

1958

THE WINNERS  
AND HONORABLE MENTIONS  
IN

THE 17<sup>th</sup> ANNUAL  
*Science Talent Search*<sup>®</sup>



**SCIENCE CLUBS OF AMERICA**

*Administered By Science Service*

1719 N STREET N. W. ★ WASHINGTON 6, D. C.

## THE ANNUAL SCIENCE TALENT SEARCH

## Washington Trip Winners

Never before has the world had greater need of the investigative turn of mind, the inquiring attitude and the love of fact that is exemplified in scientific research.

Science is important in defense of our freedom and the preservation of our way of life.

The Science Talent Search has succeeded far beyond our hopes. To the top 4,800 contestants in the first sixteen years have come many millions of dollars in scholarships from colleges and universities throughout the nation, supplementing the Westinghouse Science Scholarships distributed among those who were invited and came to Washington.

With approval from the educational world and with the winners of the first sixteen Science Talent Searches making creditable records in colleges, universities and professional positions, this attempt at picking those with research ability in science has become an institution and a tradition. Those selected in such rigorous competition have a great responsibility.

In a real sense the annual Science Talent Search is more than a scholarship contest. It is a major step toward making scientific talent available for important tasks in our civilization.

The participation of a great industrial organization in the financing of the annual Science Talent Search is a notable contribution to the advancement of science in America. This activity can be considered a support of "pure research" of importance equal to the fundamental researches in the Westinghouse Research Laboratories. Science and education are grateful for the financial support of the first seventeen Science Talent Searches by the Westinghouse Educational Foundation, an organization endowed by the Westinghouse Electric Corporation for the promotion of education and science.

Science Service, engaged in the interpretation and popularization of science on a broad front, is proud of administering, through Science Clubs of America, the annual Science Talent Search. From the newspapers, educators and scientists of America there has been enthusiastic cooperation in this annual activity that means so much to high school seniors interested in science. The Science Talent Search is a continuing opportunity and responsibility of the more than 17,000 science clubs and almost one half of a million members affiliated with Science Clubs of America.

## ABOUT THE WASHINGTON TRIP WINNERS

Three hundred boys and girls, who are believed to have unusual potential scientific ability, have been selected from the 1358 senior classes of the United States secondary schools and have been awarded honors in the Seventeenth Annual Science Talent Search.

Eight girls and 32 boys (proportion determined by ratio of boys and girls entering the contest) are being invited to Washington, D. C., for an all-expense trip February 27 through March 3, 1958, to attend the Science Talent Institute. Here one boy or girl will be awarded the \$7,500 Westinghouse Grand Science Scholarship. Four other scholarships from \$6,000 to \$3,000 will be awarded. A total of \$8,750 in Westinghouse Science Awards will be given at the discretion of the judges to the other 35 winners.

The trip winners are 15 to 18 years of age and come from 35 cities in 19 states and the District of Columbia. They were picked by the judges from among 25,039 contestants of whom 4,650 completed their entries by taking a science aptitude examination, obtaining recommendations and writing a report on "My Scientific Project." Of these 1,074 scored high enough on the examination to be named candidates. Examination requests were received from every state.

Of the 40 Seventeenth Annual Science Talent Search winners, 32 ranked in the top 5% of their graduating class and 20 of these were first, second, or third. Most of the winners are members of science clubs and many of them are club presidents, or other officers. Most of their clubs are affiliated with Science Clubs of America.

Girls accounted for 21% of the entries this year.

\* indicates girls  
H. S. indicates High School  
HOME ADDRESS follows name of school  
AGE of winner follows name  
Title of project report submitted is on next line

Montgomery	Shepard, Kenneth Wayne 17 Sidney Lanier H. S. 3854 MacLamar Rd. Vortexes in Liquids Draining from Tanks	ALABAMA
Tucson	Jensen, Richard Joseph 16 Salpointe H. S. 5602 E. Silver St. Determination of Integral Pythagorean Numbers	ARIZONA
Albany	Kirk, Rodney Carlos 17 Albany H. S. 904 Evelyn St. 6 Construction and Operation of a Pulse Height Analyzing Scintillation Counter	CALIFORNIA
El Cerrito	Williams, Robley Cook, Jr. 17 El Cerrito H. S. 1 Arlington Ct., Berkeley 7 Experiments with Algae	
Los Angeles	Kukla, Andy 16 Fairfax H. S. 8409 Blackburn Ave. 48 Geometry of Panangular, Complex, Inverse, and Complex Inverse Polygons	
Mill Valley	Niminger, Neil Logan 18 Tamalpais H. S. 24 Liberty St., Larkspur Production of High Temperature Tantalum Carbide Filaments	DISTRICT OF COLUMBIA
Washington	Rice, Jerry Mercer 17 Amcostia H. S. 161 Chesapeake St., S. W. 24 Effect of a Chemical Carcinogen upon Malignant Cells Cultivated in Vitro	FLORIDA
Miami Beach	Devine, Paul Joseph, Jr. 17 Gonzaga H. S. 6157 12th St. N., Arlington 5, Va. A Theory of Quantum Electrodynamics	ILLINOIS
Chicago	Pesticoe, Allan Emanuel 17 Miami Beach Senior H. S. 6375 Indian Creek Dr. 41 Experiments with Plants Done in a High School Radioisotopes Laboratory	INDIANA
Dupo	*Londak, Bernadette Genevieve 17 Mercy H. S. 7749 S. Langley Ave. 19 Geometric Proof of Kepler's Second Law	
Franklin Park	Dyrolf, David Ray 17 Dupo Community H. S. Box 275 An Original Electronic Vector Computer	
La Grange	Jerina, Donald Michael 18 Leyden Community H. S. 2427 N. Clinton St., River Aromatic Amino, Azo, and Carbonyl Compounds	
Bloomington	Gentle, Kenneth William 17 Lyons Township H. S. 843 Homestead Rd. Relationship Between Cosmic Radiation and Sunspot Activity	
Charles City	Martiz, Eric 17 University H. S. 817 Alwater Ave. Effect of a Dentifrice Containing Sodium Lauryl Sulphate on the Oral Lactobacilli Count	IOWA
Baltimore	Martens, Charles Paul 17 Charles City H. S. Route 4 Research on the Radial System of Venus	MARYLAND
Andover	Gaidis, James Michael 17 Baltimore City College 1511 Carswell St. 18 Development of Transistorized Communicators	MASSACHUSETTS
Attleboro	Welhofen, William Henry 17 Phillips Academy 908 Avenida Clletto, N. E., Topological Analysis by Mean of Dual Maps	
Newtonville	Thomae, Irving Herbert 17 Attleboro H. S. 123 Bervick Rd. Effect of Pole Piece Formation on Magnetic Lens Efficiency	
	Beeuwkes, Reiner III 17 Newton H. S. 123 Sargent St., Newton 58 Design and Construction of an Electron Cyclotron	
	Mitrovich, Dushan 18 Newton H. S. 105 Waban Hill Rd., Chestnut Hill 67 Flight and Stability Studies of a Model Shrouded-Propeller-Type Flying Platform	



