

Science Service

Organized 1921 as a non-profit corporation, with trustees nominated by the National Academy of Sciences, the National Research Council, the American Association for the Advancement of Science, the E. W. Scripps Estate and the journalistic profession.

WATSON DAVIS, Director



IN A DEMOCRACY LIKE OURS it is particularly important that people as a whole should so far as possible understand the aims and achievements of modern science, not only because of the value of such knowledge to themselves but because research directly or indirectly depends upon popular appreciation of its methods. The specialist is likewise a layman in every science except his own and he, too, needs to have new things explained to him in non-technical language. Scientific progress is so rapid and revolutionary these days that no one can keep up with it without some means of keeping in close contact with its new ideas and discoveries.

Independent and Permanent

Through the endowment by the late E. W. Scripps, Science Service has been assured of such basic financial support as to insure its independence and permanence. Mr. Scripps' long and wide experience as a newspaper editor and proprietor convinced him of the importance of scientific research as the foundation of the prosperity of the nation and the guide to sound thinking and living. He realized the need for an independent agency that would bring the results of research to the attention of the entire people for application to the solution of their own personal, social or political problems.

SCIENCE SERVICE is especially charged by scientists, through their leading national organizations, with the great responsibility of interpreting and popularizing science to the people. Historically, it began its work when newspapers understood little and cared less about science. To a major degree, science is appreciated and well-handled by newspapers today because of the ideals, example and practice of Science Service.

The conduct of the science club movement and the development of experimental kits have been significant contributions to public understanding of science. So also are Science Service magazines, particularly the Science News Letter which brings to scientists and intelligent non-scientists alike, significant reports of science progress.

Thousands Cooperate

Thousands of scientists and educators through the years have joined with trustees and staff in the work of Science Service.

For feeling and reporting the pulse of science, day by day, Science Service has a staff of scientist-writers at its headquarters in Washington, and contributors of scientific competence in the centers of research in America and abroad. The principal national and international science meetings are reported by staff or other scientist-writers. A large working information file and library provide quickly the necessary background to the current happenings in science.

HONORS GROUP

IN

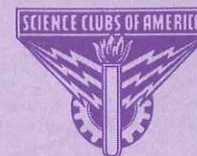
THE 22nd ANNUAL

Science Talent Search[®]

for the

Westinghouse Science Scholarships and Awards

1963



SCIENCE CLUBS OF AMERICA

Administered By Science Service

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

The Meaning of Honors in the Science Talent Search

The achieving of Honors in the Science Talent Search, earned by the top 10% of those who complete entries in the Science Talent Search, is an evidence of science ability and interest which can be taken into consideration by colleges and universities in admissions and granting of scholarships. For this reason this Honors list is distributed to all the universities and colleges of the United States utilizing a list furnished by the American Council on Education.

All boys and girls awarded Honors in the Science Talent Search are considered so outstanding that any institution of higher learning will be justified in considering their abilities carefully.

In past years members of the Honors Group have made creditable records in the colleges and universities to which they have been admitted.

From the list of 327 honor awards, 40 are being chosen as winners of the Washington trip. Among these \$34,250 in scholarships and awards will be distributed. The list of winners is being announced subsequently to the distribution of this list and will be published in the Science News Letter of February 2, 1963, and it will be sent upon request accompanied by a self-addressed stamped envelope.

Each of those winning honors is being furnished with multiple certificates intended to accompany applications for college admissions and scholarships, but a listing in this pamphlet should be accepted as an equivalent certification.

The proportion of boys and girls in this list is determined by the ratio of boys and girls entering the contest. Listed are 76 girls and 251 boys. The girls determine their own chances in the Science Talent Search in accordance with the number that enter. Of the Honors Group, 66% of the boys and 72% of the girls rank in the upper 5% in their high school classes. Among the 327 who won Honors, 279 belong to science clubs of which 199 are affiliated with Science Clubs of America.

The Annual Science Talent Search

The Science Talent Search was the pioneering endeavor to discover at the senior high school year level those who have the potentialities to become the research scientists of the future. It has fulfilled this function far beyond the hopes entertained when this educational project was conceived. Many millions of dollars in scholarships in colleges and universities throughout the nation, supplementing the Westinghouse Science Scholarships, have been given to those who have thus been discovered to have high science talent.

This selection of students with research ability in science has become an institution and tradition due to approval from the educational world and the creditable records of winners in colleges, universities and professional positions.

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 twenty-two 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 20,000 science groups and more than 700,000 members affiliated with Science Clubs of America.

FOR RELEASE: WEDNESDAY AFTERNOON, JANUARY 23, 1963

Honors Group in the Twenty-second Annual Science Talent Search®

* indicates girls

H. S. indicates High School

HOME ADDRESS is underlined

AGE of winner follows name

Title of project report submitted is on next line

ALABAMA

Talladega Smith, Jackson Ellis 17 Talladega H.S. R. #1
Geometry in A Spherical Manifold

ARIZONA

Phoenix *Owen, Ann 17 Camelback H.S. 3740 E. Piccadilly St. 18
Mathematical Analysis of Three-Dimensional Tic-Tac-Toe
*Clements, Linda Lou 17 North H.S. 2725 E. Thomas Rd. 16
Differences Between Infant and Adult A-Antigen by Use of Immuno-Diffusion on Cellulose-Acetate Membrane Filters
Royce, Ronald Richard 17 North H.S. 4741 E. Oak St. 8
Circum-Cathodic Motion of the Ball-of-Fire Mode in Gas-Filled Electron Emission Tubes with Thermionic Cathodes
Atchley, Alan Aubrey 16 West H.S. 824 W. Amelia Ave. 13
Demonstration of Planetary Motions Using an Analog Computer
*Crossland, Sydney Carol-Ann 17 West H.S. 3311 W. College Dr. 17
Ionization of Air Upon Maze Learning Rate of Rats Measured by T-Stone Maze
Weisselberg, Larry Stuart 17 West H.S. 3726 W. Cavalier Dr.
Influence of Preparatory Set on Perception

