time the Sobells were allegedly documenting their successes. The Sobells, who are now at the Addiction Research Foundation in Toronto, have refused comment on the Penderly study. The ARF has set up a committee to review the Sobells' findings.

### Reagan appeals TMI stress ruling

The Reagan administration, arguing that a lower court had interpreted "environmental impact" much too broadly, has requested that the Supreme Court reverse a decision requiring that psychological impact be considered in the decision to restart the Three Mile Island nuclear power plant. The April ruling by the federal appeals court in Washington had instructed the Nuclear Regulatory Commission to include an estimate of psychological stress in its assessment of whether or not to restart the undamaged TMI 1 unit. Studies conducted since the 1979 accident have indicated that residents of the nearby community are experiencing an elevated level of stress associated with the proposed startup. The administration is arguing that the residents' concerns are political rather than environmental in nature. In addition, the government is arguing that the requirement for psychological assessment is excessively burdensome.

### Psychiatric diagnosis: Off the mark

Psychiatrists and physicians misdiagnose behavioral disorders in four out of ten patients, often misinterpreting drug poisoning as a psychiatric condition and even more often mistaking treatable psychiatric disorders for irreversible dementia. These are the major findings from a study reported by psychiatrist Robert S. Hoffman in a recent issue of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Hoffman performed thorough neurological evaluations of 215 patients admitted consecutively to St. Mary's Hospital and Medical Center in San Francisco, and he found that 41 percent of the original diagnoses were erroneous. Because organic disorders and functional psychiatric disorders were often mistaken for one another, Hoffman reported, the misdiagnoses were clinically significant; if undetected, they would lead to inappropriate treatment. Referring physicians frequently mistook the behavioral effects of prescribed medications for psychiatric disorders such as depression and delirium. And of the patients diagnosed as having dementia—an organic brain disorder that causes progressive intellectual degeneration—26 percent were found to suffer from reversible delirium and another 11 percent from treatable psychiatric disorders—usually depression.