# MICHIGAN

Romeo Burns, Stephen Kent 17 Romeo H. S. 147 Church St.  
Color Television Using a Single Vidicon-Type Camera Tube

# MONTANA

Choteau Malone, Jesse, Jr. 17 Choteau H. S. Route 2  
Insects in My Life

# NEBRASKA

Omaha Kripke, Saul Aaron 17 Central H. S. 119 N. Happy Hollow Blvd. 32  
The System LE<sup>1</sup>

# NEW JERSEY

Elizabeth Seaton, Robert Kirk 17 Thomas Jefferson H. S. 25 Scotland Rd. 3  
A Solar-Heated Greenhouse  
Teaneck Shelby, Jane 17 Teaneck H. S. 431 Claremont Ave.  
Calculation of the Orbit of Satellite 1957 Alpha<sub>1</sub> from Amateur Observations

# NEW YORK

Brooklyn Kapuler, Alan Mitchell 15 Erasmus Hall H. S. 47 E. 16 St. 26  
Effects of Colchicine upon Orchid Plant Genetics  
Ithaca Hapner, Bertrand Israel 16 George W. Wingate H. S. 7 Balfour Pl. 25  
Solution of a Famous 8-Color Problem and Its Generalizations  
Cantrell, Cyrus Duncan III 17 Ithaca H. S. 228 S. Geneva St.  
Optics of the Ellipse with Emphasis on Parallel Incident Rays  
Jamaica Burger, Richard Melton 16 Jamaica H. S. 21-15 34 Ave., Long Island City 6  
A Time Lapse Photographic Study of the Reaction of Drosera Intermedia (Sundew) to Certain Chemical and Physical Stimuli  
Wagreich, Philip Donald 16 Jamaica H. S. 67-47 182 St., Flushing 65  
Development of Resistance to Bacteriophage in Escherichia Coli  
Kumack, Arnold Mark 16 Bronx H. S. of Science 37-22 95 St., Jackson Heights 72  
Behavior of the Gamma Function for Very Small Values of the Argument  
Yonkers Herschkopf, Sybil 17 Ramaz H. S. 638 W. 160 St. 32  
Effects of Terramycin and Gibberellic Acid on the Growth of Bean Plants  
Rosner, Jonathan Lincoln 16 Roosevelt H. S. 300 Hollywood Ave., Tuckahoe 7  
Degeneration and Regeneration of the Sciatic Nerve in the Mouse

# OHIO

Vermilion Smith, Leslie Ewart 17 Vermilion H. S. 39 Huron Rd.  
Comparison of Solid Propellants with Particular Attention to Their Use in Small, Unmanned Rockets

# OREGON

Corvallis Marshall, Ruth Ann 17 Corvallis Senior H. S. 302 N. 21st St.  
Study of Protozoa

# PENNSYLVANIA

Philadelphia \*Elich, Elvera Rena 15 Overbrook H. S. 5648 Diamond St. 31  
New Discovery in the Decomposition of Ammonium Dichromate  
Upper Darby \*Waldman, Lise Jo 16 Upper Darby Senior H. S. 625 South Ave., Secane  
Determination of the Atmospheric Mass Absorption Coefficient in Three Portions of the Solar Spectrum

# WISCONSIN

Marshfield \*Karru, Jane Ruth 17 Columbus H. S. 510 W. 6th St.  
Natural Dyes for Home Use

# WYOMING

Cheyenne \*Wallace, Lynda Diane 17 Saint Mary H. S. 3421 Dover Rd.  
Tentative Identification and Further Studies on an Unknown Bacterium

# **ABOUT THE HONORABLE MENTIONS**

In addition to the 40 chosen to come to Washington, 260 students have such promise that the judges recommended that they be awarded Honorable Mention in the Seventeenth Annual Science Talent Search and their ranking be brought to public attention and, particularly, that colleges and universities be informed.

All boys and girls awarded Honorable Mention, as well as the Washington trip winners of the Seventeenth Annual Science Talent Search, are considered so outstanding that any institution of higher learning would be justified in considering their abilities carefully.

Dr. Harold A. Edgerton, who, with Dr. Stewart H. Brit, developed and carried out the selection technique, declares that "all of the Honorable Mentions as well as the trip winners, represent a group of high school seniors of outstanding ability whose high school records indicate that they are top-notch producers. Their activities and interests reflect an enthusiastic pursuit of special fields of science."

Of the Honorable Mentions in the Seventeenth Annual Science Talent Search, 77% of the boys and 31% of the girls rank in the upper 5% in their high school classes. All of the boys and girls have studied science and/or mathematics for four years or more in high school. Among the 260 who won Honorable Mention, 184 belong to science clubs of which 99 are affiliated with Science Clubs of America. The proportion of boys and girls in this list is determined by the ratio of boys and girls entering the contest. Listed are 55 girls and 205 boys.