CALIFORNIA

Atherton Bregman, Jack Mark 17 Menlo-Atherton H.S. 700 Menlo Oaks Dr.,
Effect of Light on Distribution of Spores in Fungi Menlo Park
Bakersfield Johnson, Erik Nels 17 Bakersfield H.S. 2301 1st St.
Mutagenic Effects of Radiation
El Cerrito Jensen, David William 17 El Cerrito H.S. 16 Kerr Ave., Berkeley 7
Magnetic Core Logic Circuits
Fresno Poythress, Vern Sheridan 16 Bullard H.S. 1231 W. Escalon Ave. 5
Sums of Multinomial Coefficients
Granada Hills Gordon, Bruce Roderick 17 Granada Hills H.S. 19322 Superior St.,
Effects of Cyanide Administration on Adrenal Northridge
Function and Metabolism
La Jolla Tanalski, Theodore Graf 16 La Jolla Jr.-Sr. H.S. R. #1, Box 20-G,
Inverted Vacuum Tube Electrometer Using Del Mar
the 6BK4 Tube
Los Angeles Mitchell, David Hillard 17 Venice H.S. 751 Greentree Rd., Pacific
Effects of Low Temperatures on Plasmodium Palisades
of Physarum polycephalum
Mitchell, Ralph Martin 17 Venice H.S. 751 Greentree Rd., Pacific
Investigation of Existence and Properties of Palisades
Hyperpowers and Superpowers
Cooper, Martin David 17 Westchester H.S. 6143 W. 75th Pl. 45
Use of Electromotive Force in Conversion of Heat to Electricity
Engelbreten, Glenn Eric 17 Westchester H.S. 111 Gillis St., Playa Del
Summation of Power Series with Polynomial Coefficients Rey
*Tenney, Sharon Rose 16 Westchester H.S. 8007 Ramsgate Ave. 45
Bacteriophages for Bacillus subtilis
Palos Verdes *Gregory, Alina Elizabeth 17 Marymount H.S. 309 Via Linda Vista,
A Concept of Antibody Production Redondo Beach
Estates Buckholtz, Joel Thomas 17 Palos Verdes H.S. 2729 Palos Verdes Dr. N.
Electrical Conductivity of Salt Solutions
Pasadena Gibson, Kim Dean 18 Pasadena H.S. 502 Lakeview Rd.
Graphs of Imaginary Values of Functions

Pasadena Kyte, Jack Ernst 16 Pasadena H.S. 1425 N. Chester Ave.
Nuclear Extrusion in Dissociated Rat Heart Cells

Reseda Brown, James Willard 17 Grover Cleveland H.S. 17347 Rayen St.,
Plant Study of Tetrapanax papyriferum and Northridge
Its Toxic Effects

*Leiss, Michele Anne 16 Grover Cleveland H.S. 20722 Schoolcraft St.
Tumors in Mice Canoga Park

*McCoy, Phyllis Marlene 16 Grover Cleveland H.S. 19229 Keswick St.
Investigating Possibilities of Changing Crystal Growth

Rialto *Ware, Anita Faye 17 Eisenhower H.S. 201 E. Valencia St.
Imprinting with an Auditory Stimulus Without Any Visual Experience

San Bernardino *Anderson, Audrey Joyce 16 San Bernardino H.S. 2371 Davidson Ave.
Is Texture Density or Motion Parallax the Determining Factor
in Depth Perception?

San Francisco Vince, Andrew Joseph 17 Lowell H.S. 1642 30th Ave. 22
Extremum Problem Concerning the Longest Diagonal of a Polygon

San Jose Moses, Kurt David 17 Blackford H.S. 12547 Saratoga Creek Dr., Saratoga
Electro-Impulse-Former

Kugelmass, Joel Nathaniel 16 Del Mar H.S. 2301 Stokes St. 28
Prime Solutions of a Diophantine Equation Class

Santa Rosa Parker, Robert Daniel 17 Santa Rosa H.S. 1932 Grosse Ave.
Anodizing and Dyeing Aluminum

Saratoga Pollock, Michael Stephen 17 Saratoga H.S. 13561 Old Tree Way
Research in Digital Design and Circuitry

South Gabriel Westcott, Fred Warren II 18 Don Bosco Technical H.S. 223 33rd St.,
Design and Construction of a Fluid Charging System Hermosa Beach
for Direct Particle Accelerators

COLORADO

Greeley Weaver, Kenneth Linn 17 Greeley H.S. 2936 W. 11th St. Rd.
Temperature Variation and Effects of Radiation

CONNECTICUT

Fairfield Campbell, Alan Stuart 16 Roger Ludlowe H.S. 232 Dunnlea Rd.
Mechanism of the Molisch Reaction

Waterford *Mahoney, Susan Kay 17 Waterford H.S. 106 Vauxhall St. Ext.
Evidence for Double Helical Structure of Ribosomal RNA

DISTRICT OF COLUMBIA

Washington McLaughlin, Dennis Eugene 16 Anacostia H.S. 3730 Camden St., S.E. 20
Tunnel Diode

Miller, Karl Henry 17 Woodward School for Boys 4404 Albemarle St., N.W. 16
EPR Spectroscopy at Microwave Frequencies

FLORIDA

Coral Gables Fisher, Richard Ian 17 Coral Gables Sr. H.S. 5422 Orduna Dr. 46
Polychromatic Fluorescence of Acridine Orange
Bound to Deoxyribonucleic Acid

Groves, David George 17 Coral Gables Sr. H.S. 7401 S.W. 53rd Ct., Miami 43
Quantitative and Qualitative Estimation of
Amino Acids by Paper Chromatography

Joseph, Geoffrey Stephan 17 Coral Gables Sr. H.S. 3711 Anderson Rd. 34
System of Causal Propositions in Multi-Valued Logic

Krupp, Brian Marc 17 Coral Gables Sr. H.S. 4730 W. Ingraham Terrace 33
Anode Spot Oscillations and Moving Striations in a Cesium Plasma

*Lieberman, Laraine 17 Coral Gables Sr. H.S. 3585 S.W. 5th St., Miami
Sexual Responses of Coleoptera, Tenebrionidae-Interspecies
and Intraspecies

Rose, Robert Alan 17 Coral Gables Sr. H.S. 4547 S.W. 16th St. 34
Growth of Chlorohydra viridissima vs. Hydra littoralis Using
Original Food Limitation Techniques

*Russell, Michael-Ann 17 Coral Gables Sr. H.S. 52 Shore Dr. W., Miami 33
Enzymatic Patterns as Index of the Effect of Diethylstilbestrol
Ehrlich Lettre Ascites Carcinoma in vivo

