

ASTRONOMY-PHOTOGRAPHY

Movies of Sunset on Moon Are Shown Before Scientists

Amateur Astronomers Exhibit Results of Three Years' Work Making Fast Motion Pictures of the Moon and Jupiter

A NEWS REEL film of events on the moon and the distant planet Jupiter was shown to the members of the American Philosophical Society at the late session of their annual meeting in Philadelphia last week.

The astronomer-impresario was Dr. Heber D. Curtis of the Detroit Observatory of the University of Michigan at Ann Arbor. The pictures were made in the McMath-Hulbert Observatory near Pontiac, Mich., where three unusually gifted amateur astronomers, Robert McMath, Francis McMath and Henry S. Hulbert, have put in three years of hard work experimenting on the application of the movies principle to celestial photography.

The first film showed a sunset on one of the craters of the moon. As the sun sank toward its rim the shadow of a small peak in the center of the crater could be seen growing longer, creeping across the floor and then up the opposite wall. At the same time the shadows of the crater wall nearest the sun grew larger and finally obliterated the center of the great depression.

The second film was of the planet Jupiter showing the peculiar zones or belts that circle its great sphere and making its rotation plainly evident. After that a view was shown of Jupiter's many moons speeded up to show many hours of their revolutions about the parent planet in a few minutes.

Exactng Work

The work of taking these films is most exacting, Prof. Curtis said; frequently the telescope must be guided with the greatest accuracy for periods of six to eight hours. In the case of the moon special gears had to be calculated and cut because of the rapid motion of that satellite. For one element of the moon's motion a special motor had to be constructed.

In recognition of their work as pioneers in celestial movies the three men who built the observatory and made the films have been made hon-

orary curators of the Observatory of the University of Michigan.

None of the three associates of Dr. Curtis is a professional astronomer. Henry S. Hulbert, when not making celestial movies, is senior judge of the probate court of Detroit. Robert McMath is an engineer and manufacturer, while Francis McMath is a consulting engineer.

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ENGINEERING

New Sand Trap Cleans Irrigation Water

MUCH of the world's precious irrigation water, now wasted in washing the silt out of ditches, will undoubtedly be saved by the combination vortex and riffle sand trap just developed in the laboratory of the Colorado Agricultural Experiment Station at Fort Collins, Colo., by Ralph Parshall, senior irrigation engineer and his associates, Carl Rohwer and William J. Colson.

This new method which traps or segregates heavy materials through a

system of triangular riffles and a special vortex tube placed at an angle across the bed of a channel, is expected not only to solve the sand and silt problems of many irrigation districts but to be useful in industrial operations as well.

Among the many ingenious devices tried out are rectangular, triangular, and semicircular riffles fastened at intervals on the slightly inclined floor of a test flume. The triangular up-stream riffles were found to be very efficient in moving the bed load of sand, gravel and even large cobble stones, laterally across the channel and out through the proper sluice gates.

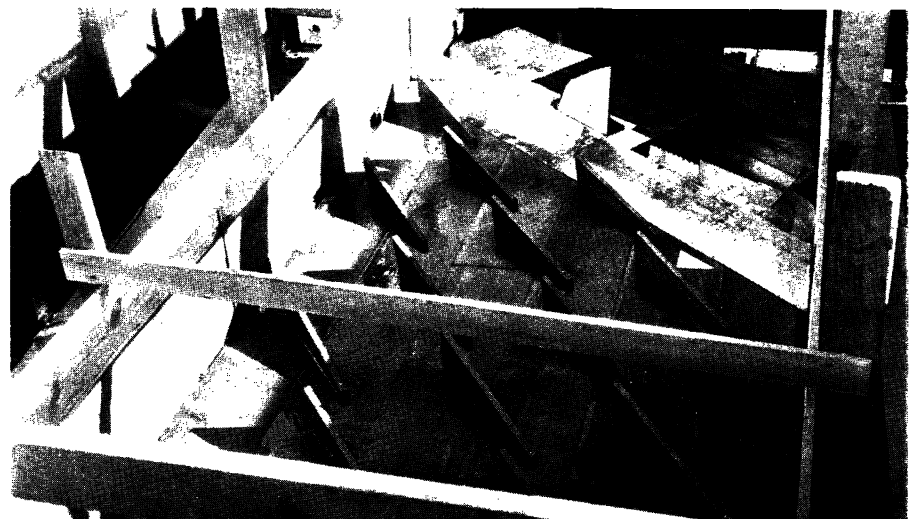
All gravel that escaped these riffles was caught by the whirling action in a special tube and speedily carried out of the main stream through another sluice gate.

According to the results of these experiments, this new sand trap is considered automatic, fool-proof and continuous in its operation. Plans are now being completed for the construction of a large combination vortex and riffle sand trap at the head of the Colorado Canal near Boone, in the Arkansas Valley.

Sand accumulation in this canal often has reduced the amount of water carried from 600 to 400 cubic feet per second in a week's time. In sluicing out this sand under present conditions the total flow in the canal is required for about three or four days.

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About 40 varieties of strawberry are grown commercially in the United States.



CLEANSING FLUME FOR IRRIGATION WATER

A development of the Colorado Agricultural Experiment Station at Fort Collins. It will save much irrigation water now wasted in washing sand and silt out of the ditches.