# *Honorable Mentions*

\* Indicates girls  
H.S. Indicates High School  
HOME ADDRESS follows name of school  
AGE of winner follows name  
Title of project report submitted is on next line

# ALABAMA

Decatur Marshall, James Lawrence 17 Decatur H. S. 819 8th Ave., S. E.  
Effects of an Electromagnetic Field on Metals  
Tuscaloosa Tunstall, Brian Parker 17 Tuscaloosa H. S. 514 Capstone Ct.  
Rocketry

# ARIZONA

Phoenix Fogle, Thomas Franklin 17 Camelback H. S. 2424 E. Avalon Dr.  
A Two-Year Study of Thunderstorms  
Cords, Donald Philip 17 North Phoenix H. S. 5141 N. 18th Pl.  
Effect of Selected Wave-Lengths of Light on the Growth of Scenedesmus Obliquus and Chlorella  
Farnbach, William Adolph 17 North Phoenix H. S. 536 E. Cheery Lynn Rd.  
An Audio Amplifier Based on the Wheatstone Bridge  
Turner, Gary Burgess 17 North Phoenix H. S. 825 E. Lawrence Rd.  
Relationship of Rate of Transfer of Heat Between Liquids to Their Relative Specific Heats  
\*Farone, Barbara Helene 17 West H. S. 3413 N. 16th Dr.  
Effect of Electrostatic and Magnetic Fields on the Ionization of Gases  
\*Gates, Prudence Ann 17 West H. S. 317 W. Encanto Blvd.  
Metabolism of the White Rat  
Golub, Michael H. 17 West H. S. 3106 N. 15th Ave.  
Electrolytic Ion Amplifier  
Lipschultz, Allen Seymour 17 West H. S. 4204 N. 18th Ave.  
Determination of the Morphology of the Erythrocyte in Selected Anemias  
Schmieder, Robert William 16 West H. S. 6012 N. 2nd Ave.  
Construction of an Electronic Clock  
Ullinger, Peter Craig 17 West H. S. 2814 N. 11th Ave.  
Electrical Muscle Stimulation  
Warrenburg, Wallace Robert 17 West H. S. 5835 N. 2nd Ave.  
Building an Analog Computer

# ARKANSAS

Little Rock \*Oakes, Glennys Ann 17 Central H. S. 1 Ranch Valley Rd.  
Effect of an Inhibitor of Vitamin B<sub>6</sub> on Growth and Feather Development in the Chick Embryo



# CALIFORNIA

Fresno Tan, Henry 17 Roosevelt H. S. 1230 E. Swift St. 3  
Building a Cyclotron

Gardena Speitz, Peter Gregory 16 Serra H. S. 15812 Casimir St.  
Analysis of Performance and Efficiency of a Small  
Four-Cycle Gasoline Engine

Los Angeles Anderson, James Alfred 17 University H. S. 12427 Rochdale Lane 49  
Properties of Some Complex Equations in Four Variables

Pasadena Ulfeldt, Stanley Richard 17 John Muir H. S. 5415 Palm Dr., La Canada  
Ecological Study of the Rodents of the Chaparral

Pleasant Hill Scott, James Lovell 17 Pleasant Hill H. S. 447 Cumberland Dr., Walnut Creek  
Performance of Slits in Airplane Wings

San Francisco \*Cromander, Charlotte Diane 17 George Washington H. S. 375 10th Ave. 18  
Solar Energy: Practical Applications

Santa Cruz Woo, James Wing-Fai 16 Lowell H. S. 498 Funston Ave. 18  
Resonance Energies of Two Imaginary Molecules

Vista Bell, Lon Edward 17 Santa Cruz H. S. 722 Walnut Ave.  
Working on Solid Rocket Fuels

Westport Matson, Clive Randolph 16 Vista H. S. 1954 Camino Loma Verde  
Angular Variation: An Experiment in the Refractive Indices of Crystals

# CONNECTICUT

Wunsch, Carl Isaac 16 Staples H. S. 24 Compo Parkway  
Chelate Metal Complexes

# DISTRICT OF COLUMBIA

Breed, Lawrence Moser 17 Sidwell Friends School 5001 30th St. N.,  
Measuring the Force of Compression Arlington 7, Va.  
of Monolayers of Various Hydrocarbons

\*Clarebush, Lois Elinor 17 Sidwell Friends School 7113 Exfair Rd.,  
Paths on a Lattice Bethesda 14, Md.

Lynn, Robert Walker 16 Woodrow Wilson H. S. 2335 Northampton St. N.W. 15  
Rate of Melanin Turnover in Tadpoles

# FLORIDA

Fernandina Digby, Thomas Graham 18 Fernandina Beach H. S. 1620 Beech St., Box 304  
Building an Oscilloscope

Marianna James, John Egbert 17 Marianna H. S. 525 Guyton St.  
Slide-rule to Simplify the Mathematical Work of  
Nuclear Emulsion Determinations

Miami Beach Preger, Robert Lawrence 17 Miami Beach Sr. H. S. 9072 Carlyle Ave.,  
Problems Encountered in Grinding a Surtside  
Ten-Inch Mirror for a Telescope

# ILLINOIS

Arlington Heights Knopp, James Arthur 17 Arlington Heights Twp. H. S. 521 S. State Rd.  
Experimenting with Sugar Plastics

Calumet City \*Stanich, Gloria Jean 16 Thornton Fractional Twp. H. S. 916 Wentworth Ave.  
Experiments with Drosophila

Chicago Kaplan, Myron Mitchell 16 Sullivan H. S. 2736 W. Sherwin Ave. 45  
Experiments with the Geiger Counter

Edwardsville \*Dean, Helen Louise 17 Edwardsville H. S. 404 N. Buchanan St.  
Transmuters and Audiogenic Seizures in the A/Jax Mouse

Evanston \*Aslanian, Sara 17 Evanston Twp. H. S. 536 Custer Ave.  
Investigation and Development of Unusual Ceramic Glazes

