



FIRST AWARD WINNERS—Dr. Charles Holmes of New Mexico Institute of Mining and Technology and chairman of the judging committees distributes the awards to the 13 top winners as Dr. Watson Davis, director of Science Service, presides.

Science Fair Award Winners

National Science Fair-International honors were given 134 finalists at Albuquerque, supplemented by 125 additional awards by health, medical, professional and defense groups.

See Front Cover

► THE MOST PROMISING teen-aged scientists of the year received top awards at the National Science Fair-International in Albuquerque, N. Mex.

The 411 finalists and their teachers were honored at an awards banquet. The long-awaited announcements of the winners were made by the chairmen of the judging committees in the various categories of competition. Awards were made in botany, chemistry and biochemistry, earth and space science, medicine and health, physics, mathematics and computers, and zoology.

First Awards were presented to:

Jean Carolyn May, 18, Incarnate Word Academy, Corpus Christi, Texas, for her project, "Dynamics of Diatom Populations";

Roberta L. Spicer, 16, Garrett H. S., Garrett, Ind., for "The Translocation and Malate Chelation of Iron in Soybeans," also the winner of a second award from the American Chemical Society;

Vernice M. Murray, 17, Lincoln H. S., Kansas City, Mo., for her project, "Experimental Methods of Verifying Force";

Deborah Chase, 17, Bronx High School of Science, New York, N. Y., for her project, "Findings on the Simultaneous Production by Cells of an Anti-Viral Agent and a Halo-Producing Factor in Response to Inactivated Viruses," also the winner of first awards from the American Medical Association, the U.S. Air Force, the American Society for Microbiology; previously winner of awards at the 12th and 13th NSF-I's and one of the 40 winners in the 1963 Science Talent Search;

Gail M. Houston, 17, Sylacauga H. S., Sylacauga, Ala., for her project, "Rous Sarcoma";

Jonathan S. Fruchter, 17, Stephen F. Aus-

tin H. S., Austin, Texas, for his project, "Factors Affecting the Production of Betacyanin Pigments in the Common Beet," also one of the 40 winners in the 1963 Science Talent Search;

Paul V. Roling, 17, Wahlert H. S., Dubuque, Iowa, for his project, "Organic Qualitative Analysis for Minerals," also a U.S. Navy Science Cruiser;

Simon M. Moltz, 18, Highlands H. S., San Antonio, Texas, for his project, "Centrifuge for Man or Mouse," also a U.S. Navy Science Cruiser and the winner of awards from the National Aeronautics and Space Administration and the National Telemetering Conference;

James L. Ash, 18, Bryan Adams H. S., Dallas, Texas, for his project, "Effects of Cooling on Radiation Damage to Living Cells," also the winner of first awards from the U.S. Atomic Energy Commission, the National Committee for Careers in Medical Technology and the American Veterinary Medical Association.

Charles P. DeNeef, 17, Circleville H. S., Circleville, Ohio, for his project, "Magneto-hydrodynamic Evaluation of an R. F. Plasma";

William E. Murray Jr., 17, Walter Johnson H. S., Bethesda, Md., for his project, "Stochastic Radioactive Equilibria Models," also the winner of first awards from the U.S. Atomic Energy Commission and the Armed Forces Chemical Association, and previously a finalist at the 13th NSF-I and a member of the Honors Group of the 1963 Science Talent Search;

Steven S. Muchnick, 17, Henry Grady H. S., Atlanta, Ga., for his project, "A General Theory of a Group of Recurrent Sequences," also the winner of the U.S. Army

alternate award, a U.S. Air Force alternate award, and a 1963 Science Talent Search winner;

Benjamin Frank Hatfield Jr., 17, W. F. Dykes H. S., Atlanta, Ga., for his project, "Egg Albumen Secretion in the Hen," also a U.S. Navy Science Cruiser and winner of the National Pest Control Association award, and previously a finalist at the 13th NSF-I.

All of these winners will receive "Wish Awards" of \$100 of scientific equipment or books of their own choice.

Winners of Second Honors

Second honors and \$75 Wish Awards went to: Tessa Orellana, 17, Northwestern Sr. H. S., Hyattsville, Md., "Phenolics and Bacterial Rot of Bananas"; Laura Norman, 18, Terry Parker H. S., Jacksonville, Fla., "Cobalt, Nickel and Iron Complexes: Synthesis and Resolution of Optical Isomers"; Mary Linney, 17, Holy Trinity H. S., Westfield, N. J., "An Abelian Group with Isomorphism Using Equivalence Relations"; Nancy Patterson, 18, Millersburg-West Holmes H. S., Millersburg, Ohio, "Effects of Hormones on Melanin"; Anita Ware, 17, Eisenhower H. S., Rialto, Calif., "Imprinting to an Auditory Stimulus Without Any Visual Experience"; Michael Haralson, 17, Abilene H. S., Abilene, Texas, "Mutations in Tomato Plants Produced by Gamma Ray Radiation"; John Aasmundstad, 18, Dickinson Central H. S., Dickinson, N. Dak., "Liesegang Rings"; James Goff, 17, Dawson County H. S., Glendive, Mont., "Biochemical and Geochemical Analysis of Fossils"; Edward Duffy, 18, Stranahan Sr. H. S., Fort Lauderdale, Fla., "Gaseous Cause of the Phenomenon Termed 'Nitrogen Narcosis' and the Effects of Traumatic Aero Embolism"; Donald Bliss, 16, Murphy H. S., Mobile, Ala., "Radio Controlled Peripheral Nozzle Air Cushion Vehicle"; Joseph Goodbread, 16, Jamaica H. S., Jamaica, N. Y.,

