PSYCHIATRY

Speech Measures Anxiety

➤ A YARDSTICK that measures a person's anxiety as expressed in his speech has been found.

The amount of anxiety a person feels at any one time was measured using five-minute verbal samples. These were then taped, transcribed and scored according to how many times the person tested referred to anxieties of death, mutilation, separation, guilt, shame and nonspecific anxiety, and the importance he placed on them.

Dr. Goldine C. Gleser of the University of Cincinnati College of Medicine said the subjects tested for anxiety were asked to talk for five minutes without interruption about any interesting or dramatic life experience they had had.

He told the International Congress of Applied Psychology in Copenhagen that one score alone did not indicate the subject's typical level of anxiety, since scores differed from day to day.

The new technique can be used to measure other emotional states, besides anxiety, Dr. Gleser reported. It has been applied in studies of rhythmic variations in emotional states of women during the menstrual cycle. The new scale might be used in interviews.

It measures what is termed "free" anxiety in contrast to "bound" anxiety manifested in symptoms, compulsions or withdrawal from human relations.

Co-authors with Dr. Gleser were Drs. Louis A. Gottschalk and Kayla J. Springer. Dr. Gleser pointed out that there are relatively few methods for measuring immediate emotional states. Most psychological tests have been designed to measure general traits or typical behavior and are therefore fairly insensitive to variations in emotional behavior.

The work was supported by the National Institute of Mental Health and the Foundations Fund for Research in Psychiatry.

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CHEMISTRY

Melt by High Temperature

➤ EVERY KIND of material known, including resistant substances like quartz and tantalum, can be melted with a new method of high-temperature production that combines combustion flames with electrical discharges.

The electrical voltage pumps into the burning flame double the heat that combustion alone can develop. Chemists foresee that the new high-temperature technique will find wide usefulness in metallurgical processes and allow more effective production of aluminum, steel and pure iron. It will beef up the open hearth steel process.

Its inventor, Dr. B. Karlovitz of Combustion and Explosives Research of Pittsburgh, described the process to the International Union of Pure and Applied Chemistry in Montreal. He predicts that his work will allow gas to compete with electricity in the production of industrial temperature ranges of about 4,000 degrees to 9,000 degrees Fahrenheit (2,000 to 5,000 degrees Kelvin). In recent years electricity has displaced gas in high-temperature production, and now the tables will be turned.

The kind of flame necessary to the job to be done, rich reducing for pulling oxygen out of the oxide ores of metals hard to separate, can be obtained as desired. Or conversely the flame can be made to add oxygen. High electrical voltage is not needed and the electrodes that feed the current into the fire are not in the heat of the furnace. The gas flame is conductive of the electrical discharge and spreads out the electrical power broadly into the furnace.

If desired, the flames can be made slowly radiant or they can be jets that are highly concentrated with high velocity. The flames can be shaped to fit a special need.

Dr. Karlovitz had the cooperation of Arthur D. Little, Inc., Cambridge, Mass., in the fundamental experimental study of flames that led to the materialization of the new process.

Half the energy of the furnace can be supplied by the electricity, and this addition gives the temperatures so much higher than the gas combustion alone.

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OCEANOGRAPHY

Radioactive Waste Dump

➤ RADIOACTIVE WASTES can be safely disposed of by dumping them in wells drilled deep into the ocean bottom.

A huge ship, especially designed for storing radioactive waste, would be used to drill wide holes in deep ocean submarine canyons, Prof. John D. Isaacs of the Scripps Institution of Oceanography, La Jolla, Calif., reported. The waste material would be lowered into the hole and buried.

Buried under tons of sediment far from heavily populated areas, the radioactive wastes would pose no health problems, Prof. Isaacs said. The radioactive heat generated while contained in the ocean bottom layers will not erupt into a "radioactive geyser," whereas atomic wastes stored in underground vats on land can, the scientist emphasized.

The huge ship, acting as an "atomic disposal unit," could cruise from port to port, picking up the "atomic trash." The ship's design would be similar to CUSS I, a ship recently used for drilling deep into the earth's interior.

Such a drilling ship is entirely feasible, the scientist said. United States scientists recently drilled three test holes into the ocean bottom in one day as part of project Mohole, whose goal is to eventually reach the earth's mantle deep under the ocean bottom.

Each were sufficiently deep to bury the radioactive wastes, Prof. Isaacs said.

The wastes can be stored in capsules or mixed with concrete slurry and pumped into the hole. The watery mixture would then solidify when it reached bottom.

The present method of storing radioactive matter in huge underground tanks could eventually contaminate underground water supplies. Dumping waste matter into ocean waters, and not underneath the ocean bottom layers, is also dangerous due to the eroding and mixing action of currents.

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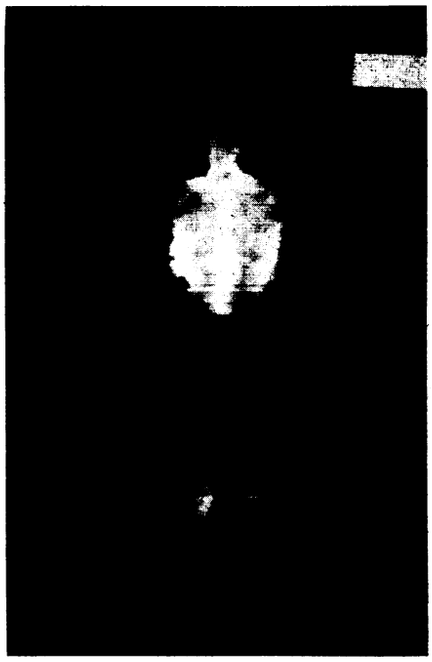

INFRARED PHOTOGRAPHY

PHOTOGRAPHY

Infrared Photography Used in Arctic Tests

➤ INFRARED PHOTOGRAPHY was used by U. S. Air Force scientists in Fairbanks, Alaska, to measure varying body temperatures in arctic survival tests.

A typical experiment showed that the skin of a man clothed only in shorts and exposed to 32-degree Fahrenheit weather would cool from 80 degrees to 40 degrees Fahrenheit in approximately one hour.

Results of the experiment indicated that the rate of heat loss is higher in the armpits, spinal column and areas surrounding the knees and elbows.

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