ing, the projectionist has other things to work out. His two projectors must be aligned so that the pictures from each projector fall upon the screen at the proper point. Misaligned machines may give the audience a crick in its neck.

Furthermore, the focal lengths of the lenses in the projectors must be much more closely matched than they usually are. And the third-dimensional effect can be killed if the projectionist fails to check the polarizing filter that screens each light beam as it leaves for the screen.

Pictures Tend to Darkness

Since these polarizing filters knock out about half the light leaving the projector, and since the polarized glasses worn by the audience filter out about half of what is left, the 3-D picture tends to be dark.

To increase brilliancy, the screen can be covered with a special aluminum paint. But this must be done with care or the pores in the screen will become clogged. Sound coming from behind-the-screen loudspeakers thus will be blocked and the audience will find it hard to hear.

These are not all of the 3-D projectionist's troubles by any means, but they should give you an idea of the complexities attached to adding one mere dimension to your theater enjoyment.

If three-dimensional movies become commonplace, it may turn out that many a projectionist will have a better build than muscle-men actors starring in the films. In an effort to keep intermissions at a minimum, film makers now are putting their 3-D movies on giant reels.

These reels, nearly two feet in diameter, hold 5,000 feet of color film and more than a mile of black-and-white film. The reels weigh about 50 pounds each and some of them must be fitted on a spindle only 5/16-inch in diameter.

Broken-Film Problem

In itself, this is hard to do, but the task is complicated because some of the reels go on spindles above the operator's head. Jockeying these heavy reels into position for a hard-to-hit spindle is bound to be good exercise for the arms and shoulders.

Another complication is brought on by the overweight reels. Unless made of a suitable steel, the 5/16-inch spindle is almost too weak to hold them. The spindles sometimes bend. This leads to snapped film as the reels wobble uncertainly in the projector's magazine.

Broken film was quite a problem at the outset of Natural Vision movies. Big take-up reels, never intended to perform such duty, moved slowly when the projector first came on. As the reel gathered speed, it quickly took up slack in the film. But the reel was spinning so fast when all the slack was absorbed that it frequently snapped the film.

The key to Natural Vision 3-D lies in polarizing light from the two projectors. Facing the screen, the left projector shows, for instance, the picture to be seen by the left eye. Light from this projector shoots through a filter in front of the lens which polarizes the light in one direction.

The same thing happens to light leaving the right-eye projector, except that the light is polarized at right angles to that of the left-eye projector. This means that light from the projectors can enter your eye only through the proper polarized lens in the glasses you wear.

Since the whole polarizing job is done right at the projectors, the operator must keep a wary eye on the polarizing filters.

Heat from the strong arc lamps deteriorates the filters. To check the filters to see if they are polarizing the light properly, the projectionist must have someone down in the house look back at the projectors through polarized glasses. If the light beams appear a deep blue, the filters still are working. If the beams are blotchy, the filters need replacing.

To date, Natural Vision has broken box office records in town after town. Its promoters hope it will snatch persons away from their television sets. It is still uncertain, however, what will happen when the novelty of 3-D wears off.

But when opticians begin polarizing the lenses of your glasses, you will know that Natural Vision is here to stay.

Science News Letter, August 1, 1953

GENETICS

Growth Studies Aimed At Tracing Abnormalities

➤ GROWTH ABNORMALITIES may some day be traced back to the specific genes, the tiny hereditary units that caused them, and thus may be corrected.

This was foreseen here by Dr. Paul B. Sawin of the Roscoe B. Jackson Memorial Laboratory. Such backward tracing of growth can be likened to counting the rings in a tree's trunk to tell its age.

Variations in the structure and size of parts of the skeleton, digestive and endocrine systems in animals can be used as the growth landmarks, Dr. Sawin said. They give clues to the inherited and environmental factors responsible for the growth pattern, which lead either to favorable or unfavorable body proportions and to endocrine imbalances. These in turn may lead to abnormalities in reproduction, sex and maternal behavior.

Rabbits from the Memorial Laboratory have been bred with specific differences in ribs, or in size and shape of glands, for instance. Such rabbits are being used in cross-breeding and egg transplantation experiments to measure the differences in growth responsible for them.

Scientists hope to trace the growth patterns back to the embryonic stage, and then correct experimentally those differences in pattern that have led to the most unfavorable developments.

Science News Letter, August 1, 1953

AERONAUTICS

"Brain" Lands Airplanes; Wins Prize for Inventor

➤ AN ELECTRONIC device that schedules airplane landings at bustling airports won the Thurman H. Bane Award for its inventor, Benjamin F. Greene Jr. of the Air Force's Cambridge Research Center, Mass.

The award is given annually by the Institute of the Aeronautical Sciences.

Designed to cut the traffic snarl in skies over airports, the electronic machine figures out when a certain airplane should arrive at the airport. Then it determines whether any other plane is scheduled to land at the same time.

If the airstrip will be in use at the scheduled arrival of the plane, the machine calculates a slight detour for the pilot to fly. The detour will delay the plane's arrival until the first moment the landing field is open. The detour path is relayed by radio to the pilot.

This eliminates the conglomeration of planes "holding" at certain altitudes over the airport while waiting for landing instructions. Theoretically one landing every 30 seconds can be made at airports equipped with the device, providing the field can be cleared of passengers and plane.

Science News Letter, August 1, 1953

Free Booklet Tells How Deaf Hear Again With Startling Clarity, Ease

New hope for the 15 million persons in the United States who are hard of hearing was voiced by a noted Chicago acoustical scientist.

He reported that through the miracle of modern electronics it is now possible to overcome deafness even if the loss is severe.

He demonstrated how the deaf can hear again with a clarity and ease they never dreamed possible.

According to this electronic engineer, Mr. S. F. Posen of Beltone, "the longer a hearing loss is neglected, the harder it is to recapture certain speech sounds and understand them."

To acquaint the hard of hearing readers of this magazine with what may be done to help the deaf hear again with miraculous clarity, full authoritative details about deafness and how to overcome it are described in an informative, new, illustrated booklet, which will be sent in a plain wrapper without any cost or obligation. Send for your valuable free copy today. A postcard will do.

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