Douglas, Aaron Jack 17 Evanston Twp. H. S. 2122 Ashland St.  
Experimental Growth of Metal Whiskers

\*Hahne, Marjorie Helen 16 Evanston Twp. H. S. 2246 Ridge Ave.  
A Statistical Analysis of Fossil Species

\*Miner, Anne Story 17 Evanston Twp. H. S. 415 Dempster St.  
An Investigation of Some Aspects of TV-Instruction

\*Times, Bette Jeanne 17 Lyons Twp. H. S. 239 S. 7th Ave.  
Iron Content of the Blood

La Grange \*Mertes, Janet Louise 17 Lyons Twp. H. S. 4514 Franklin Ave., Western  
What is Pain? Springs

\*Rose, Nell Freda 17 Lyons Twp. H. S. 143 S. Edgewood St.  
Development of a Feed Ingredient from Packing House  
Blood and Manure Waste

Northbrook \*Swanson, Linda Anne 16 Lyons Twp. H. S. 4548 Woodland Ave., Western  
The Crystallographic Lattice Springs

Peoria Ledvinka, James David 17 Lehighbrook H. S. 1420 Linden Dr.  
Experimentation with Henri Moissan's Diamond Synthesis Principles

Robinson Brynton, Larry Ray 17 Richwoods Community H. S. 905 E. Glen St., Peoria  
Design and Construction of an Ion Type X-ray Machine Heights 4

Urbana McInrosh, Patrick Slier 17 Robinson H. S. R. R. #2, Box 231  
Solar Terrestrial Relationships and Seismography

Bardeen, William Allen 16 University H. S. 56 Greencroft St., Champaign  
Flow of Color Centers in KBr Crystals

# INDIANA

Fort Wayne Swinehart, David Farmer 17 Central Catholic H. S. 5115 Fairfield Ave. 8  
Oscillation of Ionic Gases

Hammond Chappelle, Norman Andrew 17 Hammond H. S. 6925 Jackson Ave.  
Testing Rocket Motor Designs

\*Vergin, Marcia Ann 17 Hammond H. S. 8315 Greenwood St., Munster  
Effectiveness of Various Antiseptics on Different Kinds of Bacteria

\*Freeman, Julia Berg 17 Thomas Carr Howe H. S. 5461 Julian Ave. 19  
Carcinogenically Induced Cancer in Mice

Hess, Charles Thomas 17 Elston Sr. H. S. 103 Schofield Ct.  
A 50,000 Volt X-ray Machine from Junk Yard Parts

\*Settle, Eileen Jane 17 Portland Wayne Twp. H. S. R. R. #1, Keystone  
Insects on 160 Acres

Hobbs, Arthur Marmaduke 17 John Adams H. S. 1329 E. Monroe St. 15  
Rotors, with Reference to the Minimum Area Problem

Jacoby, Jimmy Kaye 18 W. Lafayette Sr. H. S. 1825 N. Salisbury St.  
Effects of Foreign Substances upon Crystal Growth

# IOWA

Dubuque Botten, LeRoy Harold 17 Dubuque Sr. H. S. 1735 Wood St.  
Design and Construction of Several Binary Digital Computers

Dyersville \*Metcalfe, Kathleen Patricia 16 St. Joseph Academy R. R. #2  
Fertilizers, the Key to Better Crops

Johnston \*Kramer, Angela Ann 17 Xavier H. S. Dyersville  
The Effects of Irradiation on Germination of Seeds

Orange City Leffler, Allan Theodore II 17 Johnston Cons. H. S. 6010 Otto Rd.  
Improvements in Receiver Construction

Lawrence Diven, Dennis James 17 Orange City H. S. 217 N. Da Costa St.  
An Electronic Speed Control for Model Trains

# KANSAS

Lawrence Fearing, Harold Wayland 16 Lawrence H. S. 1622 New Hampshire St.  
Determination of the Charge on an Electron

Topeka \*Young, Deborah Louise 17 Lawrence H. S. 3 Westwood Rd.  
Effects of Cold on the Thyroid and Adrenal Glands of the Guinea Pig

\*Glendening, Ruth Ann 17 Topeka H. S. 1217 Mulvane St.  
Physiological Effects of Heat and Cold on Different Animals

Hiebert, John Blake 17 Topeka H. S. 1517 Randolph St.  
A Method for Determining Vascular Union in Parabolic Rats

\*Owen, Judith Charlene 17 Topeka H. S. 1320 Mulvane St.  
Precipitation of Blood Proteins

# KENTUCKY

Bardstown Wade, James O'Shea 17 St. Joseph's Prep. School 551 Park Dr. N.E.,  
Geophysics and Meteorology of the Planet Venus Atlanta 6, Ga.

Louisville Blanford, George Emmanuel, Jr. 17 St. Xavier H. S. 2227 Mulvane Rd. 5  
A Spectrophotometric Analysis of Indicators

# LOUISIANA

Baton Rouge Terrebonne, Robert Alexis 17 Baton Rouge Sr. H. S. 727 W. McKinley St. 2  
Model and Mathematics of the Vanguard Rocket

New Orleans Mallettich, Dallas John, Jr. 17 Holy Cross H. S. 405 Norton St., Arabi  
Design and Construction of a Variable Frequency Oscillator

Shreveport Caine, Stephen Howard 16 C. E. Byrd H. S. 3823 Creswell Ave.  
Design of a Corrosion Control Demonstrator

Phillips, Richard Earl 17 C. E. Byrd H. S. 118 E. Elmwood St.  
Experimenting with High Fidelity



