

ASTRONOMY

Faster, Clearer Star Photos

Combination of photography and electronics gives astronomers a new, extremely sensitive tool with a 50 to one advantage over that of a photographic plate alone.

► CLEARER AND faster pictures of the stars can now be made by a new method that combines electronics and photography.

Still in the development stage, the method was devised by Drs. Andre Lallemand and Maurice Duchesne of the Observatory of Paris, France. It gives extremely clear photographs in much shorter times than has previously been possible.

Combining electronics and photography presents astronomers with a new, sensitive tool for their study of the heavens, just as the electron microscope greatly aided biologists in their study of cells.

The star's light is focused through a telescope, not as usual on a photographic plate, but on a light-sensitive plate made of glass-covered antimony and cesium. This photoelectric plate gives off electrons when hit by light. On the average, one out of four photons, or units, of light causes the emission of one electron from the plate.

The electrons are then focused and speeded to the target photographic plate by a potential difference of 30,000 volts, in the same manner as in the electron microscope.

When light falls directly on a photographic plate, only about one in 200 of the light units reacts with the emulsion to give an image. The antimony-cesium photoelectric plate thus has a 50 to one advantage over a photographic plate used alone.

Since the photoelectric plate operates only in a high vacuum, it is first placed in an inner airtight container inside the part of the new instrument to be evacuated, and held off to one side by a magnet until needed. The air is then pumped out, and the star's image is focused on the spot inside the vacuum where the photoelectric plate will be.

After these two steps, the airtight inner container is broken and the plate moved to the telescope focus with the aid of two magnets. When the star's light hits the plate, the electrons are given off and speeded on their way to the photographic plate, giving about fifty times the efficiency of the star's light used alone.

On an electronic photograph taken with an exposure of five seconds, Drs. Lallemand and Duchesne have been able to resolve the fourth star of a grouping in the constellation of Orion, the hunter, although a sensitive photographic plate exposed for three minutes in the usual fashion shows only three of the four stars.

If the combination electronic-photographic instrument, which in its early stages is showing such great promise, can be developed to the point where it is technically feasible to use in routine laboratory work, other sciences beside astronomy, such as physics and biology, could also benefit from it.

Science News Letter, July 25, 1953

• RADIO

Saturday, Aug. 1, 1953, 3:15-3:30 p.m. EDT
"Adventures in Science" with Watson Davis, Director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. J. W. Beams, professor of physics and chairman of the department of physics, University of Virginia, and Dr. William Parson, professor of internal medicine, University of Virginia Medical School, discuss "Whirling Research."

GENERAL SCIENCE

Manpower Limiting In Full Mobilization

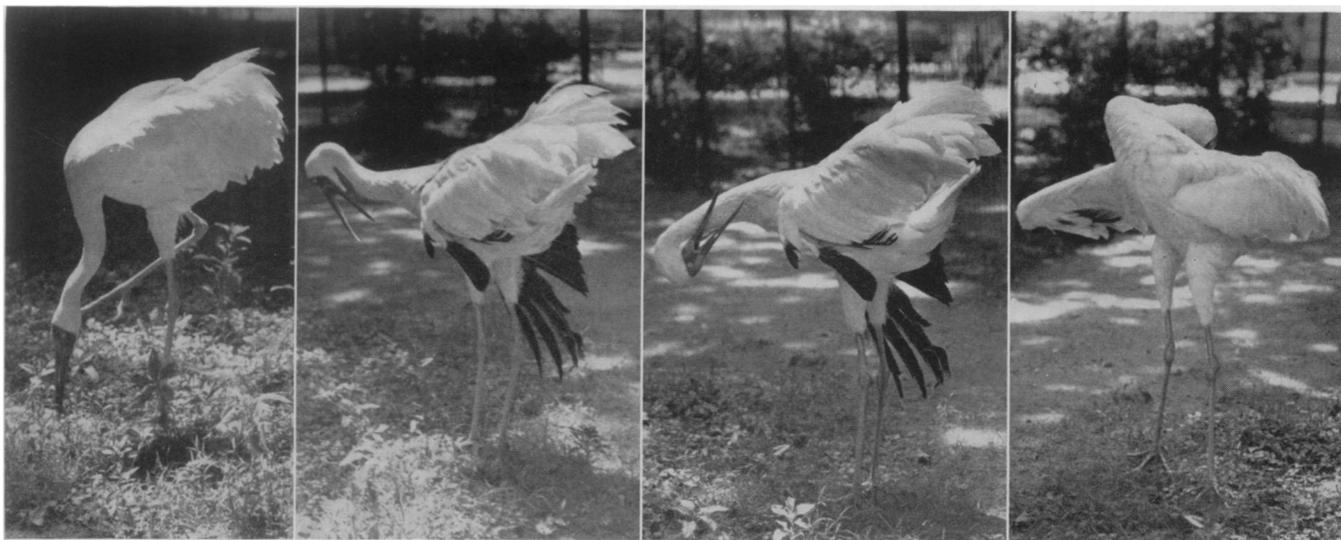
► IF FULL mobilization were to come soon, the U. S. "would be likely to find that its limiting resource was manpower," the National Planning Association warns.

This country is some 40,000,000 short of being able to match man for man, the numbers of the Soviet Union.

As part of a long-range manpower policy, the Association suggests the establishment of a Civilian Reserve, "with periodic active service for which men would be released by their organizations on the same basis as for active military duty." They would form a competent and experienced civilian hard core of government "generalists" in such fields as transportation, industrial management, rationing, etc., in case of a new war.

In "Manpower: The Nation's First Resource" (see p. 60), the Association points out that in preparing our own long-term manpower policies, comparison should be made with Russian trends. The Russians are placing major emphasis on the training of technological personnel. At present they are graduating 30,000 engineers a year, from a five-year course of six-day weeks and ten-month years. The United States output is 23,000 from a four-year course.

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DANCE OF THE CRANE—This Siberian crane, a long-time inhabitant at the National Zoological Park in Washington, goes through a dance in the apparent wish to please keepers and spectators. He first plays dead, then gets up, as in the first picture. After seeming to strut, he ducks his head until his neck makes a loop. He then unloops his neck, throws his head high and tucks it under his wings, as shown in the last picture.