

ASTRONOMY

Red Star Secret Unfolded

Antares, star of mystery, consisting of a red member and a blue part, is at the heart of enormous cloud of iron particles. Iron is not gas.

➤ A GIANT red star deeply enveloped within an iron curtain has had its mystery pierced by an American astronomer, after seven years of ceaseless watching.

The star is Antares, that glows redly in the southern constellation Scorpio; it is sometimes called "heart of the scorpion." It really consists of two stars, a giant red member 450 times the diameter of the sun, and a much smaller, terrifically hot, blue globe that seems to consist mainly of helium.

The astronomer is Dr. Otto Struve, who is director of two observatories: the Yerkes observatory of the University of Chicago and the McDonald Observatory of the University of Texas on Mt. Locke. Since 1940 he has been waiting for

the perfect atmospheric conditions that would permit him to separate the light from the two close companions on his spectrographic plates.

When he finally did get this astronomer's dream of a perfect night, his plates showed an unexpected and astonishing result: Both red and blue members are at the heart of an enormous cloud of iron particles that has ten times the diameter of our solar system. Furthermore, he reported to *Science* (Aug. 15), their light indicates that the iron is not in gaseous form, but exists as extremely minute solid particles, resembling the meteors or shooting stars familiar nightly in the earth's upper atmosphere.

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AGRICULTURE

2,4-D Only Begun To Fight

"Chemicultivation" with 2,4-D has saved corn and work too. Weed-killer may make closer spacing of corn plantings possible. Other crops have benefitted also.

➤ ONE of the most spectacular uses of 2,4-D this year has been the rescue of thousands of acres of corn, in fields so wet from the June-July deluges that it was impossible to kill their weeds by conventional methods of cultivation. Farmers, desperate in the face of threatened losses, gambled with the new spray method of cultivation—and won, in the highest corn market in history. In most places they sprayed just once, but that once was sufficient. Broad-leaved weeds went down, while corn, being a giant grass and hence immune to 2,4-D effect, stayed up and is making a crop.

At state experiment stations all over the country agronomists are ringing the changes on this new method of "chemicultivation." If one spraying will "lay by" corn that used to require three or four cultivations with steel-bladed implements, that will break a farm-labor bottleneck. At present, corn must be cultivated just at the time the hay harvest is prime, and when a few days en-

forced idleness due to rain may raise very hob with the farm work schedule.

Another vista opens up before the eyes of 2,4-D enthusiasts. At present, the spacing of corn plantings is determined more by the requirements of cultivation machinery than by the growing needs of the corn plant itself. One of the things that agronomists at the experiment stations are trying to find out is whether corn can be planted much closer together, perhaps with heavier fertilization, spray-cultivated once before the seed germinates, and then left to bear a heavier harvest. If this hopeful scheme works out it will be the most revolutionary thing that has happened to corn since the commercial introduction of hybrid varieties.

But corn is not the only crop to benefit from 2,4-D. This murderous chemical can be used to benefit crops that aren't even there. Such a paradox has arisen in Florida, where a blue-flowered creeping weed known as the day-

flower is the carrier of the virus of celery mosaic disease. If the celery fields were sprayed when the crop was in, the celery would be killed, too. So the fields are sprayed well in advance of setting out the crop, to kill the day-flower. After the 2,4-D effects have had time to wear off it is safe to put in the celery, which then stays free of mosaic.

Out West, experience in ridding lawns, parks and golf courses of weeds with 2,4-D is being put to account in obtaining cleaner grass seed for re-establishing depleted rangelands. 2,4-D'd before blossoming-time, the seed plots are free of broad-leaved weeds, and hence have nothing but grass seed to offer.

2,4-D may prove useful directly on the range, to get rid of such unwanted growths as loco-weed, creosote bush and sagebrush, that take up land that could be profitably growing grass.

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VETERINARY MEDICINE

Worm-Killing Chemical Remedy for Brucellosis

➤ PABA, a chemical that has been used with considerable success in ridding livestock of parasitic worms, has now been found to have a sulfa-like action against the exceedingly minute germs called Brucella, that cause contagious abortion in cattle and undulant fever in human beings. This new usefulness of an old drug was described by Drs. Cornelia M. Cotton and Robert E. Swope of the University of Maryland, before the meeting of the American Veterinary Medical Association in Cincinnati.

PABA, which is shorthand for para-aminobenzoic acid, was effective against the Brucella organism both in glass laboratory vessels and in the living bodies of animals. If too little of the drug was given, the germs were only stimulated and encouraged. But when the dose was increased, it at first checked their growth, then killed them outright. In some tests, PABA was first injected into the bodies of guinea pigs, followed by one and one-half billion virulent Brucella organisms. Even such a massive invasion of the germs was able to accomplish nothing; at the end of five weeks no trace of them could be found in the animals' bodies.

Unlike some germ-stopping drugs, PABA seems to produce little toxic effect on the animal under treatment, even when they continue to receive the drug for several weeks.

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