# MARYLAND

- Bethesda  
Bernstein, Michael Toby 17 Bethesda-Chevy Chase H. S. 2408 Colston Dr.,  
Observation of Newly Fertilized Ova Silver Spring  
Shear, Jonathan 17 Bethesda-Chevy Chase H. S. 5203 Battery Lane 14  
Mutations Induced in Escherichia Coli by the  
Antimetabolite 5-fluoro-uracil
- Bladensburg  
Marburger, John Harman III 16 Bladensburg H. S. 4809 Woodlawn Dr.,  
Effects of a Magnetic Field on the Spectra of Gases Landover Hills  
Menke, John Lee 17 Richard Montgomery H. S. Barnesville  
Effect of Ultrasonic Radiation on Decomposition Reactions  
Hurbutt, Douglas Herendeen 16 Montgomery Blair H. S. 9522 Bruce Dr.  
Investigation of a Gaseous Discharge Phenomenon  
Laney, Melvin Johnson 18 Montgomery Blair H. S. 9008 Eton Rd.  
Atomic Particles and Their Relation to Periodic Classification  
\*Bollinger, Alice Marie 17 Towson Sr. H. S. 6507 York Rd., Baltimore 12  
Observations of Adhesion Between Water and Glass

# MASSACHUSETTS

- Boston  
Simon, Michael Joseph 17 Boston Latin School 108 Farnham St., Belmont 78  
Experiments in the Study of Sound  
New Bedford  
Rowe, Preston Brainard, Jr. 17 New Bedford H. S. 126 Chestnut St.  
Graphing  $f(x)=x^f$
- North Cambridge  
\*Murphy, Catherine Mary 17 Malignon H. S. 56 Chestnut St., Cambridge 39  
Survey of the Diagnosis of Tuberculosis Among High  
School Students in Cambridge  
North Quincy  
Brown, Jan Christopher 17 North Quincy H. S. 45 Vane St. 71  
Workings of a Simple Cloud Chamber  
South Hamilton  
Woods, Gary Condie 17 Hamilton H. S. 57 Lois St.  
A Simple Light Beam Communication Outfit  
Ayers, Robert Martin 16 Classical St. H. S. 1374 S. Branch Pkwy. 9  
Construction of Plastic Telescope Mirrors  
Wright, Roy Allen 16 Classical St. H. S. 16 Carnarvon Circle 9  
A Long Focus Planetary Reflector of New Design  
\*Steele, Deborah Chapin 17 West Springfield H. S. 39 Upper Church St.  
Effect of Exercise on Blood Sugar Levels  
Thurston, Richard Dwight 17 Westwood H. S. 141 Washington St., Ishington  
Relation Between Rate of Contraction of the Contractile Vacuole  
of the Paramecium and the Conditions of Its Environment

# MICHIGAN

- Albena  
Kennedy, Robert Louis 18 Catholic Central H. S. 545 Minor St.  
Story of Petroleum: Formation, Drilling and Refining  
Ann Arbor  
Boethner, Donald William 17 University School 917 Dewey Ave.  
Development of a Magnetic Drum Storage Unit for a  
Small Electronic Digital Computer  
Flint  
Cheney, George Eugene 18 Central H. S. 2211 S. Dort Hwy. 7  
Design and Construction of an Analog Computer  
Hornet, Jack Allen 18 Flint Technical H. S. 3305 Herrick St. 3  
Determination of Avogadro's and Boltzmann's Constants  
Lee, Russell Fisher 17 Three Oaks H. S. 313 S. Elm St.  
Effect of Sunspots on Weather

# MINNESOTA

- Rochester  
Tomaschewski, Karl Franz 17 Lourdes H. S. 1222 10th Ave. S. E.  
Effects of Organic Ammonium Compounds on the  
Alkaloidal Production of Datura Stramonium  
St. Louis Park  
Fackler, Orrin Dean 17 St. Louis Park H. S. 2604 Inglewood Ave. 16  
Effect of Grids on a Geiger Tube

# MISSISSIPPI

- University  
\*Phay, Johanna Elizabeth 17 University H. S. Faculty Apt. C-6  
New Uses for the Osage Orange Fruit Seed  
Jackson  
Segrest, Jere Palmer 17 William B. Murrah H. S. 3930 Cambridge St. 6  
An Inexpensive Wilson Cloud Chamber

# MISSOURI

- Lebanon  
Haistay, Wesley Kenneth, Jr. 17 Lebanon H. S. 436 Harwood St.  
Instructing in Radio

# St. Louis

- Kaiser, Thomas Burton 17 Christian Brothers College H. S. 4037 Meramec St.  
Construction of and Experimentation with the  
Michelson Interferometer 16  
Mercurio, James Peter 17 Christian Brothers College H. S. 7208 Dorset St.,  
Effect of Heat on Electrical Resistance University City 5

# MONTANA

- Butte  
Haney, George Michael 17 Butte Public H. S. 3001 State St.  
Sex Linkage and Genetic Theory Demonstrated with  
Drosophila Melanogaster  
Shelby  
Lingerfelt, Garry Frank 17 Shelby H. S. 210 1st Ave. S., Box 733  
A Study of Sound

# NEBRASKA

- Omaha  
Burkholder, Peter Manning 18 Benson H. S. 5624 Burdette St. 4  
Development of a Universal Auxiliary Grammar  
\*Mills, Donna Mae 16 Brownell Hall 1000 Aldrich Rd., Lincoln 10  
Solving the Pythagorean Theorem  
Speier, Richard H. 17 Central H. S. 316 S. 56th St. 32  
Principles of Gyroscopic Stability

# NEW HAMPSHIRE

- Chambliss, Carlson Rollin 16 Phillips Exeter Academy 315 W. Lake Dr.,  
Separation of Lanthanum and Neodymium Salts, Athens, Ga.  
Utilizing Fractional Crystallization of Didymium Ammonium Nitrate

# NEW JERSEY

- Millburn  
Greiner, John Mercer 17 Millburn H. S. 99 Oakview Terrace, Short Hills  
Electro-Mechanical Maze Analyzer  
New Brunswick  
Williams, Robert Bruce 17 New Brunswick H. S. 34 Hill St., Milltown  
Recovery Patterns of Dry Philodina Roseola as  
Indicators of Resistance to Temperature  
Conrad, Richard Henry 16 Rutgers Prep. School 240 S. Adelaide Ave.,  
Engle, Plant or Animal? Highland Park  
Hoyler, Robert Clement 17 Princeton H. S. 183 Hamilton Ave.  
Design of a Transistorized Spectrum Analyzer  
Ullman, Neil Richard 17 Union H. S. 298 Newark Ave.  
The Slide Rule and Its Application to the Pythagorean Theorem