"Domain Wall Motion in Iron Whiskers"; Richard Williams, 16, Mount Holly H. S., Mount Holly, N. C., "Cybernetic Simulation of Imagination and Related Thought Processes"; Robert Schilken, 17, Ottawa Hills H. S., Grand Rapids, Mich., "Effect of Gravity on Mice."

Third Award Winners

Third Awards and \$50 Wishes went to: Carolyn Norman, 17, Park Central Sr. H. S., Bluefield, W. Va., "The Cultivation and Utilization of Algae"; Ann Spruill, 17, Jonesboro-Hodge H.S., Jonesboro, La., "Chemical Derivatives of *Myrica cerifera*"; Alice Laborde, 16, Marksville H. S., Marksville, La., "Investigating Wave Phenomena"; Nancy Williamson, 16, Bryan H. S., Bryan, Ohio, "Blood Typing Serum by Hemagglutination in Seed Extracts"; Katharine Beard, 17, Selingsgrove Area Joint H. S., Selingsgrove, Pa., "Light and Temperature Effects on the Alienicolae Phase of *Aphis fabae*"; David Gibbs, 15, Garfield H. S., Terre Haute, Ind., "Antibacterial Characteristics of Fresh Water and Marine Algae"; Gregory Wiseman, 17, Burriss Laboratory School, Muncie, Ind., "A Study of Red Radish Pigment"; Michael Gorman, 18, San Angelo Central H. S., San Angelo, Texas, "Configurations and Relative Intensities of Magnetic Field in the External Galaxies"; Christopher Landrum, 16, Auburn H. S., Auburn, Ala., "The Potential Use of Heart Cells Cultured *in vitro* in Heart Research"; Perry Cofield Jr., 15, Nathan Bedford Forrest H. S., Jacksonville, Fla., "School Plant Design"; Waldean Schulz, 17, Roy J. Wasson H. S., Colorado Springs, Colo., "Dynamics of the Boomerang"; Amory Bloch Lovins, 15, Amherst Regional H. S., Amherst, Mass., "Research in Differential Geometry and Topology"; Takashi Matsuda, 18, Funabashi Prefectural H. S., Funabashi City, Chiba Prefecture, Japan, "Study of Group Habit of Medaka (A Japanese Fresh Water Fish)."

Fourth Awards

Fourth Awards and \$25 Wishes were given to: Michael Archer, 18, Central H. S., Pine Plains, N. Y.; Frederick Aronson, 17, Pascack Valley Regional H. S., Hillsdale, N. J.; Murray Aspden, 20, Nelson H. S., Burlington, Ontario, Canada; James Baker, 18, Yorktown H. S., Arlington, Va.; John Barrett, 18, Muskogee Central H. S., Muskogee, Okla.; Terry Beard, 17, Arvin H. S., Arvin, Calif.; Robert Bell, 17, Edgewater H. S., Orlando, Fla.; Jo Lynne Birkhead, 17, Harding H. S., Oklahoma City, Okla.; Edward Bolton, 18, West Plains H. S., West Plains, Mo.; Bruce Bowman, 18, Pennsbury H. S., Yardley, Pa.; Robert Bradbury, 17, Ralph C. Mahar Regional H. S., Orange, Mass.; Anders Brahma, 18, Bromma Gymnasium, Bromma, Sweden; Robert Brock, 16, Arlington Heights H. S., Fort Worth, Texas; John Burger, 17, Emporia Sr. H. S., Emporia, Kans.; Linda Bush, 16, Missoula County H. S., Missoula, Mont.; Bruce Byrne, 17, Oliver P. Morton H. S., Hammond, Ind.; Daniel Cable, 18, West Lafayette Sr. H. S., West Lafayette, Ind.; Priscilla Yuk Chi

(Continued on p. 331)

GENERAL SCIENCE

Health Awards Winners

Students showing unusual ability in dental, medical, pharmaceutical and veterinary sciences were awarded special honors at a Health Awards banquet as part of NSF-I program.

➤ EXCEPTIONAL ability demonstrated by high school scientists in dental, medical, pharmaceutical and veterinary science earned recognition in Albuquerque, N. Mex., at the Health Awards banquet held as part of the program of the 14th National Science Fair-International, conducted by SCIENCE SERVICE.

