

ASTRONOMY

Look for Comet Bester

It will be visible just before sunrise at the end of this month or the first week in March and may be seen by the unaided eye if it is a dark, clear night.

➤ **STAR-LOVERS** in the Northern Hemisphere will have a chance to see a comet not many days hence. It will be speeding toward the northern heavens, heading for the Big Dipper.

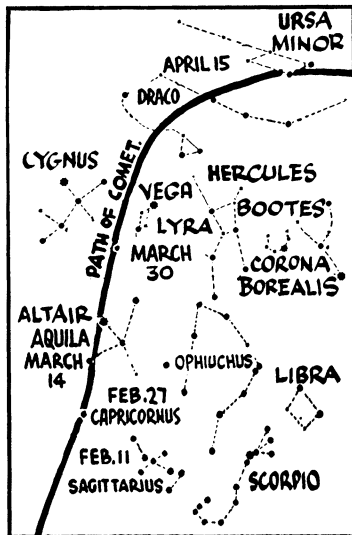
On a dark night with clear skies you may be able to pick it up with the unaided eye, but a pair of opera glasses or binoculars will help you identify it and see it in detail.

This comet was first discovered late last September. When spotted by Michiel J. Bester of Harvard's South African station, it was only a hazy splotch of light, noticeable because it changed its position among the stars. Since then it has begun to brighten and develop a tail.

About the middle of February, when it made its nearest approach to the sun Comet Bester was brightest. It can not yet be seen, however, because its light is lost in the brilliance of the sun.

Observers in the Northern Hemisphere may possibly first spot the comet late this month. But it is more likely that they will not see it until the first week in March, reports Dr. Leland E. Cunningham of Students' Observatory, University of California at Berkeley, who calculated its path.

The comet will probably appear quite suddenly. It will be found by some "night owl," as it will be visible just before sunrise. It will be moving quite rapidly, heading north.



Comet Bester, when discovered, was little more than a cluster of cosmic dust and gas. Actually there is less material in the head of a comet than in the smallest of the minor planets.

At first it shone only by reflected light. But as it approached the sun, the comet itself began to give off a little light. Today the dust reflects the sunlight and the cold gases shine by fluorescence.

On Feb. 16 the comet approached within 70,000,000 miles of the sun. This is closer to the sun than the earth ever gets and within a few million miles of being as close as the planet Venus comes.

Just what this comet will look like when it leaves the vicinity of the sun, astronomers are not venturing to guess. Like comet 1947 n, that gave such a spectacular show in the southern skies last December, it may have a long, thin tail. Then, again, its tail may be quite short and broad, or it may possibly not have any at all. Each comet is different and changes rapidly. When there is a tail, however, it always points away from the sun.

The possible brightness of the comet is another point on which astronomers prefer to hedge. Estimates indicate that it may possibly be as bright as third magnitude, about 20 times as bright as the faintest stars you can see in the country on a clear night. But predictions of a comet's brightness are only guesses at best.

The newest Comet Bester (the young South African astronomer discovered several comets last year), will probably be visible through good telescopes most of the year.

First spotted in the constellation of Eridanus, the comet immediately wandered southward so that comet seekers in the Northern Hemisphere, even those with good telescopes, had only a brief glimpse of it.

Although the comet will be around for some time, early March is the best time to look for it. The comet will be brighter than later in the month and the moon, being new, will not interfere.

The comet will cross the celestial equator about March 13. From there it

will move rapidly northward through the constellations of Aquila, the eagle; Sagitta, the arrow; and Vulpecula, the little fox. It will travel along the border between Cygnus, the swan, and Lyra, the lyre, into the constellation of Draco, the dragon.

Throughout the following few weeks Comet Bester should be easy to spot as it will be near well-known stars. On March 18, it will be close to the first magnitude star Altair, Dr. Cunningham estimates. On March 29 it will have moved close to the well-known star Beta Cygni. By April 3 it will be about one-third of the way from the first magnitude star Vega to the first magnitude star Deneb Cygni.

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COMET DISCOVERER—*Michiel J. Bester of Harvard's South African station last year discovered three comets out of a total of only nine new ones found.*

During the second week of April it will be getting closer to the North Star. Comet Bester will pass across the constellations of Draco; Ursa Minor, the smaller bear; Draco again and into Ursa Major, the larger bear.