# NEW MEXICO

- Benson, David Bernard 17 Los Alamos H. S. 2314-B 35th St.  
Design and Construction of an Electro-Magnetic Binary Computer  
Brennard, Daniel Ponder 17 Santa Fe H. S. Box 1706 Zia Rd.  
Narrowband Amplitude Modulation by Means of Frequency Division

# NEW YORK

- Hershberg, Daniel Roosevelt 17 Albany H. S. 337 S. Main Ave. 9  
Construction of an Electroluminescent Cell  
Weis, Anthony Frank 16 Bayside H. S. 45-16 172nd St., Flushing 58  
A Problem in Vectors  
Aronson, George Martin 16 Abraham Lincoln H. S. 2645 Homcrest Ave. 35  
Salt Water Adaptations of Paramecium Caudatum  
\*Ashcar, Sydelle C. 17 Abraham Lincoln H. S. 1881 Ocean Pkwy. 23  
A Statistical Study of Some of the Factors That Influence People in Buying  
Goldman, Steven Marc 16 Abraham Lincoln H. S. 2661 W. 2nd St. 23  
\*Kaplowitz, Carole Janet 16 Abraham Lincoln H. S. 2926 Brighton 1 St. 35  
An Original Finite Geometry Based on the Desargues Configuration  
Nadelman, Emanuel R. 16 Abraham Lincoln H. S. 94 Corbin Pl. 35  
A Mathematical Analysis of the Difference in Quality Between Two Violins  
Remler, Michael Paul 16 Abraham Lincoln H. S. 2085 Ocean Pkwy. 23  
Design and Construction of a Diffraction Spectroscope  
Rosemfield, J. Eli 16 Abraham Lincoln H. S. 125-B West End Ave. 35  
Unlimited Extension of the Periodic Table  
Rosner, Richard 16 Abraham Lincoln H. S. 2310 Ocean Pkwy. 23  
A New Application of Photo-Elastic Stress Analysis to Aerodynamics  
\*Chinitz, Eve 16 Erasmus Hall H. S. 34 Midwood St. 25  
Metabolism of the Albino Rat



- Goldman, Bruce Elliot 15 Erasmus Hall H. S. 100 Woodruff Ave. 26
- Catalytic Effect of Metallic Oxides on the Burning of Sugar  
Grady, Frank Joseph 16 Erasmus Hall H. S. 239 E. 34th St. 3
- General Effects of Gibberellic Acid on Growth and Development of Plants  
\*Jacobson, Rochelle Iris 17 Erasmus Hall H. S. 1050 Nostrand Ave. 25
- Comparative Changes in the Rate of Growth and Development  
of *Rhizopus nigricans* Brought About by Changes of Sugar in  
the Medium Caused by Variations in Heat and pH Values  
Kaufman, Jerome Howard 16 Erasmus Hall H. S. 310 Marlborough Rd. 26
- Artificial Transplantation and Propagation of  
Embryonic Nucleated Red Blood Cells  
Marantz, Paul Joseph 16 Erasmus Hall H. S. 246 Parkside Ave. 26
- Effect of Hexadecanol Films in Retarding the Evaporation of Water  
Miller, Jordan 16 Erasmus Hall H. S. 100 Woodruff Ave. 26
- Effect of Tension on the Blood-Clothing Rate in Albino Rats  
\*Polinsky, Esther Ila 16 Erasmus Hall H. S. 105 Backingham Rd. 26
- A Study of NaCl-KCl Mixtures by X-ray Diffraction Powder Diagrams  
Stein, Philip Geshon 16 Erasmus Hall H. S. 131 Westminster Rd. 18
- Design, Construction and Operation of a Machine to Play "Sundorra 21"  
Teller, Benjamin Edward 16 Erasmus Hall H. S. 920 Ocean Ave. 26
- Effect of Various Bands of the Spectrum on Photosynthesis in *Valisneria*  
\*Jablonsky, Susan 17 Fort Hamilton H. S. 351 Marine Ave. 9
- Maternal Licking Behavior in Mice  
Rizeman, Michael Jeffrey 17 Lafayette H. S. 8690 21st Ave. 14
- Techniques in Paper Chromatography  
Lipton, James Spencer 16 Midwood H. S. 63 DeKoven Ct. 30
- The Expansion of Cubical Determinants  
Rubin, Frank 15 Midwood H. S. 848 E. 28th St. 10
- Bipolar Coordinates  
\*Shindell, Gail Joyce 16 Midwood H. S. 1085 E. 22nd St. 10
- Determination of the Solubility of Lead Iodide  
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- A Unified and Quantized Field Theory  
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- Home Synthesis of Indigo  
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- An Investigation of the Cause of the Coloration of Quartz  
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- Design and Construction of an Electronic Slide Rule  
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- Symmetry in Equations  
\*Reich, Julie M. 16 Forest Hills H. S. 144-27 69th Rd., Flushing 67
- A Crystallization of the Problems in Radiocarbon Dating  
\*Lapides, Jacqueline Anita 16 Forest Hills H. S. 141-11 72nd Ave., Flushing 67
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\*Friedman, Susan Joyce 16 Forest Hills H. S. 141-26 68th Dr., Flushing 67
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- Evaporation of Aluminum onto Glass  
Schwarz, John Henry 16 North Shore H. S. 8 Cross Lane
- Analysis and Application of Binary Numeration  
Agnew, Palmer Wright 17 Itasca H. S. 416 Highland Rd.
- Design, Development, and Construction of a Small  
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- Specific Stains and Enzymes in a Histochemical Investigation  
of the Connective Tissue Mast Cell of the Mouse

