

New Sounds Made By Electronic Musician

➤ AN ELECTRONIC MUSICAL instrument for composing and performing contemporary tape music records any kind of sound at any speed—even, the crack of a rifle or the splintering crash of glass.

It can then play back the same sound at any desired speed, slowing down and bringing into audible range many higher sound frequencies otherwise inaudible to human ears. In this way the split-second rifle crack can be stretched to a length of several seconds, producing a sound never before heard.

Developed by Michael D. Burrige, an art student at Stanford University, the device records and plays back on a loop of magnetic tape hung from the playing head with a weighted roller at the bottom. He uses a standard tape recorder to reproduce sound, and a variable speed lever on his device is connected to a high-speed motor. The lever control enables him to record or play back at any desired velocity from top speed to a dead stop.

The hanging loop of tape can be of any desired length so long as there is space to hang it. The loop could be suspended from a balcony if necessary, Burrige said, to increase its playing time without repeating sounds.

The smaller 12- to 24-inch loops he has experimented with are probably more suitable when the device is used as a musical instrument, he added. Its unusual sounds are then recorded on another tape machine with standard reels.

• *Science News*, 90:40 July 16, 1966

MEDICINE

Soldiers May Have Hidden Malnutrition

➤ NUMEROUS SOLDIERS are expected to return from Viet Nam unaware that they suffer from the hidden effects of a nutritional disease, a Harvard physician said in Chicago.

The problem is caused by a disease called sprue, the more obvious effects of which are sore mouth, loss of weight and diarrhea. But sprue also leads to chronic difficulty in absorbing nutrients.

"In many instances this will be undiagnosed at the time of service separation and not appreciated by the soldier," said Dr. Frank H. Gardner of the Harvard Medical School and Peter Bent Brigham Hospital's Curtis Hematology Research Laboratory.

The medical profession must now realize that "we will have continued exposure to tropical disease complications throughout our lifetime," Dr. Gardner warned. "It is important for us not to confuse this symptomology

with many gastrointestinal complaints seen in the Temperate Zone."

Nutrient malabsorption is almost always associated with some degree of weight loss. Often 20 to 40 pounds may be lost before the soldier is aware of his problem, especially in zones where his main thought has been to stay alive under fire.

On return to the United States the victims continue to have diarrhea and weight loss, which are accepted as likely results of fighting in the tropics. Symptoms may persist to later years and be confused by an examining doctor with other common disorders.

The antibiotic tetracycline is the drug of choice in treating such cases, although folic acid has controlled malabsorption in the Caribbean as well as in Hong Kong.

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METEOROLOGY

High Wind Was Good For 1666 London Fire

➤ A HIGH WIND close to the ground, ordinarily the dread of fire fighters, appears to have been the reason that the horrible Great Fire of London in 1666 was not worse than it was. A similar wind, however, failed to reduce the tragedy of the 1871 Chicago fire.

An American scientist, S. Atallah, on leave in England from Tufts University, Medford, Mass., deliberately burned several wooden test buildings to the ground to measure the effect of such ground winds.

He reported in *Nature*, 211:105, 1966, that a high velocity easterly ground wind during the London fire apparently prevented the formation of a vortex above the fire and directed the fire westward, "making it easier for the inhabitants to predict its path and thus evacuate their houses in ample time."

The Chicago fire, however, was preceded a day earlier by a much smaller fire that left a layer of smoke hovering in the air. This layer absorbed large quantities of the sun's radiation and prevented the ground from giving off the heat during the night. In addition there was a hot, dry spell in progress at the time. The only thing that could have saved the city—a ground wind that might have blown the smoke layer away—was not up to the task.

The result was a fire storm in which 2,124 acres of ground containing 17,450 buildings were burned, 250 people killed and about 100,000 left homeless. The London fire, however, though it is recorded as one of the great tragedies in the city's history, was directly responsible for the deaths of only four people and the burning of 436 acres.

The actual wind speed at the time of the London fire is not known, said Mr. Atallah, but at nearby Kew Observatory it varies from an average high of 10 miles per hour in January to about seven mph in August. The fire took place in early September.