Winners of these special honors, chosen from the 411 finalists representing 219 affiliated fairs, were selected by boards of judges from the American Dental Association, the American Medical Association, the American Pharmaceutical Association and the American Veterinary Medical Association.

The American Dental Association Certificates of Superior Achievement were presented to Ruby Joyce Burriss, 17, Greenville Sr. H. S., Greenville, S. C., for "Comparative Dental Anatomy" and to Robert William Fauvelle Jr., 17, Corsicana H. S., Corsicana, Texas, for "Comparative Evaluations of the Toxicities of Anesthetics." These winners will be the guests of the ADA at its annual meeting.

Certificates of Meritorious Achievement and \$50 for scientific equipment were awarded to Carol Jean Mace, 15, Winner H. S., Winner, S. Dak., for "This Is Your Mouth—A Report on a Survey of Winner, South Dakota, Grade School Children's Teeth" and to Harold Edward Fox, 18, Poughkeepsie H. S., Poughkeepsie, N. Y., for "Kinins."

Top American Medical Association citations and plaques were presented to Debo-

rah Chase, 17, Bronx High School of Science, New York, N. Y., for "Findings on the Simultaneous Production by Cells of an Anti-Viral Agent and a Halo-Producing Factor in Response to Inactivated Viruses" and to Edward Joseph Duffy, 18, Stranahan Sr. H. S., Fort Lauderdale, Fla., for "Gaseous Cause of the Phenomenon Termed 'Nitrogen Narcosis' and the Effects of Traumatic Aero Embolism." These winners will be the guests of the AMA at its annual meeting.

AMA Honorable Mention citations and plaques were given to Rhea Louise Keller, 17, New Haven H. S., New Haven, Ind., for "Subcutaneous Induction of Malignant Melanoma in the Syrian Hamster with Cell-Free Extracts" and to John James Stevenson, 17, Stephen F. Austin H. S., El Paso, Texas, for "Genetics of the *Bacterium pseudomonas*."

The American Pharmaceutical Association First Award was presented to Francis Xavier Smith, 17, Wakefield H. S., Wakefield, Mass., for "Organic Derivatives of Antimonyl Catechol." He received a plaque and his choice of a trip to the annual meeting of the APhA or a cash award to further his scientific education.

The second APhA award, a plaque, was given to John McLean Shearman, 15, Lovington H. S., Lovington, N. Mex., for "Space Age Hormone—Erythropoietin."

The American Veterinary Medical Association citation plaque and an invitation to the annual meeting of the Association were presented to James Lee Ash Jr., 18, Bryan Adams H. S., Dallas, Texas, for "Effects of Cooling on Radiation Damage to Living Cells." One of James' parents or his teacher also will receive an all-expense-paid trip to the meeting. Henry Harris Caddell, 18, Decatur H. S., Decatur, Ala., was named AVMA alternate for "Photoreactivation of Newcastle Disease Virus."

Presentations of the Awards were made for the American Dental Association by Gerald D. Timmons, D.D.S., president of the Association and dean of Temple University School of Dentistry; for the American Medical Association by George M. Fister, M.D., president of the AMA; for the American Pharmaceutical Association by Troy C. Daniels, Ph.D., dean of pharmacy at the University of California; and for the American Veterinary Medical Association by Dan J. Anderson, D.V.M., president of the AVMA.

Announcement of the awards was followed by a Health Awards dance for the finalists and members of the Official Party, given at the New Mexico Union Ballroom by the professional associations.

• Science News Letter, 83:326 May 25, 1963



FROM ABROAD—Among those traveling the farthest to attend the National Science Fair-International were Takao Mashimo, Education Section, Yomiuri Shimbun, Tokyo, Japan, and Dr. Sigvard Strandb, Museum of Science and Industry, Stockholm, Sweden, representing the organizations sponsoring the finalists from their countries.

which pictured the figures around the stars, showed the human part of the centaur spearing the wolf.

Celestial Time Table for June

| JUNE | EDT | |
|------|------------|--|
| 3 | 10:00 a.m. | Moon farthest, distance 252,100 miles |
| 5 | 3:00 p.m. | Mars passes Uranus |
| 7 | 4:31 a.m. | Full moon |
| 9 | 3:00 a.m. | Mercury passes Venus |
| 12 | 11:00 a.m. | Moon passes Saturn |
| 13 | 2:00 a.m. | Mercury farthest west of sun |
| 14 | 4:54 p.m. | Moon in last quarter |
| 16 | 3:00 a.m. | Moon passes Jupiter |
| 19 | 4:00 a.m. | Moon nearest, distance 225,500 miles |
| | 9:00 p.m. | Moon passes Venus |
| 21 | 7:46 p.m. | New moon |
| | 11:04 p.m. | Sun farthest north, summer begins in Northern Hemisphere |
| 26 | 3:00 p.m. | Moon passes Mars |
| 28 | 4:24 p.m. | Moon in first quarter |

Subtract one hour for CDT, two hours for MDT, and three hours for PDT.