Vanarman, Joel Arthur 17 Coral Gables Sr. H.S. 1200 Country Club Prado
Application of Gas Chromatography to Determination of 34
Particulate Organic Carbon in Sea Water

Coral Gables Weiss, Mark 17 Coral Gables Sr. H.S. 3128 Coconut Grove Dr. 34
White and Far-Red Light on Mitochondrial Respirations as
an Explanation for Photomorphogenic Phenomena

Zinner, Michael Jeffrey 17 Coral Gables Sr. H.S. 2017 Alhambra Circle 34
Biophysics in Radiation Microbiology, Computer
Analysis and "Gnotobionics"

Gainesville Gammon, Nathan Allen 17 Gainesville H.S. 1403 N.W. 11th Rd.
NaCl Aversion in Hyperthyroid Rats

Hollywood Holloway, John Thomas 17 South Broward H.S. 1934 Wiley St.
Measurement of Dielectric Constant by Resolution and
Analysis of Elliptically Polarized Waves

Jacksonville *Norman, Laura Lee 17 Terry Parker Sr. H.S. 2731 Pine Summit Dr., E.
Optical Isomerism in Cobalt, Iron and Nickel Complexes 11

Marianna Quick, Joe Akers, Jr. 17 Marianna H.S. 908 College St.
Limnology of a Florida Lake

Miami Carson, Christopher Barrett 17 Miami Central H.S. 637 N.E. 81st St. 38
Electroencephalography

Kern, Alan Steven 17 Miami Central H.S. 1171 S.W. 16th Ave. 35
Detection of Radio Waves from the Sun by Means of a Coherer

North Miami Davies, Bernard Franklin 17 North Miami Sr. H.S. 1031 N.E. 180th
Effect of Varied Wavelengths of Sunlight Terrace, North Miami
on Concentration of Chlorophyll A Beach 62
in Grass Blades

Goldberg, Mark William 17 North Miami Sr. H.S. 410 N.E. 159th St.,
Apparatus to Measure Density of Liquids Miami 62
with a Magnetic Float

*Handshaw, Nancy Jo 17 North Miami Sr. H.S. 760 N.W. 102nd St.,
Effect of Naphthalene on Respiration Miami 50

Klein, Arnold William 17 North Miami Sr. H.S. 17310 N.E. 10th Ct., North
Deoxyribonucleic Acid Transformation Miami Beach 62
of Beta-Hemolytic Streptococci Groups and DNA Analysis

Walenga, Ronald William 16 North Miami Sr. H.S. 1185 N.W. 134th St.,
Causes of Crenation - Ionic or Osmotic? Miami 68

Sarasota Lipton, Hugh Lansing 16 Sarasota H.S. R. #1, Box 620L, Lakeland
Use of Vasodilators in Treatment of Hemorrhagic Shock

Stuart Fox, John Frederick 17 Martin County H.S. 633 Osceola Ave.
Reproduction and Habits of Menippe nodifrons

GEORGIA

Atlanta Pickard, William Leonard, Jr. 17 Daniel C. O'Keefe H.S. 344 Hunerkopf
Radiobiologic and Contractile Sol-Gel Flow St., N.W. 13
Mechanisms in Pinocytosis

Muchnick, Steven Stanley 17 Henry Grady H.S. 1229 Beech Valley Rd.,
General Theory of a Group of Recurrent Sequences N.E. 6

Brunswick *Harben, Evelyn Cheri 16 Glynn Academy 177 Nottingham Dr.
Metabolic By-Products of Fungi Grown in Selected Atmospheres

HAWAII

Hilo Sweeney, James Edward 16 St. Joseph's H.S. P.O. Box 223, Paauhau
Psychological Effects of Interracial Facial Differences

Honolulu *Chang, Bernice Wai Sheong 17 Roosevelt H.S. 1117 Clio St. 14
Ethnic and Sex Variance in PTC Allelic Frequency Among
Roosevelt High School Students

ILLINOIS

Aledo Seiver, Robert Lane 17 Aledo H.S. 105 N. Pine St.
Production of Sulfuric Acid by Electrolysis of Calcium Sulfate

Carbondale Lewis, William Madison, Jr. 17 University School 1211 Hill St.
Stomach Contents of Bullfrogs Taken from a Minnow Hatchery

Chicago *Fries, Margaret Frances 16 Aquinas Dominican H.S. 7410 S. Paxton St. 49
Comparative Study of Growth Stimulants

Leibovich, Lewis 17 James H. Bowen H.S. 8818 Bennett Ave. 17
Effect of Ration and Urolithiasis on Ovine Seromucoid Levels

*Roeske, Allison Lee 16 John Marshall Harlan H.S. 8847 Union Ave. 20
Methods of Organically Preparing Dyes

Neisendorfer, Joseph Alvin 17 Tilden Technical H.S. 470 W. 28th St. 16
Topics in the Geometry of Numbers

Cicero Stedronsky, Erwin Raymond 17 J.S. Morton H.S., East 5331 W. 25th Pl. 50
Chromatographic Separation of NH_4^+ , K^+ and Li^+ Ions

Deerfield Neilsen, Walter B., Jr. 17 Deerfield H.S. 707 Osterman Ave.
Electrophoresis

Des Plaines Schafer, John Arthur 17 Maine Twp. H.S., West 1339 Center St.
Methods and Study of Nervous and Muscular Activity

Downers Grove Thorn, Craig Edward 17 Downers Grove Community H.S. 4622 Douglas Rd.
Spectroscopy

Evanston Fisher, Charles Paul 16 Evanston Twp. H.S. 9028 Bennett Ave.
Properties of Some Bordered Magic Squares

Glick, Gary Wallace 17 Evanston Twp. H.S. 1131 Cleveland St.
Retention into Adulthood of Responses Conditioned in Mealworm Larvae

Goldstein, Michael Louis 17 Evanston Twp. H.S. 3827 White Cloud Dr.
Partial Study of Cobalt (II) and Cobalt (III) Ions Skokie

Klayman, John Arthur 17 Evanston Twp. H.S. 1505 Crain
Preliminary Investigations of Thioacetamide Addition
Compounds in Sulfide Precipitation

Puls, James Harry 17 Evanston Twp. H.S. 1013 Ashland Ave.
Optical Multiplexing of Audio Signals

Rich, Barry Howard 16 Evanston Twp. H.S. 8621 Trumbull Ave., Skokie
Small Coefficient Primal Generative Trinomials