• *Science News*, 90:40 July 16, 1966

IN SCIENCE

MEDICINE

Mild Thyroid Deficiency Often Goes Undiagnosed

➤ MANY THYROID deficiencies are going undiagnosed and untreated, a New Jersey doctor reported.

Dr. Maurice Bear Gordon of Ventnor, N.J., called mild hypothyroidism the "most commonly" undiagnosed hormonal problem that faces the general practitioner. Hypothyroidism usually results in an overweight problem and low vitality. It may also lead to depression, anxiety, stomach spasms, dry skin and brittle hair.

The deficiency, if it is mild, is rarely detected by routine physical examinations. However, once diagnosed with simple laboratory tests, it is the easiest endocrine disorder to cure, said Dr. Gordon. It is therefore essential, he noted, that a thyroid test be included in any thorough physical examination.

Dr. Gordon said he is "constantly amazed" at the number of mild to moderate cases he finds in such routine surveys.

He also said thyroid treatment given to patients who complain of stomach spasms, depression and anxiety frequently eliminates the symptoms and the need for other drugs such as tranquilizers and antidepressants.

His report appeared in the *Medical Times*, July 1966.

• *Science News*, 90:40 July 16, 1966

PHYSIOLOGY

Appetite Not Destroyed By Total Starvation

➤ THE MOST PERSISTENT belief that total starvation destroys the appetite has been exploded by nine obese patients in London, England.

The patients, seven women and two men, went 14 days without food at St. Bartholomew's Hospital in an effort to lose weight. Doctors, studying this method of weight control, took estimates of hunger twice a day.

Result? Except for the first day of starvation, the patients consistently indicated a moderate degree of hunger, which means they felt hungry and could eat a light snack but not a full meal.

At no time during the 14 days did the appetite disappear. Possibly the fasting fallacy is a result of the rapid fall from a peak of hunger on the first day without food, J. Trevor Silverstone, Dr. Richard M. Buckle and John E. Stark said in *Lancet*, 1:1343, 1966. After the first severe hunger pangs, the rest seems like a loss of appetite.

• *Science News*, 90:40 July 16, 1966

OCEANOGRAPHY

Ocean Depths May Alter Properties of Metals

► **HYDROSTATIC PRESSURES** in ocean depths may cause surprising changes in the properties of the metals used in the construction of submarines and underwater equipment.

This finding was reported in *Nature* by three metallurgists at Polytechnic Institute of Brooklyn.

Prof. Alan A. Johnson of the metallurgical engineering faculty and his co-workers, Assoc. Prof. Carmine R. D'Antonio and Assist. Prof. Robert J. Maciag, said in their report that below a certain critical temperature, a sufficiently stressed metal may fracture by the very rapid spread of a crack. However, above this temperature the same stress will instead cause steady deformation, the metal being sufficiently ductile to spread the stress so that it is no longer concentrated at the ends of incipient cracks.

The engineers said that "the rapidly developing interest in deep ocean engineering makes it necessary to consider possible effects of deep ocean environments on the properties of engineering materials. The principal difference between a deep ocean environment and an environment just below the surface of the ocean, of course, is that in the former there exists a large hydrostatic pressure. In our study, we consider mechanical property changes which might be expected to result from this hydrostatic pressure."

• *Science News*, 90:41 July 16, 1966

MEDICINE

Thymus Extract Aids Cancer Immunity in Mice

► **A POSSIBLE** new way of boosting the body's natural immunity to some cancers was reported by a California scientist.

As yet the process has been tested only on laboratory animals, but it was highly successful in destroying two types of tumors which resemble common human cancers.

The cancer types used were experimental malignancies called sarcoma 180 and C-6 myeloma. Sarcomas occur in connective tissue; myelomas in bone marrow.

Dr. David B. Hinshaw, chairman of the department of surgery at Loma Linda University School of Medicine, Loma Linda, Calif., reported the work at the American Medical Association meeting in Chicago.

He described an antitumor preparation made from the thymus glands of

freshly killed calves and consisting of basic peptides (combinations of amino acids). Observation suggested that the extract did not attack the tumor itself but instead stimulated the body's immune mechanism. It could do this either by triggering an inactive mechanism or boosting a weak one.