• Science News Letter, 83:330 May 25, 1963

Science Fair Awards

(Continued from p. 326)

Chow, 16, Maryknoll H. S., Honolulu, Hawaii; David Clark, 18, Harlingen H. S., Harlingen, Texas; Winston Clark, 18, Marion Sr. H. S., Marion, Va.; Edward Cohen, 15, James A. Garfield H. S., Seattle, Wash.; Eddy Cordes, 16, St. Mary's H. S., Lawton, Okla.; Dennis Crouse, 16, Marion Independent H. S., Marion, Iowa; Dennis Crouse Jr., 16, Clintonville Sr. H. S., Clintonville, Wis.; Stanley Dayan, 17, White Plains H. S., White Plains, N. Y.; Barbara Descoteaux, 17, Mt. St. Michael H. S., Hyde Park, Reading, Pa.; Robin DeVore, 17, Highland H. S., Albuquerque, N. Mex.; Susan Doherty, 16, Wichita H. S. East, Wichita, Kans.; George Fargher, 16, La Porte H. S., La Porte, Ind.; Dewey Garrett, 17, Richmond H. S., Richmond, Mo.; Roger Glade, 17, Benjamin Franklin H. S., New Orleans, La.; Richard Gomberg, 17, Immaculate Conception Academy, Mayaguez, Puerto Rico; Jerrold Grochow, 16, Stuyvesant H. S., New York, N. Y.; G. Leigh Gunnell, 17, Jordan H. S., Sandy, Utah; Alice Hardin, 17, Lawrence County H. S., Moulton, Ala.; Robert Hawley, 16, Falfurrias H. S., Falfurrias, Texas; Linda Hayes, 18, Andrews H. S., Andrews, Texas; Judith Herr, 17, Northeast H. S., St. Petersburg, Fla.; Margaret Hill, 17, Wichita H. S. East, Wichita, Kans.; Charles Hohmann, 17, Tottenville H. S., Staten Island, N. Y.; Judy Hopkins, 18, Washington-Wilkes H. S., Washington, Ga.; Cecilia Huala, 17, St. Vincent Ferrer H. S., New York, N. Y.; Henry Jaffin, 16, Bethesda-Chevy Chase H. S., Bethesda, Md.; David Johnson, 17, Richmond Sr. H. S., Richmond, Ind.; James Johnston, 17, Washington H. S., Milwaukee, Wis.; Rhea Keller, 17, New Haven H. S., New Haven, Ind.; David Kerns Jr., 18, Leon H. S., Tallahassee, Fla.; Chester Kessler, 17, Lebanon Sr. H. S., Lebanon, Pa.; Douglas Koppes, 18, Luckey H. S., Manhattan, Kans.; Joel Liebman, 15, James Madison H. S., Brooklyn, N. Y.; Bonnie Lievan, 16, (Continued on p. 332)

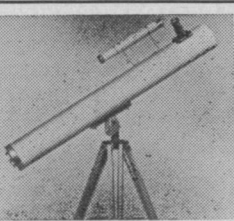
GET READY FOR THE SPACE and SCIENCE ERA! SEE SATELLITES, MOON ROCKETS CLOSE-UP

AMAZING SCIENCE BUYS

for FUN, STUDY or PROFIT

See the Stars, Moon, Planets Close Up!
3" Astronomical Reflecting Telescope
 (Famous Mt. Palomar Type)

SEE AND PHOTOGRAPH SUN'S ECLIPSE JULY 20TH. Be visually safe and use Edmund's Combination Sun Projection Screen and Camera Holder. No. 70.162-Q \$9.95 Postpaid.



60 to 180 Power An Unusual BUY!

Assembled—Ready to use! You'll see the Rings of Saturn, the fascinating planet Mars, huge craters on the Moon, phases of Venus, Star Clusters, Moon of Jupiter, in detail, Galaxies! Equatorial mount with lock on both axes. Aluminized and over-coated 3" diameter

high-speed f/10 mirror. Telescope comes equipped with a 60X eyepiece and a mounted Barlow Lens, giving you 60 to 180 power. An Optical Finder Telescope, always so essential, is also included. Sturdy, hardwood, portable tripod. FREE with Scope: Valuable STAR CHART plus 272-page "HANDBOOK OF HEAVENS," plus "HOW TO USE YOUR TELESCOPE" BOOK.
 Stock No. 85.050-Q.....\$29.95 Postpaid
 4 1/4" Reflecting Telescope—up to 255 Power, all-metal pedestal mount.
 Stock No. 85.105-Q \$79.50 F.O.B. Barrington, N.J.