LaGrange Long, Charles Anthony 17 Lyons Twp. H.S. 1325 Walnut, Western Springs
Crystal Whiskers of Ionic Salts

Park Ridge *Canellos, Georgia Ann 17 Maine Twp. H.S. East 2556 Ballard Rd., Des
Investigation Concerning Possible Existence of Lichens Plaines
on Planet Mars

*Sprieser, Janet Lee 16 Maine Twp. H.S. East 1125 S. Washington St.
Recalcence

Riverside *Relyea, Noel Mary 17 Riverside-Brookfield H.S. 296 E. Quincy St.
Effects of Radiation on Developing Organisms

*Schulz, Carol Marguerite 17 Riverside-Brookfield H.S. 240 Maplewood Rd.
Selection for Reduced Recovery of Yellow Forked and Yellow
White Forked Attached-X Females in *Drosophila melanogaster*

Rockford *Carlberg, Diane Christine 17 East Sr. H.S. 2709 Brendenwood Rd.
Comparative Effects of the Thyroid Gland

Rock Island Clevens, Emmert Corbin 17 Rock Island Sr. H.S. 2323 26th St.
Study of Photosensitive Pigments

Skokie Bramson, Martin Arnold 17 Niles Twp. H.S. West 6952 N. Crawford,
Effects of Colchicine and Its Isomers on Lincolnwood
Salivary Gland Chromosomes of *Drosophila melanogaster*

Wheaton Smucker, David Eugene 17 Wheaton Community H.S. 610 Howard St.
Effect of Altitude on the White Rat

INDIANA

Bloomington *Cuffey, Irene Priscilla 17 University H.S. 522 Eastside Dr.
Relationship of Bacteriogenetics to Antibiotic Resistance

Connersville Schwark, Richard Dennis 17 Connersville Sr. H.S. 2247 Vermont Ave.
Mathematical Formula for Predicting Growth Curve of Bacteria

Decatur Swickard, David Alexander 18 Decatur H.S. 528 Limberlost Trail
Chromatographic Analysis for Total Xanthophyll and Carotene Content

Delphi McCain, David Robert 18 Delphi H.S. R.R.1, Box 1
Use of Gas Chromatography to Analyze Constituents of
Birdsfoot Trefoil Fragrances

Greensburg Meek, Jethro William 17 Greensburg Community H.S. 222 E. Washington
Effects of Magnesium Sulfate, Ferrous Sulfate and Citric Acid
on Fermentation of Egg White by *Aerobacter aerogenes*

Highland Larrabee, James Frank 17 Highland H.S. 2214 Oakdale Ave.
Use of Bone Marrow Transplants and Sulfahydril Compounds
to Lessen Radiation Damage in Mice

Indianapolis Wischmeyer, Michael Andrew 17 Arsenal Technical H.S. 823 N. Keystone 1
Physical and Psychological Effects of a Prolonged Stay Underground

Rochester Deamer, Philip Timothy 18 Rochester H.S. East Lynne-Mt. Zion
Does There Exist an Odd Perfect Number?

Seymour Kelly, Robert James III 17 Seymour Sr. H.S. 1211 Gaiser Dr.
Differentiation Between Current and Voltage Sensitivity in Paramecia

South Bend Martin, Richard Allen 17 John Adams H.S. 110 N. Ellsworth Pl. 17
Relationship Between Barometric Pressure and Behavior of Rats

Terre Haute *Prox, Jane Ann 17 Schulte H.S. R.R. #4
Chromatography and Leaf Pigments

IOWA

Bettendorf *Roller, Frances Mary 18 Bettendorf H.S. Rt.1, Box 194
Selective Refraction of Sound

Boone Doerder, Francis Paul 17 United Community H.S. Rt.3
Winter Bird and Breeding Bird Populations on 13.8 Acres in Iowa

Cedar Falls Tietz, John Charles 18 Cedar Falls H.S. 603 W. 11th St.
Polyfocoids — Ellipses with More than Two Focal Points

Mason City Olson, Richard Lowell 18 Mason City H.S. 319 1st St. S.E.
High Temperature Plasma Techniques Necessary for a
Controlled Thermonuclear Reaction

KANSAS

Manhattan *Fickel, Ruth Ellen 17 Luckey H.S. R.R.1, Riley
Analysis of Several Insectan Hemolymphs that
Agglutinate Human Erythrocytes

Lambert, John Vincent 17 Luckey H.S. 800 Ratone St.
Survey of Applicability of HFeEDTA as a Chemical Actinometer

*Whitehair, Norma Ann 18 Luckey H.S. 121 N. 9th St.
Tests Proving Smoking Tobacco, Snuff and Cigarettes
Do Not Contain Mutagenic Agents

Prairie Village *Flicker, Michele Rhona 17 Shawnee-Mission East H.S. 5845 Sunrise Dr.,
Determination of Molecular Weight and Mission
Hydrodynamic Parameters by Means of Ultracentrifugation
and Viscosity Data

Topeka Beeson, Michael James 17 Topeka H.S. 1617 Grove
Radiomimetic Effects of Chlorambucil

LOUISIANA

New Orleans Marshall, Rudolph James III 16 Benjamin Franklin H.S. 4320 Clara St. 15
Testing the Law of Mass Action

Smith, Martin Leo 17 Benjamin Franklin H.S. 4934 Citrus 27
Polarographic Oxygen Determination

MAINE

Kittery *Collins, Susan Elizabeth 17 Robert W. Traip Academy 15 Williams Ave.
Effects of Gonadal Hormones in Parabiosis

MARYLAND

Baltimore *Milly, Susan May 17 Institute of Notre Dame 340 Crocker St., Bel Air
Statistical Analysis of Tests Given to Determine
Presence of Extra-Sensory Perception

Beltsville Hornstein, Robert Michael 17 High Point H.S. 5920 Bryn Mawr Rd.,
Hemagglutinins from Seeds College Park

Bethesda Murray, William Elwood 17 Walter Johnson H.S. 4509 Roxbury Dr. 14
A Markovian Radioactive Equilibrium Model

Bladensburg Wood, Stewart Robert 17 Bladensburg Sr. H.S. 4216 56th Ave.
Thermal Decomposition of Magnesium Oxalate

