



Lick Observatory, University of California

COMET IKEYA-SEKI—This comet, discovered by Kaoru Ikeya and T. Seki, amateur Japanese astronomers, was on its most brilliant display Oct. 20 when it reached perihelion, the point at which it was closest to the sun. It is now heading farther out into space and will disappear from view sometime in 1966.

when another prominent display was expected, the dense swarm had passed close to Jupiter, and the gravitational pull of that planet changed the paths of the Leonids.

Every November we can see some of these meteors, so watch for them this year. The bright moonlight after midnight makes conditions somewhat unfavorable, but, as the 1965 Handbook of the British Astronomical Association points out, the Leonid shower usually has a high proportion of bright meteors, so it will still be worthwhile to keep watch.

November brings the year's third eclipse, on Nov. 23, which is not visible in this part of the world. Our troops in Viet Nam will be able to see it, however. The path along which it is visible starts in Afghanistan, then goes to the southeast across Pakistan, India, Nepal, Burma, Thailand and Viet Nam. After that it crosses the South China Sea and the islands of Borneo and New Guinea, before it ends in the Pacific Ocean near the Gilbert Islands.

This will be an annular eclipse; that is, the moon will be too far away to hide the sun completely. At the height of the eclipse, a ring of the solar disk will be visible around the dark moon. Over a large area, which includes most of southern Asia as well as Australia, people will see a partial eclipse.

Celestial Timetable for November

NOV. EST

- 1 3:26 a.m. Moon in first quarter
- 10:00 a.m. Moon farthest, distance 251,200 miles

- 2 1:00 a.m. Algol (variable star in Perseus) at minimum brightness
- 3 5:00 p.m. Moon passes south of Saturn
- 4 9:50 p.m. Algol at minimum
- 7 6:30 p.m. Algol at minimum
- 8 11:16 p.m. Full moon
- 12 3:00 a.m. Moon passes north of Jupiter
- 10:00 p.m. Mercury farthest east of sun
- 14 3:00 a.m. Moon nearest, distance 229,600 miles
- 15 3:00 p.m. Venus farthest east of sun
- 8:54 p.m. Moon in last quarter
- 17 early a.m. Meteors of Leonid shower at maximum
- 22 2:40 a.m. Algol at minimum
- 11:10 p.m. New moon, annular eclipse of sun, visible in Asia
- 24 11:30 p.m. Algol at minimum
- 25 midnight Moon passes south of Mars
- 27 1:00 a.m. Moon passes south of Venus
- 8:20 p.m. Algol at minimum
- 29 7:00 a.m. Moon farthest, distance 251,500 miles
- 30 5:10 p.m. Algol at minimum

Subtract one hour for CST, two hours for MST, and three hours for PST.

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Nature Note

Flatworms

➤ A LITTLE HIGHER up the scale of animal development from the jellyfish, anemone and corals of the phylum Coelenterata is the group known as the Platyhelminthes or flatworms. There are more than 9,000 species of these flat creatures and they are widely distributed throughout the world.

The flatworm phylum is divided into three classes: the free-living or true flatworms, and the two parasitic classes—the flukes and the tapeworms.

One of the more common true flatworms is the seemingly cross-eyed creature called *planarium*, a flat brownish worm about half an inch long and much studied and experimented upon in laboratories. Its tri-pointed head has two pigment-cup eyes placed on two light-sensory lobes in such a way that the worm looks comically cross-eyed. These light-sensitive eyes are the first traces of eyes to appear in the lower animals. One side of the animal is similar to the other side—an example of bilateral symmetry in the evolution of animal form.

The trematoda or flukes live as parasites on many species of animals, and cause many serious diseases. Some live in livers, others in lungs and still others in the bloodstream. Looking somewhat like planarians, the flukes have two or more suckers for attaching themselves to and feeding upon their hosts.

Tapeworms are long ribbon-like worms that almost always live inside the intestines of animals and humans. Some grow to enormous lengths of 50 or more feet. These unpleasant creatures have no mouths or digestive apparatus—they just absorb much of their nutrition directly through their body wall from the intestinal contents of their host. A tapeworm's head is equipped with suckers or hooks to attach itself. Behind these stretch a whole series of sectional pieces, each one capable of reproducing sperms and eggs. When they grow to maturity, these pieces break off and pass out of the host animal.

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