

technology notes

ELECTRONICS

Star checker checks circuits

A technique long used by astronomers to chart movements of the stars has been incorporated into an inspection machine that will detect minute flaws in complex electronic printed circuits.

In the checking process, the new circuit and an identical circuit of known quality are placed in the machine. Two mirrors, one of which rotates, and front and back lighting then provide the machine operator with rapidly alternating views of the two circuits. Any flaw in the new circuitry is seen as a flicker or twinkling spot.

The machine is in use at RCA's automated printed circuit facilities at Moorestown and Camden, N.J.

NUCLEAR POWER

Atoms for Middle East

The Senate last year passed a resolution asking the Administration to investigate the potential of large-scale nuclear power-and-desalting plants as a way of keeping "a stable and durable peace" in the Middle East.

The Atomic Energy Commission is now beginning the job. Representatives from Government, industry, foundations and universities will study the region's power and freshwater needs, the availability of raw materials to build the plants, and the costs of specific projects, as well as determine which ones would have to be preceded by smaller pilot projects. Job planning, both in the plants themselves and on farms that might occupy the newly developed areas, will get special attention.

ART HISTORY

Renaissance painting techniques

After studying flecks of paint no bigger than the point of a pin, a University of Michigan researcher concludes that the techniques of the painters in the Italian Renaissance were apparently somewhat different from what present textbooks state.

It has been believed, says art conservator and chemistry research associate Mrs. Meryl Johnson, that tempera paints were used until the early 15th century, when the Van Eyck brothers supposedly invented oil paints and the majority of artists switched to them.

After studying 63 14th and 15th century Italian paintings at the Walters Art Gallery in Baltimore, Md., Mrs. Johnson believes this chronological picture is inaccurate. She found oils in use well before the Van Eycks, and tempera in use together with oil as late as the mid-17th century. In addition, she found that the paint was often applied in as many as 10 thin layers, instead of relatively few ones as had been supposed.

Mrs. Johnson discovered the multitude of layers by using a high-powered microscope to make edge-on examinations of paint flecks as light as 10 millionths of a gram. Each layer was extremely thin, she found, allowing some color from the layer beneath to come through and be seen.

Staining techniques, like those used in medicine, enabled her to determine whether the layers were oil or tempera.

ACOUSTICS

Silence is leaden

Silence may be golden, but the office staff in Luft-hansa's new \$10 million office building in Cologne, Germany, is not so sure. Ultra-efficient soundproofing and windows that are permanently sealed because of the air conditioning have been driving the employes to complain that they cannot stand the silence.

So, the builders and architects are now planning to install a "noise machine" to bring back a sense of life and activity to the offices. It will provide a constant background murmur of traffic sounds—squealing tires, engines revving and so on—along with a hubbub of jangling telephone bells and typewriters.

TESTING

Phosphors could check hull design

Future ship designers may have the job of checking the water flow around the hull made easier, thanks to a technique that has largely been confined to testing welds, according to a U.S. Army researcher.

Phosphors which glow brighter and darker under ultraviolet light in response to temperature variations as small as a fraction of a degree would permit water flow to be determined over large areas, rather than point by point as is presently done, says Philip Morrill, an engineer with the Army Mobility Equipment Research and Development Center at Fort Belvoir, Va. They can be easily sprayed on the inside of the hull from an aerosol can, he says, either as a stripping film, for easy removal, or to be left in place for future use.

The phosphors could also be used in a ship's piping system, Morrill says, to locate blocked points or to redesign the layout for minimum turbulence.

ENVIRONMENTAL TESTING

Japan's first weightlessness simulator

A zero-gravity simulation tank, reportedly the first in Japan, will be installed at Nagoya University's laboratory of environmental medicine late this year.

Although Japan has yet to successfully launch an orbiting satellite of its own, the test tank is planned to provide data leading to future manned space flights.

The U.S. space agency estimates that this country has dozens of such tanks.

The tank, measuring 2.0 meters in diameter and 2.8 meters in length, will be filled with saline water, kept at a uniform 35 degrees C. The water will be of 0.7 percent saline concentration and have a specific gravity of 1.05—values corresponding to those of the human body.

Besides observation windows, internal lighting and black-and-white closed-circuit television, the tank will be equipped with an infrared TV system to monitor tests conducted in total darkness. Both physiological and psychological research will start in early 1969.

Test subjects will enter the tank, which can tilt as much as 45 degrees, through a hatch in the top. Automatic equipment will record body temperature, pulse rate, blood pressure, heart activity and brain waves.

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