PSYCHOLOGY

Short Noise Bursts Affect Decision Making

SHORT NOISE bursts of one second, as from the firing of rockets, cause a temporary decrease in the efficiency of men making rapid decisions from visual signals.

How noise distracted 36 men of normal hearing in the age range of 16 to 28 was studied by Dr. Muriel M. Woodhead of the Applied Psychology Research Unit, Cambridge, England. The test subjects matched moving cards with stationary ones by deciding how many symbols were the same on both.

Aim of the first of two experiments was to detect any decrease in work following the one-second burst of recorded sounds of a rocket firing. Dr. Woodhead learned that the noise of rocket firings had a temporary but real effect, decreasing efficiency. The subjects did not merely pause briefly and then continue, but showed a pattern of intermittent gaps in response to the next few demands of the task.

Over the whole task their efficiency was not noticeably lower than that of those taking the test under quiet conditions.

The second experiment was designed to show any variation in effects relative to the intensity of the sound. Dr. Woodhead found that bursts at 95 to 115 decibels caused an efficiency decrease, but that at 85 decibels, the tendency was much smaller.

The report of her studies appears in the *Journal of the Acoustical Society of America* (Oct.), published by the American Institute of Physics.

Science News Letter, November 14, 1959

AERONAUTICS

Space Ideas Pouring in To NASA Invention Board

IDEAS FOR advancing the United States' position in the space race are pouring in from Americans in all walks of life, a National Aeronautics and Space Administration official reports. Someone could win $100,000 as a reward for a top-notch technical suggestion.

Dr. James A. Hootman, secretary of NASA's Inventions and Contributions Board, said a large percentage of how-to-do-it suggestions are also coming in from foreign countries, especially Italy.

Under the law, NASA's administrator can recommend a cash award up to $100,000 for an outstanding scientific or technological contribution to aeronautical or space activities. The Board has processed about 1,200 ideas since December, but no award has yet been made.

An oft-submitted idea is for launching a space craft from a mineshaft, sunken tube or inclined track running up a mountain. Steam or compressed air are suggested for "getting the rocket going" before its own expensive fuel is ignited.

Other suggestions concern astronauts, including maintenance of oxygen supplies and improvements in space suits.

Many suggestions, frequently referred to NASA by the White House, are from high school students.

"Some of their plans are ingenious," Dr. Hootman said. "But more often the suggestion is for something not as good as that which we already have. But in any case, we try to offer constructive answers to queries."

Other suggestions, he said, come from "almost as many sources as there are Americans," including large corporations, their employees, Government workers and university professors.

Ideas from high school students are "as good as those we get from the average citizen," he said, but the best ideas are generally from people having experience in the field.

Dr. Hootman said some of the ideas volunteered have held merit. Many, however, have been too advanced to be fully appreciated at this time. Awards on some of these ideas may be made later when the value can be more accurately assessed, he said.

Science News Letter, November 14, 1959

PUBLIC HEALTH

Nuclear Fallout Drops Sooner Than Believed

FALLOUT measurements taken over Norway indicate radioactive particles from nuclear tests remain in the stratosphere only about half a year, instead of five to ten years as scientists had previously estimated.

This would mean that the worst fallout from the most recent nuclear bomb test a year ago, Nov. 3, 1958, by Russia, has already taken place.

These findings were made by the Norwegian Defense Research Institute and were based on systematic measurements reaching up to 40,000 feet in altitude. They have not yet been officially published, it was learned at the Norwegian Embassy.

The stratosphere, the upper layer of the atmosphere, begins at anywhere from 25,000 feet over the poles to 55,000 feet over the equator. Samples taken from altitudes up to 40,000 feet over Norway were thus well into the stratosphere.

The measurements were made exclusively over Norwegian territory in cooperation with the Norwegian Meteorological Institute and the Air Force. They showed that radioactivity near the ground increased steadily until last May, although no nuclear bomb had been detonated for a half year. During the following months, however, radioactivity levels have dropped just as steadily. Peak radioactivity therefore occurred six months after the last detonation.

Not only should the worst fallout period be over, research director Torleif P. Hvinden reported, but radioactivity should decrease to an unmeasurable level within the next several years if there are no further bomb tests.

The reason it has now become possible to obtain results contrary to previous belief is largely because measurements have now been made during a time span free of nuclear detonations.