- \*Stekmann, Suzan Carol 16 Kenmore Sr. H. S. 19 Crosby Ave. 17
- X-ray Induced Nutritional Mutations in *Bacillus Subtilis*  
\*Downing, Diane Elizabeth 17 Kenmore Sr. H. S. 239 Knowlton Ave. 23
- Experiments in Neurophysiology  
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- Improvements in Electrophoresis  
Hanson, Kenneth Merrill 17 F. E. Bellows H. S. 203 Carroll Ave.
- Design, Construction and Application of a  
Low-Cost Precision Electronic Analog Computer  
Greenberg, Stephen Daniel 16 Mineola H. S. 20 Webydige Rd.
- Design, Construction and Uses of a Six-Inch Cyclotron  
Clark, Richard Lee 17 New Rochelle H. S. 131 Rose Hill Ave.
- Crystals: Their Formation, Structure, and Classification  
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- Experimenting with the Cadmium Sulphide Radiation Probe  
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- Antibiotics from the Compost on the Bottom of Fish Tanks  
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- Properties of Trapezoids  
Morris, Alan David 18 Stuyvesant H. S. 342 E. 82nd St. 28
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- A Device for the Conversion of Heat into Electricity  
Silver, Robert Steven 15 Stuyvesant H. S. 1664 Macombs Rd. 53
- Principles of Low-Power Electrochemical Devices  
Yesodi, Oradaya 17 Stuyvesant H. S. 7721 18th Ave., Brooklyn 14
- Ecological Factors as Determinants of Ameiboid Protozoan Movements  
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- Expansion of a Polynomial of the  $n$ th Degree to the  $n$ th Power  
\*Bender, Linda Joan 16 Martin Van Buren H. S. 82-38 212th St. 27
- Investigation of the Halogens  
Tenenbaum, Joel 17 Martin Van Buren H. S. 86-06 208th St. 27
- Minimizing Calculating Time for Polynomial Solution in Digital Computers



Rockville Centre Rome	Collins, Kenneth Alan 15 Martin Van Buren H. S. 73-30 Springfield Rd., A Successful Laboratory Procedure for Obtaining Metallic Lithium Krieger, Allen Stephen 16 South Side H. S. 243 Princeton Rd. Determining the Rate of Photosynthesis *Gallivan, Mary Ellen 17 Academy of the Holy Names 705 Elm St. Comparative Study of the Effects of Various Nutrients on Certain Bryophytes Grave, Gilman Drew 17 Rye H. S. 594 Forest Ave. Statistical Approach to Endocrine Relationships in Mice Mead, Robert Mosher 17 Mont Pleasant H. S. 901 Union St. 8 Design and Construction of a Liquid Freon 114 Bubble Chamber *Burnham, Mary Clare 17 Griffith Institute and Central School 56 Newman St. The Effects of Estrogen and of Testosterone on the Skeleton of the C57 Mouse Reiskind, Jeremy 17 Curtis H. S. 610 Victory Blvd. 1 Effects of Twelve Commercial Peptides on the Proliferation of Strain L (Earle) Mouse Cells *Paris, Lucy Florence 17 Eastwood H. S. 520 Hawley Ave. 3 The Effects of Neotetrazoleum Chloride on the Growing and Resting Hair Follicles in Mice and on the Growth of Protozoa *Pekurney, Martha Carol 17 Eastwood H. S. 155 Plymouth Dr. 6 The Effect of Vitamin D and a Chelating Agent on the Calcium and Phosphorus Metabolism of the Rat Anthony, Robert Stephen 16 Archbishop Stepien H. S. 220 Heatherdell Rd., Synthesis of Tetraethanol Ammonium Hydroxide Torop, Paul 17 Roosevelt H. S. 113 Cresthill Rd. Designing and Building a Gas Barometer Ardsley
Syracuse	<b>NORTH CAROLINA</b> Homeyut, Russell Kent 17 Central H. S. Route 2 Construction of a Semi-Automatic Wilson Cloud Chamber Tripp, Alton Parker, Jr. 17 Broughton H. S. 2217 Creston Rd. Building a Spectroscope NORTH DAKOTA
White Plains	Thompson, David Allen 17 Central H. S. 724 Fifth St. Designing and Testing Rockets OHIO
Yonkers	Stutzman, Kriss Leroy 17 Archbold H. S. Route 1 A Topological Study of Parabolic Curves *Manak, Barbara Rose 16 Lourdes Academy 2217 Montclair 9 Construction of a Spectroscope for Analysis of Metals and Rare Earths Hacker, Richard McLean 17 Roosevelt H. S. 350 Verona Rd. 17 An Experimental Solar Generator Mosher, Stephen Lloyd 16 Fairmount H. S. 4100 Elmridge Rd. 29 Nuclear Electric Quadrupole Resonance Stahl, Gordon Irving 17 Hoover H. S. 426 Werstler Ave. 20 A Projected Improvement in the Electronic Organ Farrell, Robert Ernest 17 Vermillion H. S. 414 Perry St. Design and Construction of a Wind Tunnel Sanford, Thomas Bayes 17 Vermillion H. S. West River Rd. Van de Graaff Generator with Proposed Beta Particle Accelerator OKLAHOMA
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Archbold	*Bogart, Elizabeth Ann 17 Corvallis Sr. H. S. 937 N. 36th St., Route 4 New Histological Staining Techniques
Cleveland	
Dayton	
Kettering	
North Canton	
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Oklahoma City	
Ponca City	
Tulsa	
Corvallis	

