

ASTRONOMY

Coollest Stars Found

► THE COOLEST STARS yet have been discovered. One is reported to have a surface temperature as low as 800 degrees F., about that of the surface of the planet Venus.

In contrast, the temperature of the visible surface of the sun, nearest star to earth, is about 10,000 degrees F.

The other of the two cool stars has a surface temperature of about 1,200 degrees. Both objects are presumed to be true stars, not planets, having interior temperatures of 25 million degrees, high enough for them to be stoked by nuclear fusion.

The coolest star is in the constellation of Cygnus, the swan; the other is in Taurus, the bull. Both are much too faint to be seen without a large telescope.

The stars were discovered during a sky survey being made with a 62-inch infrared telescope at Mt. Wilson Observatory, oper-

ated jointly by Carnegie Institution of Washington, D.C., and California Institute of Technology, Pasadena.

The infrared sky map shows a different distribution of matter in the universe than charts made by optical or radio telescopes. Some objects that are bright in the infrared are barely visible or are invisible using optical or radio telescopes.

The infrared survey is being conducted by Drs. Gerry Neugebauer and Robert B. Leighton of the California Institute, under sponsorship of the National Aeronautics and Space Administration. Also associated with the program are Dr. Bruce T. Ulrich of the California Institute and D. E. Martz, now at Pacific Union College, Angwin, Calif.

Their results are reported in the *Astro-physical Journal*.

• Science News Letter, 88:178 September 18, 1965

PHYSICS

Paint Without Liquids By Electrostatic Process

► PAINTS, ENAMELS and even metal coatings can be applied without solvents using a new electrostatic process described to the British Association for the Advancement of Science in Cambridge, England.

Cars, radiators, and even wooden chairs can often be painted electrostatically with automatic machinery, said Dr. A. W. Bright, electrical engineer at Southampton University. Electrostatic crop spraying has already been used to protect tobacco crops.

Electrostatic generators which were formerly inferior in operation to the usual electromagnetic dynamos as sources of electrical energy are now available and in operation. Prof. N. J. Felici of the National Centre for Scientific Research, Grenoble, France, said that such electrostatic generators are uniquely suitable for the generation of ripple-free current at high voltages.

• Science News Letter, 88:178 September 18, 1965

SERVICES to you . . . By SCIENCE SERVICE

- You read (and subscribe to) **SCIENCE NEWS LETTER**.
 - Here is a **CHECK LIST** of other aids to scientists, teachers, students that can come to you from **SCIENCE SERVICE**.
- ✓ ✓ ✓ this List.

THINGS of science An experimental kit issued each month with interesting specimens of new products of scientific research. Actual samples of educational value, explanations and experimental directions. Use for museum and for teaching.

.....memberships at \$5 a year (add \$1 overseas postage)

Fourteen representative units (including Cryptography, Optical Illusion, Ancient Gems, Marble, Crystallization) for demonstration purposes.

.....sets of 14 units at \$7.49 (add 80¢ overseas postage)

SCIENCE PROJECTS HANDBOOK

A variety of examples of successful projects done by National Science Fair-International finalists and Science Talent Search winners and members of the Honors Group; suggestions on planning and carrying out projects and exhibits; new ideas for research and sources of information and equipment. How to become a scientist is discussed and helpful suggestions given.

Each 50¢ (add 5¢ postage)

Postpaid 10 copies for \$5 _____copies

THOUSANDS OF SCIENCE PROJECTS

So you want a suggestion for a project report? This 48-page booklet lists classified titles of exhibits shown at science fairs and/or as projects for the annual Science Talent Search.

Each 25¢ 10 copies for \$1 _____copies

WONDERFUL WORLD OF SCIENCE

A guide specifically compiled for students, teachers, club sponsors. Free gifts and low-cost samples by the thousands . . . films, photos, kits, books, plans, scientific apparatus. Covers the broad field of science from anthropology through zoology.

Each 50¢ (add 5¢ postage)

Postpaid 10 copies for \$5 _____copies

PROJECTS: SPACE

The exciting story of U.S. space exploration with reports on fourteen fascinating student science projects in space age science. Written with the technical assistance of the National Aeronautics and Space Administration.