Science News Letter, November 14, 1959

IN SCIENC

EDUCATION

Develop "Adult Primers" As Reading Aids

"ADULT PRIMERS" have been developed at the University of California, Los Angeles, as remedial reading aids.

Designed for children, adolescents and young adults who have reading problems, a new five-book "Deep Sea Adventure Series" uses a basic but gradually expanding vocabulary to develop adult story lines.

Authors are Dr. James C. Coleman, Frances Berres, Frank M. Hewett and Dr. William Biscoe of UCLA's Psychological Clinic School. Publisher is Harr-Wagoner of San Francisco.

"The series was designed to fulfill a long felt need for stimulating content material to replace the dull 'Fred has a sled' motif of conventional primers," Dr. Coleman says.

"We feel that by offering exciting, adventurous material, presented in books with adult illustrations and format, and yet told simply with a basic vocabulary, we may stimulate the retarded reader. Thus reading may become a pleasure to him, rather than a tiresome, frustrating task."

The series is for individual or classroom use by teachers who do not necessarily have special remedial reading training. It also offers a new type of reading material for modern youngsters who are achieving on schedule in early grades and who may be too sophisticated for the "Fred has a sled" motif.

Vocabulary and comprehension building aids and suggestions for utilizing the series in a variety of situations are included in an accompanyng teacher's manual.

Science News Letter, November 14, 1959

METROLOGY

New Scientific Terms for "Very Large" Adopted

TERA, GIGA, nano and pico are new scientific terms adopted to denote very large and extremely small quantities.

The four prefixes are now being used by the National Bureau of Standards. Tera indicates a trillion and giga a billion. Nano is the prefix meaning a billionth and a pico, a trillionth.

These prefixes were adopted by the International Committee on Weights and Measures, and are in addition to the eight now in common use.

The prefixes followed by the multiple or submultiple denoted in figures, are: tera—1,000,000,000,000; giga—1,000,000,000; mega—1,000,000; kilo—1,000; hecto—100; deka—10; deci—0.1; centi—0.01; milli—0.001; micro—0.000,001; nano—0.000,000,001; and pico—0.000,000,000,001.

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E FIELDS

PHARMACOLOGY

New Antibacterial Drug Treats Skin Infections

AN ANTIBACTERIAL drug has proven highly successful in treating almost 90% of patients with a wide variety of skin infections.

The new orally administered drug, whose generic name is furaltadone, is the newest of the synthetically derived nitrofurans, distinct from the antibiotics and the sulfa drugs.

The drug was effective, reported Dr. Alfred L. Weiner of the University of Cincinnati's College of Medicine, in treating 35 out of 40 patients with boils, carbuncles, bacterial skin infections accompanying eczema, acne, cellulitis, and other infections caused by staphylococci.

Besides the 40 patients whose progress was followed carefully, an additional 22 were treated in the short time his investigation has been under way. Initial study of this group indicates results will probably parallel those obtained with the first group of patients.

Such skin infections are one of the most common problems caused by staphylococci resistant to antibiotics, and the incidence of staphylococcal infections being carried from the hospital to the home is on the increase, recent studies have shown.

The incidence of side reactions to the new drug was low, Dr. Weiner reported, with five instances of nausea and vomiting, one of dizziness, and an unusual reaction of rash, fast pulse and difficult breathing in a few patients who had taken alcohol during the drug therapy.

Science News Letter, November 14, 1959

SURGERY

Neck Yields Graft Tissue For Facial Plastic Surgery

A LARGE defect on a patient's face can now be successfully repaired with "borrowed" skin from the patient's neck, two surgeons have found.

Drs. Milton T. Edgerton and F. C. Hansen, both of the plastic surgery division of the Johns Hopkins Hospital, told the American Society of Plastic and Reconstructive Surgery meeting in Miami Beach, Fla., that neck skin matches facial skin well in color and texture and is available in large amounts.

Plastic surgeons have for a long time had trouble finding suitable skin to cover a large facial lesion, such as is created by the removal of a port wine birthmark. When skin which does not match the face is grafted there, the doctors said, the result is little better than substituting one defect for another.

Although skin from one part of the face, they said, makes an ideal graft for another part of the face, it is only available in limited quantity. Skin can be removed from the neck in a single piece measuring as much as four by eight inches.

