



program is laid out for these moons. At 11:48 p. m., E. S. T., on the 22nd, satellite III, which is called Ganymede, will be eclipsed as Jupiter's shadow engulfs it. At 1:16 a. m., II, Europa, will disappear in a similar way. At 2:38 a. m., I, known as Io, will be out of sight when it starts a transit in front of the planet. This will leave only satellite IV, Callisto, visible until 3:54 a. m., when Ganymede will emerge from behind Jupiter. At 4:42 a. m., Europa will return to view, followed six minutes later by the reappearance of Io, after which all four moons will again be visible. Io will then be seen on the western side of the planet, the others to the east.

And also in the evening sky is Saturn, whose rings are probably the most interesting sight of all to most observatory visitors. Now they are very well seen. These rings consist of a vast swarm of tiny moons. In addition, Saturn has nine other moons, two short of Jupiter's total of 11. But the Saturnian moons are not as easy to see, and they are not eclipsed nor occulted.

Our own moon, also, is taking part in an occultation this month. On Nov. 6, two days past full, it will pass in front of the bright star Aldebaran,

in Taurus. As seen from Washington, the star will be hidden at 6:02 a. m., E. S. T., and will reappear at 7:03 a. m. Farther west, it will happen earlier, long before dawn. At a selected point in northern California, for which calculations have been made, the star will hide at 2:07 a. m., P. S. T., and will reappear at 2:51 a. m., P. S. T. This is one of a series of occultations of this star occurring this year.

Celestial Time Table for November

Saturday, Nov. 1, 9:35 a. m., Moon passes Mars. **Monday, Nov. 3,** 9:00 p. m., Full moon. **Wednesday, Nov. 5,** 1:50 a. m., Moon passes Saturn; Noon, Moon farthest, distance 252,500 miles. **Thursday, Nov. 6,** Early morning, Moon occults Aldebaran. **Friday, Nov. 7,** 2:57 a. m., Moon passes Jupiter. **Tuesday, Nov. 11,** 10:00 p. m., Mercury farthest west of sun; 11:53 p. m., Moon at last quarter. **Sunday, Nov. 16,** Early morning, Meteors of Leonid shower visible. **Monday, Nov. 17,** Noon, Moon passes Mercury; 2:00 p. m., Saturn opposite sun and nearest earth with distance of 756,300,000 miles. **Tuesday, Nov. 18,** 7:04 p. m., New moon; 9:00 p. m., Moon nearest, 221,700 miles distant. **Saturday, Nov. 22,** 5:23 a. m., Moon passes Venus; Midnight, Venus farthest east of sun. **Tuesday, Nov. 25,** 12:52 p. m., Moon in first quarter. **Friday, Nov. 28,** 5:10 p. m., Moon passes Mars.

Eastern standard time throughout.

Science News Letter, October 25, 1941

pellor situated at the tip of the tail. This new design with the engine inside the fusilage and propeller in the rear, with no projections or obstructions permits a far higher degree of streamlining than is possible with a flying boat of the usual type, which has an elevated wing and motors in the wing. In landing or starting, the whole tail including engine and propeller is lifted clear of the waves. Another feature of the design is that it provides a step on the under surface of the fusilage when the tail is lifted, which step completely disappears when the tail is lowered for normal flying, and thus avoids the formation of undesirable eddy currents.

Science News Letter, October 25, 1941

Bacterial War on Beetle

A NEW method of germ warfare against the Japanese beetle, which has so ravished our fruits, vegetables, trees and flowers, is the invention of Samson R. Dutky of Moorestown, N. J., Patent 2,258,319, who has assigned his patent rights to the U. S. Government without any payment of royalties to himself.

Instead of poisons or poison gas, Mr. Dutky compounds an insecticide of ground up bacteria of the kind that produce an ailment known as milky disease in the larvae of the Japanese beetle and related insects. The bacteria are mixed with an inert substance, chalk, marble dust, or similar powder, in such proportion that each ounce of the powder contains 30 billion of the deadly spores.

The insecticide can be diluted with water to use as a spray, or mixed with solid materials and applied directly on the ground or mixed with the soil.

The bacteria used belong to the groups *Bacillus popilliae* and *Bacillus lentimorbus*.

Science News Letter, October 25, 1941

INVENTION

Plane That Lifts Its Tail Brings Patent To German

AN AIRPLANE that lifts its tail like a bird when it sits down on land or water is among 858 inventions granted U. S. Patents recently.

The plane, of truly revolutionary design, is the invention of Claude Dornier, famous German airplane designer, who

was awarded U. S. Patent 2,257,940.

The whole rear is carried on a hinge in such a way that it can be lifted to a high angle. This rear end also carries the entire power plant, the usual vertical fin and rudder, the horizontal tail planes and elevators, and a pusher pro-

RESEARCH

Research Job For Defense Used 150 Scientists

ONE of the most extensive jobs of scientific research in the defense effort took 150 different physicists from 25 different universities to the Massachusetts Institute of Technology's Radiation Laboratory to work on "a highly confidential and important subject with the greatest possible speed," President James Bryant Conant of Harvard, Chairman of the National Defense Research

