

Technology Notes

ELECTRIC POWER

Freon-drive for Russian Turbines

A power-generating plant using freon gas as the driving fluid for its turbo-generators is to be built on the Paratunka River in Kamchatka, the peninsula that juts out from Siberia toward Japan.

Using freon or other refrigerant gases allows the turbines to be made much smaller. In conventional fossil-fuel stations, however, an intermediate heat exchanger is needed to transfer the heat from boiler steam to the freon.

The Russian design gets around that difficulty by obtaining heat from underground high-temperature springs. If the experiment is successful, freon-based stations will be set up in other areas where there are thermal springs.

Power from the Kamchatka station will be enough to run a greenhouse farm. Kamchatka has only 60 warm days a year. With a new form of heating, it is hoped to produce about 1,000 tons of vegetables a year.

HOLOGRAPHY

Lasers Pierce Fog

Holograms made of stationary objects in fog are sharper than ordinary photographs, reports Karl A. Stetson of GCA Corp., Bedford, Mass. But a laser-powered fog lamp doesn't seem likely, he told the Optical Society of America meeting in Columbus, Ohio.

Holograms are made with coherent light, which is all in one frequency. Light reflected off a moving object changes frequency, while light reflected from stationary objects keeps its original frequency.

Stetson theorized that moving fog particles would change coherent light frequencies so that the reflected waves wouldn't show up on the hologram. Coherent light bounced off stationary objects would keep the same frequency and would be recorded.

Tested experimentally in a soap-and-water mixture simulating fog, the theory held. Holograms were sharper than ordinary photographs. But they were also darker, showing that much of the laser light was dissipated in the fog.

As a practical thing, the laser will work only on stationary objects. It wouldn't help to use a pulsed laser, which is like a flash tube that stops the motion by a very short exposure. That would stop the motion of the fog particles as well as the object.

NAVIGATION

Man-made Atlantic Islands

Man-made islands that would act as robot policemen in the Atlantic, monitoring and safeguarding supersonic air traffic, are being planned at a British shipyard.

The project has been going on in secret for two and a half years at Vickers' shipyard in Barrow, where Britain's Polaris missile subs are made, according to defense minister Roy Mason.

Five of the 100-foot-diameter islands would be spaced

as tracking station links across the ocean. Anchored to the sea floor, they would also serve as oceanographic research stations and helicopter bases.

PLASTICS

Glass-fiber Plastic Wings

Air Force engineers are using glass-reinforced plastic as structural parts in airplane wings. They claim the experimental wing sections will have three times the strength and one-third the weight of an all-aluminum wing.

The extra strength derives not only from the new material, but from the way the engineers use it. The glass fibers are aligned in the directions in which stresses occur, putting extra strength where it is needed at the least cost in weight.

The glass strands in the material are formed by twisting together about 4,000 smaller glass filaments—each .00035 inch in diameter—and treating them with an epoxy resin.

The technique is cheaper and more simple than conventional manufacturing methods, according to Air Force engineers. The experimental work is being carried on at the Air Force Materials Laboratory, Wright-Patterson AFB, Ohio.

LASER ELECTRONICS

Rocket Sled Tracked by Laser

A laser-directed device that keeps a camera aimed at rocket test sleds moving at six times the speed of sound was reported at the Society of Motion Picture and Television Engineers conference in New York.

The camera in the tracking system is stationary but views the rocket via a rotating mirror. A narrow laser beam is projected through the mirror to a reflector on the target. The reflector returns the beam through the mirror to an optical sensing mechanism. The sensor determines the speed and direction of the sled and automatically aims the mirror at the test vehicle.

The tracker is located 1,000 feet from the midpoint of the seven-mile rocket sled track at Holloman Air Force Base, N. Mex.

At top speed, the mirror has to follow the sled at a rate of 360 degrees per second. Experienced manual camera operators can't track targets moving faster than 60 degrees per second, say Sylvania Electric engineers, who developed the system.

SCRAP METALLURGY

Aluminum Cans Recoverable

Aluminum has a high enough scrap value to make it worth while collecting discarded cans, say industry officials. In a pilot program in Miami, sponsored by Reynolds Metals Co., Richmond, Va., a campaign for reclaiming aluminum beer cans has netted about 120,000 cans since January.