

ASTRONOMY

New Guider for Telescopes

This new automatic device operates through a photoelectric cell which is activated by a small part of the starlight which is reflected from within the telescope.

➤ GIANT telescopes used by astronomers will automatically follow the stars on which they are pointed by means of a new guiding device developed at Mount Wilson Observatory, Pasadena, Calif., by Horace W. Babcock. A description of the instrument appeared in the *Review of Scientific Instruments* (Nov.), a publication of the American Institute of Physics.

The heart of the new guiding device is a photoelectric cell which is activated by a small part of the starlight which is reflected from within the telescope. The cell, in turn, operates the mechanism to keep the telescope directed on the star. The guider is now in use on the Mount Wilson 100-inch telescope.

In photographic work with large telescopes, constant manual control is usually necessary. This is particularly true in spectrographic work, where the image of the star must be kept accurately on the spectrographic slit in the instrument through which light passes to form the

star's spectrum. The new device is particularly valuable for this work because stars studied are generally brighter than the guide stars usually available in direct photography.

In spectrographic work, a part of the light of the star does not enter the slit but is reflected back by its polished knife-edge jaws. The new device uses a fraction of this reflected light. A small guiding telescope is used for observing the slit. Its eye-piece, where the image of the slit and star is formed, is converted into a scanning device by use of a small internal coaxial tube, mounted in ball bearings and rotated by a miniature motor.

Any deviation of the star from the axis of the rotating tube results in modulation of the light transmitted by the eyepiece into a multiplier-type phototube. The output of the tube therefore varies, and is used after amplification to operate the mechanism to adjust the pointing direction of the telescope.

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to the border patrol in checking illegal crossing of the boundary in either direction, particularly by smugglers.

Present commercial relations between the United States and Mexico will not be affected in any way by the foot-and-mouth quarantine, Dr. Simms stated. Practically no meat or green hides have been entering recently, and since the virus is destroyed in the tanning process it is quite safe to bring in Mexican leather goods.

Vaccine for Mexico's fight to save her cattle will either be made by the International Commission or by private firms under its supervision, if the Commission's recommendations are adopted by the Mexican government. Unsupervised vaccine manufacture is too apt to result in a product of low potency.

Up to now, foot-and-mouth disease vaccine has been made by inoculating animals, isolating the virus after they develop the disease, and reducing its power for ill by chemical treatment. Use of living animals makes the product costly. Lately experiments have given hope that it can be made in glass vessels, with the virus feeding on animal tissues obtained from slaughter-houses. If this works out, costs will be materially reduced.

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VETERINARY MEDICINE

Deer Are Worst Danger In Foot-Mouth Disease Area

➤ REPORTS that hooved game animals may be infected wholesale in the Mexican foot-and-mouth disease area have aroused considerable interest among wildlife scientists. If wild animals do pick up the disease, the situation will become very serious.

Most probable victims would be deer, which are fairly numerous in the wilder parts of central Mexico. Deer would be very difficult to exterminate completely, since they run singly or in small groups and are quite skilled in hiding in brush and second-growth forest.

Antelope would present no great problem, for there are few or none of them in the area. They are animals of the open, much more easily hunted than deer, if ordinarily illegal means like jeeps and helicopters are used.

Wild pigs known as peccaries or javelinas may become infected. If they do, they should not be too difficult to run down and exterminate, for unlike deer and antelope they move and feed in compact herds.

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VETERINARY MEDICINE

Plan To Fence Off Border

Recommend vaccine made by International Commission to fight foot and mouth disease in Mexican cattle. Won't affect trade.

➤ DEFENSE against foot and mouth disease in Mexico, now that the war against the virus has settled into the long-drawn-out siege phase, may require fewer instead of more men, Dr. B. T. Simms, chief of the Bureau of Animal Industry, U. S. Department of Agriculture, stated in a Science Service interview. Operations will continue to be on an international basis, with American field men working alongside their Mexican colleagues in maintaining the strict quarantine that will be necessary.

Two lines of defense have been drawn up. One of them is deep in Mexican territory, from 350 to 700 miles south of the border, along the edge of the area of known infection. The second is along the border itself.

The project for a high woven-wire fence along the whole boundary, capable of preventing the crossing of either man or beast, which was proposed but not acted upon when the outbreak first occurred, has now been revived. An appropriation for its construction will be asked of Congress; Texas cattlemen are especially active in its support.

Such a fence will have value beyond simply preventing the unauthorized passage of possibly diseased cattle, Dr. Simms pointed out. Hooved game animals, especially deer, are capable of carrying the virus, and it will be highly dangerous to have them freely crossing and re-crossing the border if the disease ever makes its way farther north. The fence should also be a material aid