Thymus gland extracts have recently been of considerable interest to cancer specialists studying natural immunity. However, there is as yet no conclusive evidence that a thymus preparation improves immunity in humans.

The Loma Linda investigators, working at the school's surgical research laboratory in Los Angeles, implanted malignant tissue in hundreds of mice, half of which received the gland extract. At the end of the experiment period, tumors in the treated mice weighed only one-fourth as much as those in the untreated mice, Dr. Hinshaw reported. Also, microscopic study revealed almost no living cells in tumors of treated mice.

Dr. Weldon B. Jolley of Loma Linda and Louis Cano, a research associate, also took part in the research.

• *Science News*, 90:41 July 16, 1966

PUBLIC SAFETY

Oxygen Mask Ignites, Gives Nine-Foot Flame

► **NINE-FOOT** flames shooting from the oxygen mask of a seriously ill hospital patient illuminated a "bizarre" accident caused by a simple short circuit.

At Peter Bent Brigham Hospital in Boston, two patients with "life-endangering illness" were breathing through respiratory devices when a nurse moved a floor lamp.

Faulty insulation in the lamp allowed current to flow into the lamp's metal base. Poor design of the respirator created an all-metal pathway running from a caster in its base up to the body of the instrument, along a spring inside one of the air hoses, through a valve and along a set screw to the wire that connected the unit to the electrical ground.

When the lamp base came into contact with the caster, the current in the lamp flowed through the respirator and heated the spring to "glowing red." The oxygen-rich atmosphere in the hose ignited instantly.

The result, according to the attending physician, was that "a flame shot about three to nine feet from the face of the respirator."

The patients were wheeled safely out of the room. The investigation that followed revealed that the lamp had not one but three breaks in its insulation. Dr. Carl W. Walter of Harvard Medical School and the Hospital reported in the *Journal of the American Medical Association*, 197:1, 1966, that "careless maintenance, faulty engineering design and unlightened use" all combined to produce the disaster.

• *Science News*, 90:41 July 16, 1966

PHYSICS

Music Sounds Best With Two-Level Orchestra

► **A TWO-LEVEL** orchestra may be the best way to present music, according to a team of physicists at the University of California at Los Angeles.

The suggestion is based on a study at the UCLA physics department in which its anechoic (dead sound) and reverberation laboratories were divided into upper and lower acoustical chambers through an array of 96 suspended plywood panels.

In a long series of experiments, Dr. Vern O. Knudsen and two of his colleagues found that in a hall with suspended panels the reverberating sounds of a choral symphony may come across best if the orchestra is located near the ceiling, as in a choir loft.

For the dainty notes of a Mozart minuet, the musicians should sit, as usual, on the orchestra floor to dampen the reverberations.

Dr. Knudsen is UCLA's chancellor emeritus, whose acoustical know-how is reflected in the first movie sound stages and the Hollywood Bowl, among other places.

Main purpose of the study by Drs. Knudsen, Leo P. Delsasso and Robert W. Leonard was to test the effectiveness of the plywood panels in eliminating echoes and long-delayed reflections and in modifying the reverberation characteristics of concert halls.

• *Science News*, 90:41 July 16, 1966

DENTISTRY

Oral Surgeons Needed To Treat Accident Cases

► **HOSPITAL** emergency rooms should have oral surgeons available to treat auto crash victims, a national meeting of mouth and dental surgeons was told.

Early treatment of mouth wounds and lacerations by specialists will assure better appearance of survivors, while reducing problems of malocclusion of the teeth, nonunion of fractures and loss of functioning, Dr. Howard B. Adilman of Chicago emphasized.

He urged the adoption of shoulder harnesses to keep the head from striking the instrument panel or other hard objects in cars. Motorcycle riders should wear mouth and nose guards similar to those worn by football players and boxers.

Prof. Hugo Obwegeser of Zurich, Switzerland, had encouraging advice for people who have trouble wearing false teeth. Worn-down bony ridges can be helped by several surgical techniques, including one that literally lowers the floor of the mouth.

The conference was sponsored by the American Society of Oral Surgeons and the U.S. Army Dental Corps at the Walter Reed Army Medical Center, Washington, D.C.

• *Science News*, 90:41 July 16, 1966