Because only the upper layers of the neck skin are cut away, the area regenerates spontaneously, the surgeons explained. A graft only 12 to 14 thousandths of an inch in thickness can be taken, leaving an area which heals almost invisibly.

For male patients, whose neck skin contains visible hair follicles, which would be unsightly on some parts of the face, the surgeons suggest using skin from the smooth bare area under the collarbone.

The use of neck skin grafts will allow surgeons to attempt procedures on the face, particularly with children, which they have had to avoid in the past, they said. Flaps of skin can be moved from the forehead to other parts of the face, with neck skin used to replace the forehead loss.

Although a skin graft is necessarily framed by scar, Drs. Edgerton and Hansen said that with careful planning, scars could be fairly well concealed in natural lines and folds of the face.

Science News Letter, November 14, 1959

GEOLOGY

Earth's Interior Is Cooler Than Previously Believed

TEMPERATURES inside the earth are probably somewhat lower than they were believed to be a few years ago.

Present observations indicate the bottom of the earth's crust to be approximately 900 degrees Fahrenheit, and the outer boundary of the core to be approximately 3,600 degrees Fahrenheit.

These figures were quoted by Dr. John Verhoogen, University of California, Berkeley, at the Sigma Xi Club of Drake University, Des Moines, Iowa. Sigma Xi is a national organization for the encouragement of scientific research.

The origin of the thermal fluctuations that lead to volcanism and mountain building, however, are still obscure, Dr. Verhoogen said. If more could be learned about the temperature distribution within the earth, man's understanding of such geological phenomena would be greatly enhanced.

Temperature distribution could be exactly determined if one knew the earth's surface heat flow, the distribution of heat sources, and the mechanism of heat transfer and relevant thermal conductivity, he said.

The first is known approximately, the second may be surmised if proper assumptions are made regarding the earth's chemical composition, and the third is poorly known.

Temperature at any depth can also be evaluated from phase relationships, such as melting, or from the effect of temperature on elastic properties and density.

The latter method seems most promising, he said, although it still involves "considerable uncertainties."

Science News Letter, November 14, 1959

ENGINEERING

Message System Uses Meteor Trail Reflection

A TWO-WAY message system using radio signals reflected from the ionized air left in the wake of meteors has been successfully developed.

The message to be sent is first recorded on magnetic tape. With both transmitters on the air, the presence of a suitably located meteor trail is detected within a few thousandths of a second.

Then the message is sent, most satisfactorily at 2,400 words per minute, 40 times the speed of present teletype transmission. When the signal strength falls too low, as the meteor trail disappears, the transmission is temporarily halted.

Extensive tests made over an 800-mile path shows the 49-megacycle transmissions can compete effectively with other long-range systems.

The system, developed by the National Bureau of Standards, is relatively free from ionospheric disturbances. However, the simultaneous occurrence of two meteors can cause garbled signals.

In a project known as Janet, Canadian scientists had previously used meteor ionization to aid short-wave radio communications.

The overcrowding of the high-frequency bands normally used for long-range radio communications has stimulated various attempts to use wavelengths so short that ordinarily they would serve only over a line-of-sight path. The report on meteor trails for radio communications appears in *Sky and Telescope* (Nov.).

Science News Letter, November 14, 1959

MEDICINE

Electron Transfer Occurs In Potent Drug Reactions

HOW EASILY a drug gives up its electrons may be a very important factor in how good a drug it is.

Chlorpromazine has "striking biological activity," a team of researchers reports in SCIENCE (Oct. 30). The drug, which affects the central nervous system, also has "striking properties as an electron donor," they point out.

Its particular tranquilizing action may be due to chlorpromazine's charge-transfer properties, report Dr. G. Karreman of the Eastern Pennsylvania Psychiatric Institute, Philadelphia, and Dr. I. Isenberg and Nobel Prize winner Dr. A. Szent-Gyorgyi of the Institute for Muscle Research, Woods Hole, Mass.

Another drug, d-lysergic acid diethylamide, with strong action on the central nervous system was found to be a very good electron donor. They report serotonin is also good.

Further studies on charge transfer may contribute to understanding of the mechanism of normal and abnormal psychic functions, the scientists conclude.

Science News Letter, November 14, 1959