Hyattsville *Berk, Evelyn Harriet 17 Northwestern H.S. 4113 Kennedy St.
Action of Streptomycin on *Escherichia coli* and Effect of Chloramphenicol

McDonogh von Saleski, Rainer Oliver 16 McDonogh School 386 Butler Rd.,
Effects of Histamine and Antihistamines Reisterstown
on *Paramecium caudatum*

MASSACHUSETTS

Cohasset *Crolus, Katherine Folsom 17 Cohasset H.S. 6 Parker Ave.
Comparison of Susceptibilities of Inbred Mice to
Effects of Two Teratogens

Concord Payne, John Devereux 17 Concord-Carlisle H.S. 93 Main St.
Congruent Polygons

Winter, Steven Arthur 17 Concord-Carlisle H.S. Sudbury Rd.
Design and Construction of an Electron Diffraction Camera

Dorchester *Austin, Deanna Jean 16 Girls' Latin School 35 Farrar Ave., Hyde Park 36
Fast Neutron Production from 3-MEV Bremsstrahlung Radiation of Be^9

Holden Cole, Douglas Reese 17 Wachusett Regional H.S. 30 Anderson Ave.
Nature of Nervous Impulse and Response in *Paramecia aurelia*

Holyoke Doherty, Edward John 18 Holyoke Catholic H.S. 526 South St.
A Language Translator
Newtonville Rosen, Barry Kumin 17 Newton H.S. 409 Crafts St. 60
Mathematical Theory of Scientific Explanations
North Quincy *Simpson, Joan Eve 17 North Quincy H.S. 15 Livesey Rd., Squantum 71
Research on Bacillariophyceae in Quincy Bay
Revere Antonelli, Vincent Thomas 17 Revere H.S. 6 Sprague St. 51
Growth Inhibitory Effects of Several Phthalanilides
on *Escherichia coli*
Cataldo, Arthur Americo 17 Revere H.S. 36 Oxford Park 51
Mechanical Electrical Device for Equational Analysis
Springfield Hammer, Robert Alexander 16 Classical H.S. 60 Catalina Dr. 8
Blood Protein Analysis
Waltham Julien, Paul Charles 17 Waltham H.S. 24 Coolidge Ave. 54
Orthogonality of Eigenvectors

MICHIGAN

Ann Arbor Joeris, Leonard Simon, Jr. 17 Ann Arbor H.S. 1502 Morton
Two Freon Bubble Chambers
Detroit *Padgett, Christine W. 16 Denby H.S. 16090 Lappin St. 5
Analysis of Blood Counts from Different Parts of the Mouse Body
Highland Park Moore, William George 17 Highland Park H.S. 67 Puritan St. 3
Histochemical Investigation of Mouse Thymus in
Three Stages of Growth
Midland *Gill, Pamela Kay 18 Midland Sr. H.S. 711 Chatham Dr.
Hormodzein
Oak Park Hauptman, Larry 17 Oak Park H.S. 24501 Harding 37
Capillary Tube Method of Electrophoresis

MINNESOTA

St. Paul Gustafson, Steven Carl 17 Alexander Ramsey H.S. 912 W. County Rd. D 12
Charge to Mass Ratio of Carbon Particles in
Electrically Deflected Flames

MISSISSIPPI

Greenville Hafter, Jerome Charles 17 Greenville H.S. 315 Wetherbee St.
Centrifuge and Its Applications in Technical Research
Jackson *Reed, Mary Margaret 17 William B. Murrah H.S. 105 Robinhood Rd. 6
Marine Plankton Diatoms of Mississippi Sound

MONTANA

Anaconda Smith, Kenneth Arthur 18 Anaconda Sr. H.S. 1311 W. 3rd St.
Lunar Surveillance
*White, Dorothy Ann 17 Anaconda Catholic Central H.S. 1003 W. Fourth St.
Soil Bacteria - Source of Antibiotics
Choteau *Chalmers, Ann Leslie 17 Choteau H.S. R.R. #2
New Findings on How to Grow Malting Quality Barley
Sunburst Schlegel, Oscar Thomas 17 North Toole County H.S. Sunburst
Experiments with a Repulsion Coil

NEBRASKA

Omaha Siemon, Michael Leonard 17 Central H.S. 1807 N. 50th St. 4
Investigation of the Four Color Theorem
Schuyler Cada, Kenneth Stanley 17 Schuyler H.S. Rt. 1, Clarkson
Copper (II) Sulfate and Its Complexes

NEW HAMPSHIRE

Exeter Falwell, Richard Lee 18 Phillips Exeter Academy 6309 Rockhurst Rd.,
Spot Cycles of Jupiter and Saturn Bethesda 14, Md.

NEW JERSEY

Butler Orban, Robert Arnold 17 Butler H.S. 626 Mountain Rd., Smoke Rise,
Stereo vs. Binaural - Two-Channel Sound Butler P.O.
Reproduction Systems
Leonia *Harper, Vicki Lynn 17 Leonia H.S. 184 Sylvan Ave.
Pituitary Physiology as Studied by Parabiosis
Madison MacPhillamy, Douglas John 17 Madison H.S. 145 Green Ave.
Biochemical Comparison of Thymus Extract and Insect Juvenile Hormone

Paramus Romney, Jonathan Daniel 16 Paramus H.S. 659 Terrace Dr.
On Boron and Molten Calcium Fluoride
Raritan Bell, Donald Laurence 17 Bridgewater-Raritan H.S. Rt. 2, Box 1130,
Visible Effects of Radiation on Diatoms Martinsville
Teaneck Lester, Henry Allen 17 Teaneck H.S. 980 East Lawn Dr.
Modulating Microwaves by Varying Plane of
Polarization with Ferrites
West Orange Waxman, Stephen George 17 Mountain H.S. 19 Mellon Ave.
Skin Homografts in Rats

NEW MEXICO

Albuquerque Devore, Robin Kent 17 Highland H.S. 420 Montclair S.E.
Genetics, Disease and Hemoglobins
Falck, Melvin Simpson, Jr. 17 Highland H.S. 400 Palomas Dr. N.E.
Design Derivation and Testing of a Super-Regenerative Video Detector
Griffith, William Clyde, Jr. 17 Sandia H.S. 8619 Menaul Blvd., N.E.
N-Dimensional Tic-Tac-Toe