Portland	*Brady, Mary Ann 16 Corvallis Sr. H. S. 403 Whiteside Dr. Construction of a Cuprous Oxide Photo-cell Hartman, Philip Henry 17 Corvallis Sr. H. S. 135 N. 30th St. Improving the Electrical Contacts for a Self-Playing Electronic Music Box Ashley, Roger Farmand 17 Lincoln H. S. 4837 W. Burnside Rd. 1 Construction of a Differential Thermal Analysis Apparatus for Qualitative Determination of Thermally Active Minerals *Munson, Edith Linda 17 U. S. Grant H. S. 4072 N. E. 32nd Ave. 12 Duplication of C. M. Hall's Patents for Production of Aluminum from Aluminum Oxide PENNSYLVANIA
Berwyn	Holland, Richard Walter 17 Conestoga Sr. H. S. 381 N. Valley Forge Rd., Butterflies and Moths of Southeastern United States Devon Fantazer, Richard Michael 17 St. Thomas H. S. 1439 Electric Ave., East Pittsburgh Single Crystals of Austenitic Stainless Steel Kreuzer, Lloyd Barton 17 Cheltenham H. S. 325 Harrison Ave. 17 Relation of Erythropoietin to Hereditary Macrocytic Anemia in the House Mouse Lewis, Daniel Evan 17 Kingston H. S. 387 Tioga Ave. An Application of the Calculus of Variations: The Brachistochrone Problem Desiderio, Dominic Morse, Jr. 17 Stow H. S. 1301 Woodward Ave. A Model to Illustrate Molecular Action Slet, Albert William 18 Millersburg-Upper Paxton Union H. S. 640 State St. Designing and Building Experimental Sonar *Kiefer, Nancy Winona 17 Notre Dame H. S. 17 Curtis Rd., Springfield, Macroscopic Algae of the Northwestern Section of Delaware County, Pa. *Christman, Judith Irene 17 Northampton H. S. R. D. #1, Box 53 Ion Exchange Chromatography Jefferys, William Hamilton III 17 Episcopal Academy 365 Belrose Lane, An Amateur's Radio Telescope *Lois, Suelen Marie 17 Sacred Heart H. S. Box 102A Harcourt Dr., Route 7, The Photoelectric Effect Applied to Control of Artificial Street Lighting Henry, Cyrus Pershing 17 Punksutawney Area Joint H. S. Box 137 Big Run Experiments on the Distillation of Crude Coke Oven Tar Winter, Harry Clark 16 State College Sr. H. S. 505 S. Pugh St. Experiments in Electrophoresis Koh, Robert 16 Tarentum H. S. 1118 Park St. Bonding of Silver Brazed Stainless Steel Joints *Ball, Barbara Ann 17 Academy of Notre Dame 335 Upper Gulph Rd., Presence of Dirt and Metallic Substances in Commercial Soaps Zwicky, Arnold Melchor, Jr. 17 Wilson Joint H. S. 24 Valley Rd., An Inductive Analysis of the Patterns of Recurring Decimals Wyomissing
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Millersburg	
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Elkins Park	
Braddock	
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Columbia	
Hot Springs	
Yankton	



## TENNESSEE

- Bristol Bushore, Arthur William 17 Bristol H. S. 700 Georgia Ave.  
Designing and Building Plasma Jets  
Mallett, Vincent de Paul, Jr. 18 The McCalle School 7249 E. Brainerd Rd.  
An Electrical Combination Lock  
Erickson, Harold Paul 18 Notre Dame H. S. 2710 E. 12th St. 4  
Design and Construction of an Electronic Saxophone  
Johnson, Charles Edward 17 Central H. S. 5102 Holston Dr. 14  
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## TEXAS

- Alvin Hankamer, Jorge Elwood 17 Alvin H. S. 2007 Blum St.  
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Austin Feuerbacher, David George 17 S. F. Austin H. S. 3111 Dancy St. 2  
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Factors Affecting the Stability of Porphyrim  
\*Moses, Mary Catherine 17 S. F. Austin H. S. 2500 Winsted Lane 3  
Factors Affecting Vitamin C Loss  
Pratt, Terrence Wendall 17 McCulloch H. S. 5001 Ridge Oak Dr. 3  
Testing the Feasibility of Using Diatomaceous Earth as an  
Agent for Controlling the Speed of Reaction of Solid Rocket Fuels  
Fischer, Michael Christian 17 Coleman H. S. 419 E. Tenth St.  
New Concepts in Wave Theory  
Dallas Goode, John Vivian 17 Hillcrest H. S. 4656 Miron Dr. 20  
The Color Electronic Microscope  
Perkinson, Roy Lee 17 Hillcrest H. S. 7544 Rambler Rd. 31  
An Improved Cloud Chamber  
Denton \*Trull, Linda Elaine 16 Denton St. H. S. Box 5433 N. Texas State College  
Synthesis of Some 1-Substituted-2-Methylamphimide-4,9-Diones

## UTAH

- Logan Thorne, Kip Stephen 17 Logan H. S. 226 W. 1st South  
A Four-Dimensional Geometry  
Salt Lake City Linford, Gary Joe 17 East H. S. 2244 S. 20th East  
Building an Observatory  
Vernal McCarrell, William F. 18 Uintah H. S. 214 W. 1st North  
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- Shoreham Menard, Dwight Thomas 17 Shoreham H. S. Shoreham  
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## VIRGINIA

- Arlington Taylor, Albion Dennis 16 Washington-Lee H. S. 2319 N. Nottingham St. 5  
Orbital Calculus  
Eagle Rock \*Myers, Mary Louise 17 Eagle Rock H. S. Glen Wilton  
Endocrinology and the Effects of Hormones  
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Effects of Microwaves on Parametia and Amoebae  
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## WASHINGTON

- Westport Erickson, Gary George 17 Ocosta H. S. Pacific Rd., Grayland  
Construction of a Six-Inch Reflector Telescope

## WEST VIRGINIA

- Charleston Lang, Roger Medbury 17 Stonewall Jackson H. S. 701 Red Oak St. 2  
Production of Geometric Forms without Mass  
Lovejoy, William Dana 17 Stonewall Jackson H. S. 1240 Park Ave. 2  
Production of the Chemotherapeutic Agent, Penicillin,  
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Singer, June Whitfield 17 Stonewall Jackson H. S. Box 608, Hurricane  
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## WISCONSIN

- La Crosse Gollnick, Daniel Archie 17 Central H. S. 4012 Glenhaven Dr.  
Effect of Natural Phenomena on Cosmic Ray Intensity  
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Experiences with Solid Rocket Fuels  
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