'FISH' WITH A WAR SURPLUS MAGNET

Go Treasure Hunting on the Bottom

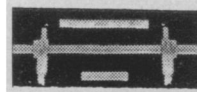


Great idea! Fascinating fun and sometimes tremendously profitable! Tie a line to our 5-lb. Magnet—drop it overboard in bay, river, lake or ocean. Trawl it along the bottom—your "treasure" haul can be onboard motors, anchors, fishing tackle, all kinds of metal valuables. 5-lb. Magnet is war surplus—Alnico V Type. Gov't cost \$50. Lifts over 125 lbs. on land—much greater weights under water. Order now and try this new sport.

Stock No. 70.570-Q—3 1/2 lb. size...\$8.75 Postpaid
 Stock No. 70.571-Q—5 lb. Magnet...\$12.50 Postpaid
 Stock No. 70.572-Q—7 1/2 lb. Magnet...\$18.75 Ppd.
 Stock No. 85.152-Q—15 lb. size lifts 250 lbs.

ADJUSTABLE SPANNER WRENCH

Remove Your Retaining Rings, Disassemble Lenses, Cameras, etc.



Made for U. S. Air Force—available at a fraction of Government cost. A top grade, versatile tool that every instrument and camera repair man or just plain tinkerer should own. Adjustable for 1/2" to 1 1/2" diameter retaining rings. Complete with six different pairs of points to fit all types of slots and holes. 3", 6" and 12" main bars. All steel and nicely plated. The finest tool we have ever come across for this type of retaining ring work AND a real bargain at our low price.

Stock No. 70.355-Q.....\$12.50 Postpaid

WOODEN SOLID PUZZLES



12 Different puzzles that will stimulate your ability to think and reason. Here is a fascinating assortment of wood puzzles that will provide hours of pleasure. Twelve different puzzles, animals and geometric forms to take apart and reassemble, give a chance for all the family, young or old, to test skill, patience and, best of all, to stimulate ability to think and reason while having lots of fun. Order yours now.

Stock No. 70.205-Q.....\$3.00 Postpaid

Terrific Buy! American Made! OPAQUE PROJECTOR



Projects illustration up to 3" x 3 1/2" and enlarges them to 35" x 30" if screen is 8 1/2 ft. from projector; larger pictures if screen is further away. No film or negatives needed. Projects charts, diagrams, pictures, photos, lettering in full color or black-and-white. Operates on 115 volt, A.C. current... 8-ft. extension cord and plug included. Operates on 60 watt bulb, not included. Size 12" x 8" x 4 1/2" wide. Weight 1 lb. 2 ozs. Plastic case with built-in handle.
 Stock No. 70.199-Q.....\$7.95 Postpaid

BUILD A SOLAR ENERGY FURNACE



A fascinating new field. Build your own Solar Furnace for experimentation—many practical uses. Easy! Inexpensive! Use scrapwood! We furnish instructions. This sun powered furnace will generate terrific heat—2000° to 3000°. Fuses enamel to metal. Sets paper aflame in seconds. Use our Fresnel Lens—14" diameter... f. l. 14".
 Stock No. 70.130-Q...Fresnel Lens...\$6.00 Pstpd.
 11" Sq. Fresnel Lens F.L. 19". Slight 2nd.
 Stock No. 70.533-Q.....\$4.75 Pstpd.



MAT ALARM — NEW SIGNALING DEVICE — FOR HOME, STORES AND OFFICES

Mat Alarm and Signaling Device, 3/32" thick x 17" x 23", detects presence of anyone entering a home, store or office. May be used as burglar alarm, entrance signal in small stores, professional offices, provide front and back door illumination for private homes, etc. It may be placed under rugs or other floor covering at entrances or below windows. Pressure of 5 lbs. or more on any part of mat actuates low-voltage bell or buzzer, or lights an electric bulb. Switching elements electronically sealed between sheets of tough vinyl. Transformer to step down voltage to proper level for alarm or signaling circuit included. Bell or other alarm device may be obtained locally.

Stock No. 70.591-Q.....\$10.75 Postpaid
 CONSTANT-SIGNALING DROP RELAY activated by pressure on mat is optional. This keeps alarm on until manually reset.
 Stock No. 40.592-Q.....\$7.50 Postpaid



New! 2 in 1 Combination! Pocket-Size 50 POWER MICROSCOPE and 10 POWER TELESCOPE



Useful Telescope and Microscope combined in one amazing precision instrument. Imported! No larger than a fountain pen. Telescope is 10 Power. Microscope magnifies 50 Times. Sharp focus at any range. Handy for sports, looking at small objects, just plain snooping.
 Order Stock No. 30.059-Q.....\$4.50 Pstpd.



New OBSERV-O-SCOPE

Protects Against Intruders!

Now the perfect optical device for identifying callers before you open door. New revolutionary Observe-O-Scope allows wide-angle vision through door—175° in all directions, yet is only 1/2" in diam. Just drill 1/2" hole through door at eye-level and push Observe-O-Scope through flush with outside. Gives clear, sharp image without revealing your presence inside. Invaluable for homes, motels, hotels. Adjustable for wooden doors 3/4" to 2 1/4" thick. Brass finish.

