

## ASTRONOMY

# Photograph Unborn Stars

**Tiny black spots on photographs, easily mistaken for film imperfections, are dense clouds of cosmic dust believed to be contracting into young stars.**

► STARS YET to be born have been photographed. Not advanced enough to shine forth in the heavens, they show up as dark, roundish spots against a background of bright stars or glowing nebulae.

Dozens of these tiny black spots, which might easily be mistaken for imperfections in the film, show up in photographs of the Great Nebula near Eta Carinae in the constellation of Carina, the ship's keel.

SNL cover, Feb. 23, shows this birthplace of the stars, at that time unannounced.

Pictures of them were taken by Dr. Bart J. Bok, associate director of Harvard College Observatory, and by the staff of the Boyden Station during Dr. Bok's 18-month stay in South Africa.

"These dark globules are dense clouds of cosmic dust," Dr. Bok told SCIENCE SERVICE. "They were created out of material filling the space between the stars and are believed to be contracting into young stars. Millions of years from now they may shine forth in the southern sky."

A wide-eyed telescope owned jointly by Armagh Observatory of Northern Ireland, Dunsink Observatory of Eire and Harvard Observatory was used for these photographs. The only one of its kind in the southern hemisphere where the Milky Way is best seen, it is a modified Schmidt telescope designed by Dr. James G. Baker of Harvard Observatory. The telescope was constructed by the Perkin-Elmer Corp. at Norwalk, Conn., with Dr. Baker as principal consultant. A picture of this telescope appeared in SNL, Feb. 23, p. 115.

The telescope was put into operation near Bloemfontein, South Africa, about a year and a half ago. It gives exceptionally clear pictures of a large area of sky. Already it is furnishing fresh information concerning the possibility that stars are continually being created by condensation of vast cosmic "dust clouds" in interstellar space.

"These tiny dark globules are seen projected against almost all of the larger luminous nebulae surrounding blue-white supergiants," Dr. Bok pointed out. "They and the shining nebulae which serve as background to make them visible are particularly numerous in the Carina constellation. A total of 65 of these embryo stars have been found near the Eta Carina Nebula."

The process of star formation is believed to have progressed farther in these small, dark, round nebulae than in any other

heavenly object as yet observed. Most of them are quite small, cosmically speaking. Their diameters range from 5,000 to 30,000 times the distance separating the earth and the sun. Yet they are so light their mass is estimated to be only somewhere between one-tenth and one-hundredth that of the sun.

Some day gravity, assisted by the outside pressure of radiation from the surrounding stars, will pack the material forming these globules so close together they will become heated and begin to shine from the stellar fire thus started. Dr. Fred L. Whipple of Harvard Observatory and Dr. Lyman Spitzer of Princeton University Observatory have demonstrated theoretically that in time these globules should become luminous stars.

These embryo stars all belong to our own Milky Way system. They seem to be especially prevalent in the Eta Carina Nebula, which really is a luminous knot in one of the spiral arms of our Milky Way galaxy, Dr. Bok recently showed.

Some of these dark nebulae, now called globules, were noted by the late Dr. E. E. Barnard of Lick and Yerkes Observatories. Although he made a list of them, however, little attention has been paid them until recently.

Science News Letter, July 5, 1952

## VETERINARY MEDICINE

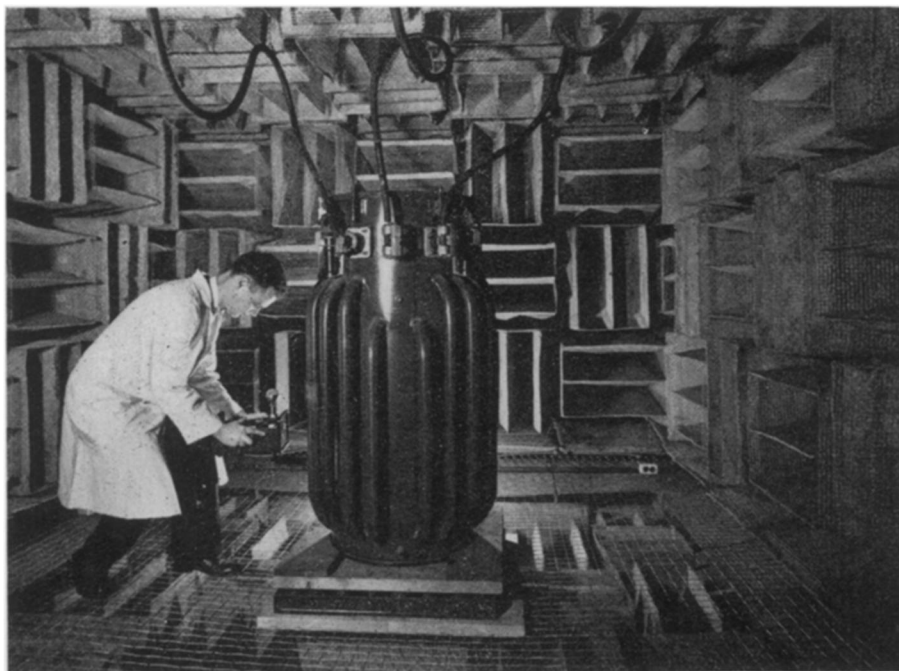
## Combination Vaccine Halts Dog Hepatitis and Distemper

► LASTING PROTECTION against the two most serious infectious diseases of dogs, distemper and infectious hepatitis, can be had from a "combination vaccine" announced by Drs. James A. Baker, George C. Poppensiek and James H. Gillespie of Cornell Research Laboratory for Diseases of Dogs, Ithaca, N. Y., at the meeting of the American Veterinary Medical Association in Atlantic City, N. J.

Infectious hepatitis is a liver and kidney ailment that kills 10% of animals getting it and permanently injures those that recover. About half the present dog population has had the disease at one time or another.

A vaccine for lasting immunity to distemper has been available for some years but this is the first time a vaccine against infectious hepatitis has been combined with the distemper vaccine. Supplies of the double vaccine are expected to be available to veterinarians later this year.

Science News Letter, July 5, 1952



**ANECHOIC LABORATORY**—Quieter fluorescent lights, transformers and other electrical equipment are expected to result from studies now being made in this specially designed room, center of operations in the new Westinghouse acoustics laboratory. Charles H. Smith, engineer, is measuring the slight hum of a transformer.