NEW YORK

Baldwin Nevin, Donald Michael 17 Baldwin Sr. H.S. 820 DeMott Ave.
Numerical Sequence Which Yields Prime Numbers
Bayside Elbert, Larry Emil 16 Bayside H.S. 33-63 164th St., Flushing 58
Energy Output Characteristics of the Optical Ruby Maser
Propper, Ralph Leonard 15 Bayside H.S. 16-26 200th St. 60
Determination of Relative Sizes of Organic Radicals
by a Method of Racemization
Warner, Philip Mark 16 Bayside H.S. 254-03 38th Ave., Little Neck 63
Cellular Control Mechanisms - Induced Synthesis of
Beta-Galactosidase in *Escherichia coli*
Brooklyn *Bodner, Rachel 16 Abraham Lincoln H.S. 125 Neptune Ave. 35
Phototropic Response of Coleus Plant to Varying
Amounts of Injected Indolylbutyric Acid
*Slifkin, Nancy Laura 16 Abraham Lincoln H.S. 2341 Ocean Pkwy. 23
Action of Neurosecretion from the Corpora Cardiaca of
Leucophaea maderae on Nervous Activity, Heart Beat and Behavior
Aaronson, Joel Peter 16 Erasmus Hall H.S. 302 Eastern Pkwy. 25
Effect of Varying Light and Darkness Exposures on Rat Sleeping Time
Elias, Laurence 16 Erasmus Hall H.S. 1203 Newkirk Ave. 30
Pyroxene as a Geochemical Thermometer
Fetell, Michael Richard 15 Erasmus Hall H.S. 325 Ocean Ave. 25
Effects of Lysozyme on *Sarcina lutea*
*Gerber, Miriam 15 Erasmus Hall H.S. 61 Eastern Pkwy. 38
Hypervitaminosis A in Mice
Katz, Matthew Mark 16 Erasmus Hall H.S. 201 Crown St. 25
Mapping of *Escherichia coli* K-12 Chromosome
Using Genetic Recombination
Kirsch, Edward Barry 16 Erasmus Hall H.S. 1268 Albany Ave. 3
Disaggregation of Iris Mesophyllous Tissue and Propagation *in vitro*
Leslie, Bruce Robert 15 Erasmus Hall H.S. 50 E. 19th St. 26
Mapping Study of Genetic Mutation Sites of the rII Region
in Bacteriophage T2
Lozner, Jerrold Stanley 15 Erasmus Hall H.S. 71 Ocean Pkwy. 18
Stainability of Acidophilic and Basophilic Dyes on
White Blood Cells and Artificial Systems
Miller, Zachary Ian 16 Erasmus Hall H.S. 100 Woodruff Ave. 26
Effect of Thyroxine on Various Stages of Development of the
Chick Embryo
Reasenber, Paul Allen 16 Erasmus Hall H.S. 277 Rugby Rd. 26
Physiological Effects of Ionized Air on Mice
Silverstein, Alvin Jerome 16 Erasmus Hall H.S. 10 Ocean Pkwy. 18
Induction of Tumors in Carrots by *Agrobacterium tumefaciens*
Press, Robert Arthur 15 James Madison H.S. 2285 Ocean Ave. 29
Effects of Protein-Deficient Diet on Blood of Rats
*Kolkin, Marjorie Ena 15 Lafayette H.S. 2101 75th St. 4
Determination of Terminal Nucleoside of sRNA
Kramer, Kenneth 16 Lafayette H.S. 8678 Bay Pkwy. 14
Finite Geometry in the Modular Plane