Stock No. 40.582-Q.....\$3.30 Postpaid
 Adapter for thickness less than 3/4"
 Stock No. 40.584-Q.....\$7.00 Postpaid



Now... Accurate Weather Forecasting for Schools, Homes, Hobbyists

New "Weather Station" is highly sensitive to weather changes. Consistently accurate thermometer, barometer and humidity meter. Foretells weather changes to 12 to 24 hours in advance. Humidity meter calibrated in "percent relative humidity". Thermometer accurate to 1°F. Excellent for teaching weather phenomena and meteorological hobby work. Instruments mounted on handsome wood-grained panel 15 1/4" x 5 1/4". Meter cases heavily metalized—combine beauty and protection. Dials, in etched aluminum, made with micrometer precision. Full instructions.
 Stock No. 70.607-Q.....\$9.95 Postpaid



SCIENCE TREASURE CHESTS

For Boys—Girls—Adults!

Science Treasure Chest—Extra-powerful magnets, polarizing filters, compass, one-way-mirror film, prism, diffraction grating, and lots of other items for hundreds of thrilling experiments, plus a Ten-Lens Kit for making telescopes, microscopes, etc. Full instructions included.

Stock No. 70.342-Q.....\$5.00 Postpaid
 Science Treasure Chest DeLuxe—Everything in Chest above plus exciting additional items for more advanced experiments, including crystal-growing kit, electric motor, molecular models set, first-surface mirrors, and lots more.
 Stock No. 70.343-Q.....\$10.00 Postpaid

MAIL COUPON for FREE CATALOG "Q"

NEW! 1000's of bargains—164 pages

EDMUND SCIENTIFIC CO., Barrington, New Jersey
 Please rush Free Giant Catalog Q.

Name.....
 Address.....
 City..... Zone.. State..



ORDER BY STOCK NUMBER . SEND CHECK OR MONEY ORDER . SATISFACTION GUARANTEED!

EDMUND SCIENTIFIC CO., BARRINGTON, N. J.

Books of the Week

For the editorial information of our readers, books received for review are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C.

THE ARCHAEOLOGY OF ANCIENT CHINA—Kwang-chih Chang—Yale Univ. Press, 346 p., illus., maps, \$7.50. Anthropologist's scholarly reconstruction of the cultural growth of early China and surrounding regions, from earliest times.

THE ATOMIC ENERGY DESKBOOK—John F. Hogerton with others, foreword by Glenn T. Seaborg—Reinhold, 673 p., illus., \$11. A combination dictionary-encyclopedia of atomic energy principles and applications, more than 1,000 entries range from brief definitions to full length articles, oriented toward subjects of industrial importance.

BIOCHEMISTRY: An Introduction—P. H. Jellinek—Holt, 308 p., illus., \$6. Elementary textbook, understandable to students with only limited background in organic chemistry and biology.

C. P. SNOW: The Politics of Conscience—Friedrich R. Karl, preface by Harry T. Moore—Southern Ill. Univ. Press, 162 p., \$4.50. A critical evaluation of C. P. Snow's novels.

THE CALCULUS: A Genetic Approach—Otto Toepflitz, transl. from German by Louise Lange—Univ. of Chicago Press, 192 p., diagrams, paper, \$1.95. Presents the study of infinitesimal calculus by going back to the origins of concepts.

CELL GROWTH AND CELL DIVISION: Symposia of the International Society for Cell Biology, Vol. 2—R. J. C. Harris, Ed.—Academic Press, 341 p., illus., \$13. Report of symposium covering both the biochemical and cytological aspects of cell growth and division in bacterial, plant and animal systems.

GOLD CATHODE DISCHARGE TUBES—J. R. Acton and J. D. Swift—Academic Press, 351 p., \$12. Treats the theory of fundamental processes of electrical discharges in gases and deals with the practice and design of actual tubes.

EDUCATIONAL PSYCHOLOGY IN THE U.S.S.R.—D. N. Bogoiavlenski and others, transl. by Joan Simon, introd. by Brian and Joan Simon, Eds.—Stanford Univ. Press, 283 p., \$6.75. Provides survey of recent Soviet work on the psychology of human learning.

EUCLID AND GEOMETRY—Estelle A. DeLacy—Watts, F., 120 p., \$2.95. Juvenile biography, stressing scientific contribution.

THE EVOLUTION OF THE HUMAN BRAIN—Gerhard von Bonin—Univ. of Chicago Press, 92 p., illus., \$5. Neuroanatomist's critical investigation of theories concerning the brain of early man, discussing the fossil forms, the endocasts and the structure and function of the cortex.

THE FIRST BOOK OF BOLIVIA—William E. Carter—Watts, F., 82 p., photographs, \$2.50. Introduces young people to the land and its customs.

