

## ASTRONOMY

# Gigantic Variable Stars

**Eighteen gigantic variable stars, each a billion miles across, discovered in southern skies. If centered on sun, many would overflow Jupiter's orbit.**

► EIGHTEEN GIGANTIC variable stars, each almost a billion miles across, have been detected in the southern skies, Dr. Harlow Shapley, director, and Mrs. Virginia McKibben Nail of Harvard College Observatory, and William Tift, Harvard undergraduate, reported.

These stars are so large the radius of each is more than five times the distance from the earth to the sun, members of the American Astronomical Society meeting at the National Bureau of Standards in Washington were told.

If centered on the sun, the planets Mercury, Venus, earth and Mars could all revolve around inside them in their customary orbits, and Jupiter would probably skim along the surface. Each star is more than a billion times the sun in volume.

The stars shine 8,000 to 21,000 times as brightly as our sun, the Harvard astronomers calculate. But because they are about 500 million billion miles away, some shine only as thirteenth magnitude stars in our heavens and thus a telescope is needed to see them.

These dozen and a half stars are all in and around the Large Magellanic Cloud, so far south that they are never seen from the United States. These groups of hundreds of millions of stars are among the

nearest of galaxies beyond our own Milky Way system. To the unaided eye they look like detached portions of the Milky Way. Photographs for the study were made at Harvard's station in the Orange Free State, South Africa.

These reddish stars, Cepheid variables, regularly become brighter, then fade out only to brighten up again. Some take 24 days to complete this cycle while others take up to 172 days to fade out and blaze forth again.

The only variable star in the heavens brighter than these reported for the first time at the meeting is the well-known bluish variable star S. Doradus. It is half a million times more luminous than the sun, and its real brightness is exceeded only by the bursts of supernovae, the brightest of "new stars."

Nearly as bright and gigantic as these Cepheid giants are half a dozen red irregular variable stars of the general type of our neighbor star Betelgeuse, bright star in the constellation of Orion, the giant Hunter, and with a diameter 400 times the sun's.

In the field of the Large Magellanic Cloud are also several giant eclipsing stars and supergiant variables, Dr. Shapley reported, but they probably are of our own Milky Way galaxy superposed on the Cloud.

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## ORNITHOLOGY

# Incubator Baby Condor

See Front Cover

► AN INCUBATOR baby Andean Condor is now in its third week of life, and growing at a "phenomenal rate." It is the second Andean Condor chick hatched in an incubator, but the first, born last year, survived only six days.

The egg was "pipped," or broken through, on May 25, and the hole was just large enough to reveal a small, persistent bill hammering away inside. Two days later the condor chick broke out of its shell.

The front cover of this week's SCIENCE NEWS LETTER shows the young chick at six days. His rudimentary comb can be easily spotted.

His survival until now has shown scientists at the Zoological Society of San Diego's Balboa Park, California, that they may be able to get four young chicks every two

years, instead of only one baby condor in two years as has been the case.

Normally Andean Condor parents rear only one chick every two years, since the baby requires the care and attention of its parents for at least half of the two-year period. Zoo officials have stepped the rate up to one condor chick every year by taking the young chick away from its parents near the end of the first year. The adult condors immediately produce another chick—the second in the two-year interval.

Dr. Glen Crosbie, Zoo veterinarian, suggested that the first of the two eggs invariably produced each year by the San Diego condors be put in an incubator, since the parent birds either neglect or destroy this egg. Successful growth, after a 56-day incubation period, of the usually neglected egg, points the way towards production of

four times the normal number of young condors.

Death of last year's incubator baby condor is believed to have been caused by food that was too difficult for the chick to digest. Parent-reared chicks are fed on meat that has already been partly digested.

Curator of birds Kenton C. Lint and Dr. Crosbie added two digestive aids to the new condor chick formula: Lederle's Profactor B with aureomycin, one of the antibiotics, and powdered dehydrated papaya juice.

When the incubator baby condor was offered ground mouse tissue well seasoned with the two digestive aids, he accepted it eagerly, Ken Stott, Jr., general curator of the Zoo, reports. Officials are "extremely optimistic" about the survival chances of the new chick.

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## ENTOMOLOGY

# Firefly Hunt Aids Work On More Efficient Light

► BALTIMORE YOUNGSTERS will be out hunting fireflies for the next two months or more, gathering the glowing insects to help a Johns Hopkins University scientist find out why they light up.

They will also be helping themselves, for Dr. William D. McElroy pays them two bits for every hundred they bring in. During the present firefly season, he wants to get about 300,000 of them stowed in his deep freeze, Dr. McElroy told SCIENCE SERVICE.

He and Dr. J. Hastings of the Atomic Energy Commission will then study the chemistry of the firefly's glow. For this little insect changes chemical energy into light energy with far less loss than man has been able to do. Their studies may lead to a more efficient light for humans.

The two scientists are looking for the vitamin they believe the firefly needs to make its light. Dr. McElroy suspects this vitamin may be related to folic acid, one of the new anti-anemia vitamins needed by humans.

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## CHEMISTRY

# Artificial Perspiration Tests Metal Protection

► SYNTHETIC HUMAN perspiration is used in discovering how to keep fingerprints from ruining precisely machined pieces of metal.

Scientists of the Socony-Vacuum Oil Co. laboratory in Brooklyn, N. Y., are improving slushing oils used to prevent the almost invisible corrosion that occurs on precision apparatus even when they are most carefully handled.

Natural perspiration is too variable to be used in tests, although it does the damage when transferred with fingerprints to metal that is handled.

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