

# Technology Notes

## ATMOSPHERICS

### Sun pillar patterns

Sun pillars are plume-like shafts of light occasionally seen directly above or below the setting sun.

The most common explanation of the pillars is that they are reflections of sunlight from ice crystals in the atmosphere.

Computations by University of Wisconsin physicists using one particular kind of ice crystal predict patterns that have some features of the actual observed pillars; but other features are in doubt.

The crystal shape used in the computations is a flat hexagonal chip floating more or less horizontally. Depending on the altitude of the sun and maximum angle off the horizontal assumed for the crystals, pillars of various heights and widths are predicted.

One feature in the computation that doesn't quite fit reality is the prediction that with the sun fairly high (about six degrees above the horizon) the pillar is quite short. Actually, some tall pillars have been seen with the sun that high.

Other possible explanations, Dr. Robert G. Greenler told the Optical Society of America annual meeting are differently shaped crystals and the effect of distance and the curvature of the earth.

But what he really needs, says Dr. Greenler, is more data. "Our predictions are better than our observations," he said, appealing for more pictures of the pillars.

## HOLOGRAPHY

### Eliminating information

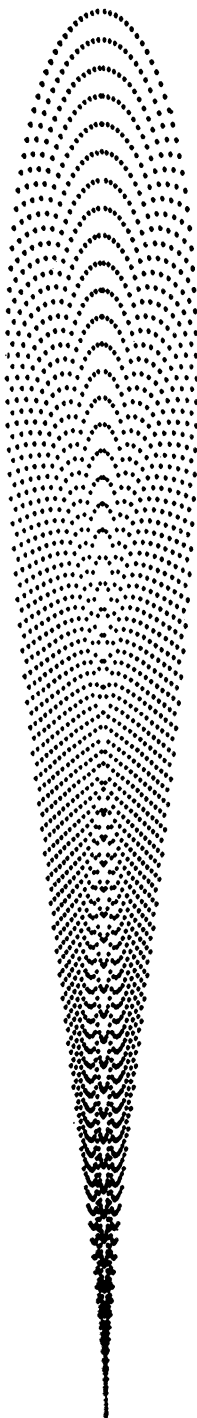
Holograms are an excellent means of recording a three-dimensional scene. But for some applications they contain too much information.

Sending a typical hologram over television, for instance—assuming that became technically possible—would require about 10,000 TV channels, according to some estimates.

It is possible to reproduce a hologram image by using only a small fraction of the hologram, but when this is done, the image looks as though it is being seen through a screen.

A University of Michigan physicist has managed to eliminate the screen effect, however, and at the same time reduce the amount of information of the hologram.

Holograms are formed by bouncing laser light off an



object and on to a photographic plate: another laser beam goes directly to the plate, and the interference between the two beams forms a pattern. This interference pattern is the hologram; when a laser is beamed through it, a three-dimensional image is formed.

By putting a frosted glass diffuser between the object to be holographed and the photographic plate, the detail in the interference pattern can be cut down, Dr. Douglas B. Brumm reported to the Optical Society. The three-dimensional image is still reproduced, although there is a loss of either contrast or resolution in the image.

## ASTRONOMY

### Arabia plans major 'scope

Saudi Arabia's King Faisal plans a big astronomical observatory to rival those in the U.S., Australia and Britain, and has asked the British Astronomer Royal to come advise him on design, layout and construction.

Sir Richard Wooley said before leaving for Arabia he had some doubts about whether the desert observatory would work out.

"The trouble may be sand storms," he said. "It is no use at all spending millions of dollars on big telescopes—and King Faisal wants at least one big one, about 98-inch diameter—if they will be blinded and probably damaged by sand and grit. Even a bottomless budget can't solve that."

## PHOTOELECTRICITY

### Light-aid for the handicapped

A photoelectric control system developed in London will permit the physically handicapped to operate a typewriter and switch on other devices.

The photoelectric system uses a beam of light from a special flashlight which can be strapped to the patient's head, or any other part of the body which is not disabled. The light initiates a control action when it shines on the appropriate photocell.

One of two devices that use this method is a typewriter system, in which a vertical keyboard is placed in front of the patient. Photocells which are marked on the board correspond to the figures and numerals of the typewriter. When the light beam is shone on to a cell, it operates an electric typewriter to which the keyboard is connected.

A time delay prevents accidental triggering of the keys if the light is just passing over the photocells.

Another unit can operate an alarm, switch on and tune a radio, control light switches, fans and open and close doors and curtains.

## AUTO STANDARDS

### Curved chrome to cut glare

Federal auto safety regulations require trim surface to have a flat nonreflective finish to cut glare.

General Motors chemist Roger L. Saur claims that shiny surfaces can be just as glareless as matte finishes, if the surfaces are curved sharply enough.

Dr. Saur built a machine to test glare, and told the Optical Society that curving the surface, which reduces the size of the sun's image as it is reflected, cut down glare just as well as reducing the reflecting quality.