- Brooklyn Tischfield, Jay Arnold 16 Lafayette H.S. 123 Ave. P 4
Transference of Radioactive Materials in Marine Biomes
Garson, Jerrold 17 Midwood H.S. 1040 E. 13th St. 30
Effects of Antibiotics on Morphology and Physiology
of *Serratia marcescens*
Willig, Robert Daniel 16 Midwood H.S. 1305 E. 21st St. 10
Temperature Dependence of Ionic Mobility in Liquids
Brettler, Elias 16 New Utrecht H.S. 1501 53rd St. 19
Determination of nth Term of an Infinite Repeating Series
*Schwarzbach, Madeleine Joyce 17 Yeshiva of Flatbush H.S. 1324 Brooklyn Ave. 3
Visual Disarrangement and Readjustment
- Buffalo Flor, William John 17 The Nichols School 403 Plymouth Ave. 13
Stimulatory and/or Toxic Effects of Antibiotic Meomycin
Sulfate on Suspension Cultures of Human RPMI #41 Cells
- Cedarhurst Zingher, Arthur Richard 17 Lawrence H.S. 511 Church Ave., Woodmere, L.I.
Slope Walls in Thin Iron Whiskers
- Elmira Hall, James Alexander, Jr. 16 Notre Dame H.S. 106 Durland Ave.
Mechanics of the Vibrating String
- Farmingdale Freedman, Richard Walter 17 Farmingdale Sr. H.S. 27 Fourth Ave.
Rotary Dispersion of Cellophane Tape
- Far Rockaway Small, Eric 16 Far Rockaway H.S. 158 Beach 130th St., Belle Harbor, Queens 94
Microwave Communications
- Flushing Berenzweig, Harold Karl 16 Francis Lewis H.S. 69-24 168th St. 65
Effects of Ciliary Apparatus of *Stentor coerules* on
Mitosis of Micronuclei
Nathan, Neil Jay 15 Francis Lewis H.S. 216-17 68th Ave., Bayside 64
Chromatography and Electrophoresis as Applied to
Separation of Hemicelluloses
Stern, Carl Russell 15 Francis Lewis H.S. 64-15 232nd St., Bayside 64
Comparison of Amino Acids in *Paramecium aurelia* and
Paramecium bursaria
- Forest Hills Abeles, Micha 17 Forest Hills H.S. 110-33 72nd Ave. 75
Relationship of Plant Growth to Sonic Stimuli
Aronson, Peter Samuel 15 Forest Hills H.S. 68-37 138th St. 67
Investigation of Symmetry and Asymptotes of Algebraic Loci
Chang, Stephen Peng 16 Forest Hills H.S. 110-17 64th Rd. 75
Chemically Produced Haploid Characteristics in *Rana pipiens*
*Hilfer, Jane Betsy 15 Forest Hills H.S. 6404 99th St. 74
Effect of Darkness on Central Nervous System of Rat Under Varying
Environmental Conditions When Subjected to Hormone Extracts and Drugs
Rosenfeld, Eric H. 16 Forest Hills H.S. 103-10 Queens Blvd. 75
Sound Source Localization by the Human Ear
*Schuker, Jacqueline Marjorie 16 Forest Hills H.S. 108-16 66th Ave. 75
Test of the Arousal Theory of Exploratory Behavior Using
Two Psychoactive Drugs
- Franklin Square Waldman, Robert Harvey 17 Valley Stream North H.S. 62 Dolores Pl.,
High Speed Computer Investigation into Prime Pairs Malverne
- Garden City Potter, Douglas Marion 17 Garden City H.S. 39 Transverse Rd.
Harmonic Analysis
- Great Neck Schehr, Robert Sidney 17 Great Neck S. Sr. H.S. 15 Norfolk Rd.
Effect of Pyridoxine-Deficiency on Transplanted Melanomas in Mice
- Hamburg DePasquale, John Leonard 17 Hamburg Central H.S. Lake St., Angola
Leucocyte Populations of Six F₁ Hybrids Between Mice
During Fourth Week of Age
- Hicksville Yanof, Arne William 16 Hicksville Sr. H.S. 15 Straw Lane
Kinetic Study of Reduction of Au(CN)₄ to Au(CN)₂
- Islip Vaupel, James Walton 17 Islip H.S. 21 Shebar Dr.
Game Theory Computer
- Ithaca Seeley, Daniel Henry 17 Ithaca H.S. 1216 Ellis Hollow Rd., R.F.D. #2
Experiment in Maze Learning with Turtles and Mice
Wright, Timothy William 17 Ithaca H.S. 203 Roat St.
Experiment to Test Ability of Young Lemon Sharks and Young
Bull Sharks to Learn
- Jamaica *Baliff, Linda Mae 16 Jamaica H.S. 139-63 87th Ave. 35
Percentage of Error in Work of First Year Physics
Students in the Laboratory
Bloch, Robert Joseph 16 Jamaica H.S. 138-27A 77th Ave., Flushing 67
Effects of Colchicine on Ploidy in *Polystichum acrostichoides*
- Jamaica *Doblin, Ellen Margaret 16 Jamaica H.S. 179-33 Grand Central Pkwy. 32
Interrelationships Among Species of Genus *Achimenes*
Goodbread, Joseph Henry 16 Jamaica H.S. 73-12 188th St., Flushing 66
Observation of Axial Domain Wall Propagation in Thin Iron Whiskers
Lambert, Glenn Simon 15 Jamaica H.S. 84-50 Avon St. 32
Effects of Psychological Cues on Phenomenon of Binocular Fusion
Shaw, Richard Jeffrey 16 Jamaica H.S. 193-40 McLaughlin Ave. 23
Electronarcosis in the Guinea Pig and Its Effect on Growth
Marshak, Marvin Lloyd 16 Kenmore West Sr. H.S. 379 Knowlton Ave. 23
Defects in Crystal Structure of Sodium Thiosulfate Pentahydrate
Starkschall, George 16 Sachem H.S. 7 Willis Ave.
Simple and Complex Solubility Effects in Halides of Transition Metals
Martin, Ronald Michael 17 Island Trees H.S. 44 Constellation Rd.
Learning Process in Computers
Singer, Mark Harold 17 Herricks Sr. H.S. 7 Kemp Lane
A 60° System of Trigonometry
Libman, Lawrence Charles 17 New Rochelle H.S. 30 Eastchester Rd.
Determination of Optimal pH of Alpha Amylase Activity
Nowinski, Robert Charles 17 New Rochelle H.S. 14 Cole Terrace
Transfer of a Specific Tissue Immunity to Newborn Rats with
Immune Cell Transplants
Pisetsky, David Stephen 17 New Rochelle H.S. 26 Braemar Ave.
Determining Role of Cell Wall in Growth and Adsorption of
Bacteriophages
Serwer, Daniel Paul 17 New Rochelle H.S. 265 Storer Ave.
Thermochromism of the Inorganic Oxides
Ameen, Ramsey Mark 17 Bronx H.S. of Science 787 E. 175th St. 60
Application of Numerical Analysis to Information Theory
with Particular Reference to Loudspeaker Testing
*Bronstein, Ellen 16 Bronx H.S. of Science 712 E. Gunhill Rd. 67
Prediction of Dominant Wavelength of Absorption of an
Inorganic Metallic Salt
Cappell, Sylvain Edward 16 Bronx H.S. of Science 129 W. 197th St. 68
Theory of Semi-Cyclical Groups with Special Reference to
Generalized Non-Aristotelian Logics
*Chase, Deborah 17 Bronx H.S. of Science 825 W. End Ave. 25
Findings on Simultaneous Production by Cells of an Anti-Viral
Agent and a Halo-Producing Factor in Response to
Inactivated Viruses
Dichter, Robert Harry 16 Bronx H.S. of Science 57 W. 75th St. 23
Possible Use of Polarographic Methods for Determination
of Dicyanoaurate (I) and Tetracyanoaurate (III)
Dodes, Lance Meredith 16 Bronx H.S. of Science 100-10 67 Rd., Forest Hills 75
Time Dependence of Pentobarbital in Conditioning
of White Mice
Friedman, Norman Ebbe 16 Bronx H.S. of Science 2255 Morris Ave. 53
Looping and Non-Looping Systems of Logic in Mathematics
Grassian, Stuart Edwin 16 Bronx H.S. of Science 125 E. 168th St. 52
Group-Theoretical Considerations of Isomorphic Transformations
of a Euclidean Space onto Itself
Koenigsberg, Harold Warren 16 Bronx H.S. of Science 910 W. End Ave. 25
Biological Assay of Drug Substances
Milford, Edgar Louis, Jr. 17 Bronx H.S. of Science 358 S. Middletown Rd.,
Nanuet
Macro-Instruction Translating System
Perelson, Alan Stuart 15 Bronx H.S. of Science 40-45 Hampton St.,
Elmhurst 73
Velocity Profile and Axial Accumulation of Blood
Saperstein, David Dorn 16 Bronx H.S. of Science 83-37 St. James Ave.,
Elmhurst 73
Investigation on Post Log Phase of Growth Curve
of *Escherichia coli*
Shenkin, Peter Steven 15 Bronx H.S. of Science 1522 Unionport Rd. 62
Atypical Results of Bromination of Aceto-4-Bromo-m-Toluidine
Sigel, Richard Michael 16 Bronx H.S. of Science 611 W. 239th St. 63
Analysis of Stimulus Alternation Behavior in Mice
Tischler, Arthur Steven 16 Bronx H.S. of Science 277 E. 207th St. 67
Reversal of Toxic Effects of Nicotinic Acid on *Ochromonas danica*
Weinberger, Alan Paul 16 Bronx H.S. of Science 49 Payson Ave. 34
Cross-Resistance of Bacteria to Streptomycin and Aureomycin