HAM ANTENNA CONSTRUCTION PROJECTS—J. A. Stanley—Sams, 160 p., illus., paper, \$2.95.

Handbook of construction methods, transmission line feeders, antenna tuners and tuning techniques.

HANDBOOK OF HAM RADIO CIRCUITS—David E. Hicks—Sams, 128 p., illus., paper, \$2.95. Discusses the design and operation of some of the most popular amateur equipment in use.

THE HIGHWAY AND THE CITY—Lewis Mumford—Harcourt, 246 p., paper, \$1.65. Critical essays on architecture and some of the problems of contemporary great cities.

• Science News Letter, 83:332 May 25, 1963

Science Fair Awards

(Continued from p. 331)

Brookings H. S., Brookings, S. Dak.; Jon Lindstrom, 17, Rock Island Sr. H. S., Rock Island, Ill.; Lucy Lynch, 17, McLean H. S., McLean, Va.; Alice Martin, 16, Lourdes Academy, Cleveland, Ohio; Joe Maskasky, 17, DuVal Sr. H. S., Lanham, Md.; Malcolm May Jr., 18, Greenwood H. S., Greenwood, Miss.; Vivian McDonald, 15, Xavier University Preparatory School, New Orleans, La.; Cinda McKeeth, 17, Caldwell H. S., Caldwell, Idaho; Paul Minter, 18, Manzano H. S., Albuquerque, N. Mex.; Gilberto Molero, 18, Catholic Academy, San Juan, Puerto Rico; James Moorer, 17, Leon H. S., Tallahassee, Fla.; Eileen O'Brien, 16, New Dorp H. S., New York, N. Y.; Jose Olivarez, 18, Mission H. S., Mission, Texas; Walter Paluchowski, 18, Conglin H. S., Wilkes-Barre, Pa.; David Pariser, 16, Norfolk Academy, Norfolk, Va.; Walter Peidl, 16, Southington H. S., Southington, Conn.; Donald Peterson, 16, Oak Ridge H. S., Oak Ridge, Tenn.; Roger Pommerenke, 17, Great Bend H. S., Great Bend, Kans.; Leslie Poppe, 16, Pocatello H. S., Pocatello, Idaho; Alice Reichardt, 15, Oliver P. Morton H. S., Hammond, Ind.; Doris Reitingner, 17, Cheltenham H. S., Wyncote, Pa.; Roger Rensvold, 17, Duncan H. S., Duncan, Okla.; Terry Richardson, 16, The Porter Academy, Charleston, S. C.; Arthur Riegert, 17, J. K. Mullen H. S., Fort Logan, Colo.; Roger Roth, 17, Alamogordo H. S., Alamogordo, N. Mex.; Dorothy Sanders, 16, Many H. S., Many, La.; Val Schnabl, 18, Brookfield Central H. S., Brookfield, Wis.; Mary Schoettlin, 18, Reitz Me-

morial H. S., Evansville, Ind.; Patricia Schultz, 16, Faribault Sr. H. S., Faribault, Minn.; Arthur Shapiro, 17, Central H. S., Philadelphia, Pa.; Francis Smith, 17, Wakefield H. S., Wakefield, Mass.; Douglas Spence, 16, York H. S., Yorktown, Va.; Mary Strahl, 16, Clairmont H. S., San Diego, Calif.; Kennon Strauss, 16, C. E. Byrd H. S., Shreveport, La.; Eric Sundberg, 18, Watsonville H. S., Watsonville, Calif.; Gordon Telford, 18, West H. S., Waterloo, Iowa; Anne Tolar, 16, Latta H. S., Latta, S. C.; Joyce Van de Vyver, 17, Felician Academy, Detroit, Mich.; Robert Waber, 18, Otsego H. S., Otsego, Mich.; Andrea Whitaker, 17, Parkersburg H. S., Parkersburg, W. Va.; Dorothy White, 18, Anaconda Catholic Central H. S., Anaconda, Mont.; Elizabeth Winstead, 17, Terry Parker H. S., Jacksonville, Fla.; Robert Wray, 16, Fremont H. S., Oakland, Calif.; Erik Wright, 16, Lawrence H. S., Lawrence, Kans.; Randall Zisler, 16, Wakefield Sr. H. S., Arlington, Va.

• Science News Letter, 83:325 May 25, 1963

Special Honors at Fair

(Continued from p. 327)

Medical Technology gave a First Award of a certificate and a summer job with the American Registry of Pathology at the Armed Forces Institute of Pathology in Washington, D. C., plus up to \$100 for travel expense, to James L. Ash Jr., 18, Bryan Adams H. S., Dallas, Texas, for "Effects of Cooling on Radiation Damage to Living Cells." A Second Award citation went to Nancy L. Williamson, 16, Bryan H. S., Bryan, Ohio, for "Blood Typing Serum by Hemagglutination in Seed Extracts." Also citations to Bruce C. Byrne, Hammond, Ind.; Robin DeVore, Albuquerque, N. Mex.; Renee Welling, Apopka, Fla.; and Rhea Keller, New Haven, Ind.