Each 45¢ (add 5¢ postage)

Postpaid 10 copies for \$4.50 _____copies

LAWS OF MATTER UP-TO-DATE

The fundamental laws of physics which have been changed as the result of new discoveries of the atomic age.

Each 10¢

Postpaid 100 copies for \$3 _____copies

THE CHEMICAL ELEMENTS

Their properties, sources, most important isotopes, characteristic compounds, places in the periodic table and histories of their discoveries, including announcements. Up-to-date revision includes element 103. Fully indexed, paper bound. Invaluable for reference.

Each 50¢ (add 5¢ postage)

Postpaid 10 copies for \$5 _____copies

EXPERIMENTING WITH CHEMISTRY

A guide and laboratory manual including detailed explanations of reactions and processes for students who wish to experiment in chemistry. More than 125 experiments. Special sections on sympathetic inks, spectacular reactions, spontaneous combustion, blow pipe analysis and metallurgy.

Postpaid \$2 _____copies

SCIENCE EXHIBITS

How to select material, plan its presentation, display, label and light it, and describe the work done.

Postpaid \$2 _____copies

THE CENTURY OF SCIENCE

The story of the wonderful progress of science and technology in the twentieth century written by Watson Davis, Director of Science Service and editor of Science News Letter. Illuminates and backgrounds today's rushing developments. Big, hard cover book with 200 vivid and historic photographs.

Postpaid \$5.95 _____copies

150 SCIENCE EXPERIMENTS STEP-BY-STEP

From the exciting worlds of modern science—fascinating experiments in chemistry, biology, physics and weather with instructions for making your own equipment. Complete with Periodic Table of Elements, Laws of Matter, Weights and Measures, Centigrade to Fahrenheit Conversion Table, Charts of Animal and Plant Kingdoms.

Each 60¢ (add 5¢ postage)

Postpaid 10 copies for \$6 _____copies

ORGANIC CHEMISTRY FOR THE HOME LAB

Learn to think chemically . . . Mauve, the first aniline dye, was discovered one hundred years ago by a young chemist who followed where his curiosity led him. You can make this and other beautiful dyes, interesting plastics, fundamental chemicals, by following these clear directions.

Postpaid \$2 _____copies

SCIENTIFIC INSTRUMENTS YOU CAN MAKE

How teen-age scientists have designed and built astronomical instruments, spectroscopes, Tesla coils, oscilloscopes, cloud chambers, atom counters, Van de Graaff generators, electronic computers, stroboscopes, and demonstrated ultrasonics, chromatography, photomicrography and mathematical constructions. Illustrations show completed instruments. References guide the reader to research in the fields using these instruments.

Postpaid \$2 _____copies

PERIODIC TABLE OF ELEMENTS

Both Mendeleev and Bohr arrangements. An up-to-date chart of the chemical elements by groups and series with spaces for new elements through hypothetical No. 118, to be filled in as announced.

Each 25¢

Postpaid 10 copies for \$1 _____copies

HOW TO GET INTO SCIENCE AND ENGINEERING

A leaflet published by Science Service to inspire and inform students interested in scientific careers . . . tips for students, necessary prerequisites, How to do a Science Project, career possibilities.

Each 10¢

Postpaid 100 copies for \$3 _____copies

SCIENCE BACKGROUND TESTS

Pick potential scientists at Grades 4 to 9 with a simple 30-minute, paper and pencil test. **SCIENCE BACKGROUND 1A**—a check list of "things done in science"; **SCIENCE BACKGROUND 2A**—a simple science vocabulary test. Try this double-barreled technique for selecting students really interested in science. Test sets include 25 each of the two tests, teacher's manuals, answer key, report and record forms.

Complete set \$4.75 _____sets

TOTAL ENCLOSED
(UNESCO coupons accepted)

\$

Mail to

SCIENCE NEWS LETTER, 1719 N Street, N.W., Washington, D. C. 20036

9-18-5