New York
Zasloff, Michael Alan 16 Bronx H.S. of Science 325 Riverside Dr. 25
Planarian Regeneration - A Biochemical Inquiry into Influencing Factors
Chaikin, Joshua Samuel 15 Stuyvesant H.S. 21-55 34 Ave., Long Island
Preparation of Electrets from Polyurethane Setting City 6
Compounds
Fries, Brant Elias 16 Stuyvesant H.S. 52 8th Ave., Brooklyn 17
Progressive Studies in Electrical Mechanical Machines with
Special Application to the Solving of Ciphers
Hirsh, William Alan 16 Stuyvesant H.S. 140 Ocean Pkwy., Brooklyn 18
Thermoelectric Junction Parameters
Rubin, Richard Hilliard 16 Stuyvesant H.S. 2630 Cropsey Ave., Brooklyn
Roles of Copper and Cobalt in Erythropoiesis, Hemoglobin 14
Synthesis and Metabolic Activities of Rats
Smilowitz, Henry Martin 16 Stuyvesant H.S. 815 Sutter Ave., Brooklyn 7
Comparative Study of Ultraviolet Photobiology of an RNA and DNA Phage
Steinlauf, Michael Charles 15 Stuyvesant H.S. 3101 Brighton 2nd St.,
Development of the Funtion P(n) Brooklyn 35
Wacholder, Bernard Guy 16 Stuyvesant H.S. 2807 Kings Highway,
Photo-Conductivity in a Semiconductor as Brooklyn 29
Related to Optical Absorption and Carrier Mobility
Pelham
Glendenning, John Walter III 17 Pelham Memorial H.S. 26 Sherwood Ave.,
Electroluminescence Pelham Manor
Penfield
St. Mary, Jonathan Lawrence 16 Penfield Sr. H.S. 37 Stoneham Dr.,
The Lockport Dolomite Deposition Rochester 25
Queens Village
*Pelner, Leonore Zena 17 Martin Van Buren H.S. 83-19 Commonwealth
Applications of Nomography to Prediction Blvd., Bellerose 26
of Electric Power, Acceleration and Young's
Modulus by Methods of Determinants
Sassen, Roger 16 Martin Van Buren H.S. 8021 231st St. 27
Geochemistry of Organic and Metallic Compounds in
Coals, Shales and Limestones
Rome
*Silverberg, Joan 15 Martin Van Buren H.S. 70-08 267th St., Floral Park
Exchange of Ions Between Resins and Radish Root Tips
*Cecilia, Carla Elizabeth 17 Rome Free Academy 121 E. Pine St.
Topology - Rubber-Sheet Geometry
Schnectady
Dugan, Gerald Francis 17 Bishop Gibbons H.S. 1005 Hegeman St. 6
Magnetic Properties of Pantaerythritol Crystals
Snyder
Schriber, David Lee 17 Amherst Central H.S. 205 Westfield Rd., Buffalo 26
Preliminary Optical Survey
Springville
Witter, David William 17 Griffith Institute & Central School 5 Prospect Ave.
An Allele at P Locus in the Mouse
Staten Island
Cawse, James Norman 17 Curtis H.S. 7 Haynes St. 9
Inorganic Microanalysis
*Halloran, Jean Mary 16 Curtis H.S. 488 Darlington Ave. 9
Auxins - Plant Growth Substances
Siegel, Paul David 16 Curtis H.S. 40 Lortel Ave. 14
Effect of Nitrous Acid on Oxidizing Powers of Nitric Acid
Sigelman, Jesse Leonard 17 Curtis H.S. 127 Cebra Ave. 4
Thermoluminescence
Swartz, Joel Barry 17 Curtis H.S. 569 Pelton Ave. 10
Relationship Between Mechanical Frequency and Radiation
Frequency of a Bohr Electron
White Plains
Young, Richard Allen 17 White Plains H.S. 42M Rockledge Rd., Hartsdale
Removal of Radioactive Strontium from Milk
Whitesboro
Finn, Michael Patrick 17 Whitesboro Central School 47 Walnut Dr.
Toxic Effects of Salicylic Acid on Kidneys

NORTH CAROLINA

Clinton
Carroll, Robert Lee, Jr. 17 Clinton H.S. Box 5, Turkey
Design and Construction of an Electronic Computer Car
Raleigh
Kelly, Henry Charles 17 N.B. Broughton H.S. 613 Macon Pl.
Biological Effects of Acceleration
Wilmington
*Farmer, Judith Blair 17 New Hanover H.S. Box 96, Carolina Beach
Comparative Anatomy of Coronary Artery Distribution
in Hearts of Human, Pig and Dog

NORTH DAKOTA

Richardton
Marx, Keith Lawrence 17 Assumption Abbey Prep School Fairfield
Antibiotics in Cactus?
Wahpeton
*Johnson, Gail Louise 17 Wahpeton Central H.S. 502 7th Ave. N.
Metabolism in Rats and Mice Under Varied Conditions

OHIO

Akron
Kallman, Robert Richard 17 Archbishop Hoban H.S. 745 Crestwood Ave.,
Elementary Proof of Prime Number Theorem Wadsworth
Bedford
Hora, Richard Peter 17 Bedford Sr. H.S. 647 High St.
Synthesis of Amino Acids
Sadowsky, Thomas Michael 17 Bedford Sr. H.S. 25631 Alexander Rd.
Anatomical and Biochemical Study of *Galleria mellonella*
*Yavorsky, Carol Ann 17 Bedford Sr. H.S. 17732 Alexander Rd.
Study of Anaerobic Bacteria for Use in a Low Cost Energy Source
Cleveland
Konopka, Ronald Jerome 15 Cathedral Latin H.S. 6849 Ottawa Rd. 5
Amino Acids - Key to Regeneration?
Kaiser, Donald Lance 17 Charles F. