

MEDICINE

Blame Bad Heart Habits

► THE HUMAN HEART can learn bad habits and this may be one cause of high blood pressure.

Experiments by a number of scientists point to this, the American Heart Association reported in New York.

The heart, like any other muscle, can "learn" and be conditioned to respond in a certain way to certain kinds of stimulus, Dr. W. Horsely Gantt and associates at Johns Hopkins University, Baltimore, find.

The heart forms habits more quickly than many other muscles and has more difficulty dropping them, Dr. Gantt believes. It learns quickly to beat faster and send blood through the body at a faster rate when an animal or man is angry or frightened.

Once this becomes a habit, however, the heart may do this when it is no longer necessary.

It may even become conditioned so that high blood pressure as well as changes in rate of heart beat result, some of Dr. Gantt's findings suggest.

Nerve endings called baroreceptors in the aorta, the great artery above the heart, and in the two carotid arteries in the neck may learn the bad habit of accepting a new high blood pressure level as normal and may act to keep the blood pressure at that level,

Dr. James W. McCubbin and associates of Cleveland (Ohio) Clinic Research Division find.

The baroreceptors are part of the mechanism that controls blood pressure by regulating heart rate and blood vessel width.

Reserpine, one of the tranquilizing drugs sometimes used in high blood pressure, eliminates conditioned heart and breathing responses in animals, Dr. Paul D. MacLean and collaborators of Yale Medical School, New Haven, Conn., find.

They think the drug acts by modifying or abolishing conditioned responses that no longer serve a useful purpose.

Reserpine, Dr. Gantt has found, increases an animal's heart rate but another tranquilizer, chlorpromazine, lowers it. Both drugs greatly diminish the animal's reaction to unexpected stimuli such as a flash of light.

This reaction is the basis of an animal's normal alertness to a new stimulus, but when it is exaggerated or prolonged, it turns into anxiety and becomes a burden to the nervous system and the heart. Therefore, drugs which reduce this reaction might be of value in "giving the cardiac system a rest from the ordinarily distracting, alerting stimuli of the environment."

Science News Letter, November 17, 1956

ENGINEERING

Heat Pump Controls

► A HEATING SYSTEM that uses no fire or boilers and operates on theories developed in industrial automation is in operation at the Southdale Shopping Center in Minnesota.

It is one of the first major buildings in the world to use a heat pump.

The heat pump takes heat out of the building by air conditioning in the summer or when the shops and stores are crowded in the winter. On cold days this heat is used to warm the outside walls of the building. If it is not needed at once, it is "stored" for use later.

A central control computer and automatic data-handling system developed by automation and temperature control engineers, of Minneapolis-Honeywell make the entire operation automatic.

Techniques used in processing steel, mixing chemicals and in other "automatized" industries are employed to determine the amount of heating or cooling needed to meet changing occupancy loads and varying outside weather conditions.

The master control center of the system automatically disposes of excess heat, regulates the pressure and flow of water and conditioned air, and controls the operation of the supply and disposal wells. It regulates the domestic water supply, automatic-

ally controls snow melting equipment and yard watering, and supervises the disposal of excess water into the ground or into a nearby lake.

Linked to the control center will be a data-handling system, also developed by M-H engineers, which will automatically scan, measure and chart information on temperature, pressure, flow and heat output from more than 100 separate points.

It will make readings every hour and will transmit data to an automatic typewriter, which will record it on log sheets and punched tapes for later analysis. It will give warnings of any trouble anywhere in the system.

Science News Letter, November 17, 1956

EDUCATION

"Spelled Speech" to Help Blind Read Faster

► DEVELOPMENT of a new kind of language, called "spelled speech," to help the blind read faster was announced by Dr. Milton F. Metfessel of the University of Southern California, Los Angeles.

Eventually, he hopes, the new language will enable blind persons to "read" 180 words per minute. This is 50 words per

minute faster than ordinary conversation and faster than most sighted persons can read.

For young students who must depend on others to read their textbooks to them, the new language may become a great boon. Months of research are still necessary, however, to perfect the project.

The language is produced by 25 synthetic alphabet sounds scientifically selected for speed of learning and ease of understanding. The code is transmitted to the listener by an electronic eye that scans the page of a newspaper, book or magazine.

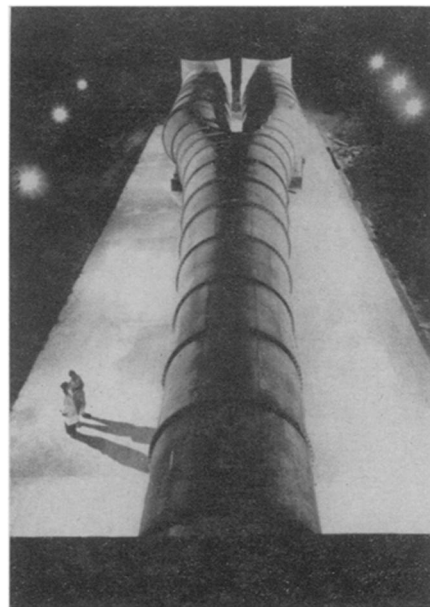
"The reading machine has two parts, a recognition unit and a speaking unit," Dr. Metfessel said.

"The recognition unit simulates the human eye as it travels across the printed page. It scans and selects a signal for each letter or other printed symbol. This is transmitted to the speaking unit where there is a continuously-revolving drum with magnetic tapes upon which the sound patterns have been pre-recorded.

"Whenever a letter is identified by the recognition unit the sound pattern for that letter will be produced and heard."

The "spelled-speech" has vocal fluctuations like the human voice that are pleasant to hear. Genuine speech is not used. Instead, signals from the recognition unit are molded into words and phrases.

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SILENT NIGHT—To meet the around-the-clock problem of testing tomorrow's powerful jet engines without disturbing nearby residents, the British firm of de Havilland has designed at Hatfield, Hertfordshire, England, a testbed fitted with a silencer that can handle engines of more than 30,000-pound thrust. A low-pitched rumble and the shimmering of exhaust gas are the only signs of the tests.