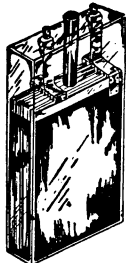
The National Pest Control Association gave a certificate and \$100 for science materials and experimentation in biology to Benjamin F. Hatfield Jr., 17, W. F. Dykes H. S., Atlanta, Ga., for "Egg Albumen Secretion in the Hen."

The National Telemetering Conference awarded a certificate and a trip for himself and his sponsor, to exhibit at the annual conference, to Daniel R. Jacobsmeyer, 18, Hazelwood H. S., St. Louis, Mo., for "Bio-Medical Engineering." Simon M. Moltz, 18, Highlands H. S., San Antonio, Texas, "Centrifuge for Man or Mouse," was named as alternate.

The Optical Society of America presented a First Award of \$100 for materials, equipment, or books to Roger B. Rensvold, 17, Duncan H. S., Duncan, Okla., for "Laser Action in Fluid Media." The Second Award of \$75 went to Robert C. Waber, 18, Otsego H. S., Otsego, Mich., for "Design and

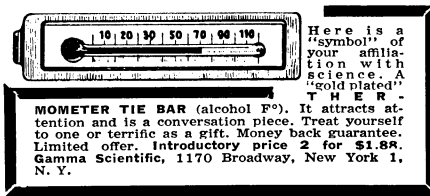
The Battery That's Used in Guided Missiles Now Released as Government Surplus

For Photography, Aircraft, Models, Searchlights, Radios, etc. \$1.95 ea. Postpaid Sintered-plate Nickel-Cadmium alkaline storage batteries designed for "NIKE" Missile and now surplus due to design change. A lifetime battery with no known limit of service (over 5000 recharges on test without loss of capacity). Other features: Virtually indestructible, compact & lightweight, withstands heavy shock and vibration. Flat voltage curve during discharge retains charge year or more, high discharge rate up to 50 amps. for this cell, no corrosion fumes to harm clothing or equipment, spill-proof construction, discharge in any position, indefinite storage without deterioration, operates in temperatures — 60°F to +120°F. Each cell is approx.



4 ampere hour capacity. Nominal voltage per cell is 1.2 volts. (A 6 V. battery requires 5 cells.) Cell size 6" H. x 2" W. x 1/2" T. Wt. 6 oz. ea. Uses Potassium-Hydroxide (30%) electrolyte. Negligible loss during lifetime service. Add only distilled water once a year. A fraction of Government cost. Used Test Cells... \$1.59 ea. Postpaid Brand New Cells... \$2.49 ea. Postpaid 30 A.H. Motor Starting Cells—Nickel-Cad. steel cased with 1/2" screw terminals for nom. current drains to 1000 amps. Size 8 1/2" H. x 3" W. x 1 3/16" T. Wt. approx. 3 1/2 lb. Need no filling. New cells... \$5.95 ea. (not shipped prepaid) Used cells... \$2.95 ea. (not shipped prepaid) All cells guaranteed to your satisfaction or money refunded (less postage).

ESSE RADIO COMPANY, Dept. SNL
42 W. South St. Indianapolis 25, Indiana



Here is a "symbol" of your affiliation with science. A "gold plated" THERMOMETER TIE BAR (alcohol F°). It attracts attention and is a conversation piece. Treat yourself to one or terrific as a gift. Money back guarantee. Limited offer. Introductory price 2 for \$1.88. Gamma Scientific, 1170 Broadway, New York 1, N. Y.

YOUR SKIN AND ITS CARE

By H. T. Behrman, M.D. and O. L. Levin, M.D. Two dermatologists give you the up-to-date scientific facts. They tell you in detail exactly what to do to beautify and improve your skin, how to avoid or correct skin disorders, and how to deal with many skin problems as: Daily care of the face • allergies • cosmetics • pimples • blackheads • acne • whiteheads • cysts • boils • oily skin • dry skin • chapping • poison ivy • cold sores • hives • superfluous hair • ringworm • moles • birthmarks • scars • warts • tumors • skin cancer • excessive sweating • etc., etc. "Accurate, unvarnished story of practical skin care."—Connecticut State Medical Journal. Price \$3.50 Postfree • 5-day Money-Back Guarantee EMERSON BOOKS, Inc., Dept. 733-M, 251 W. 19th Street, New York 11.

LEARN MODERN MATH!

Stumped by references to cybernetics, game theory? Confused by relativity? Brilliant new book by remarkable expositor makes these & other important new fields crystal-clear to laymen, students. "Great Ideas of Modern Mathematics," J. Singh. 213pp. \$1.55 + 10¢ postage. Money-back guarantee. Dept. SNL, Dover, 180 Varick St., N.Y. 14, N.Y.