On April 13 the comet will be directly north of the "head of Draco." On April 21 it will pass between the Guardians of the Pole Star, Beta and Gamma Ursa Minoris. By this time, however, the comet will probably have faded so much that it will no longer interest amateur astronomers. But it should still show up well even then when seen through a telescope.

Science News Letter, February 21, 1948

INVENTION

Blade Kills Weeds by Cutting Underground Roots

➤ AN implement that kills weeds as cutworms kill your favorite garden plants, by clipping off their roots below the ground surface, is the invention on which Charles S. Noble of Nobleford, Alberta, has received U. S. patent 2,432,035. Mr. Noble is already well known for his system of sub-surface cultivation, which stirs the soil with minimum disturbance of surface-protecting vegetation or litter. In the present invention, a gently arced blade is drawn along a couple of inches under the surface, clipping off weed roots as it goes. The surface layer rides over the arc and drops back into place.

Science News Letter, February 21, 1948

MEDICINE

Experiments on Prisoners

Reduction in sentence should not be so great as to influence volunteering. This advice is given by a committee of medical and religious leaders.

➤ THE Soviet scientist who is reported as saying American medical scientists follow Nazi methods when they use prisoners in medical experiments can find how wrong he is by reading a report in the *Journal of the American Medical Association*, (Feb. 14).

Even when prisoners are given a reduction of sentence in prison as a reward for volunteering their services, the reduction in sentence should not be so great that it could influence them to volunteer for medical experiments. To make sure that it has no influence, the amount the sentence is reduced should be decided in relation to each prisoner and the nature of the experiment.

This, in brief, is the advice given the Illinois Department of Public Safety by a committee of medical, religious and lay leaders appointed by Governor Dwight H. Green of Illinois.

"The most important requirement for the ethical use of human beings as subjects in medical experiments is that they be volunteers," the committee states.

"Volunteering exists when a person is able to say 'yes' or 'no' without fear of being punished or of being deprived of privileges due him in the ordinary course of events."

An excessive reduction of sentence would be "inconsistent with the principle of voluntary participation," the committee explains, because it might exercise undue influence in gaining the consent of the prisoners to serve as subjects if their sole motive for doing so is to gain a reduction in sentence.

Prisoners are not the only persons who have volunteered for experiments planned to advance human welfare. Medical scientists, medical students, soldiers, sailors and others have also volunteered. These experiments have always been carried out according to certain ethical principles and rules.

One such rule is that if there is any reason to suspect that death or disabling injury may occur, as in experiments such as those of Walter Reed which showed the mosquito spread yellow fever, "then medical scientists should serve or should have served as volun-

teers along with nonscientific personnel," the committee states.

Consent of the volunteer must be obtained, without coercion, and he must have been informed of the dangers, if any.

Science News Letter, February 21, 1948

GEOLOGY

Home-Made Seismograph Detects Quake in Alaska

➤ AN earthquake that shook Fairbanks, Alaska, recorded itself on a seismograph built by a high school senior, Michael D. Lubin, 17, of Tottenville High School on Staten Island, N. Y. Although of simple construction, the instrument operates on the same principles as the elaborate mechanisms used by professional seismologists.

The seismograph he has constructed is of the type known as the Bosch-Omori, from its original inventors. Its foundation consists of a heavy block of concrete sunk in the earth, with a vertical pillar rising from it. Projecting horizontally from this, near its base, is a hinged horizontal arm or boom, which carries a heavy weight. An oblique wire or rod to the top of the pillar helps support the weight, which is free to swing as a horizontal pendulum.

A long but light continuation of the boom carries a writing point at its end. This rests lightly on smoked paper stretched over a horizontal cylinder or drum, which is slowly turned by clockwork. This is the recording mechanism.

When the waves from a distant earthquake, undetectable by ordinary human senses, reach the instrument they cause the vertical pillar to sway by a microscopic amount. The inertia of the heavy pendulum mass tends to hold it motionless against the swing of the boom. This in turn produces an exaggerated amount of apparent motion at the recording end, which registers itself as the familiar wiggly line of a seismogram.

Mr. Lubin states that his instrument is not as sensitive as he would like, because it had to be set in the clay subsoil of Staten Island, 50 feet above the nearest bedrock. Loose material like clay does not transmit waves so well as solid rock,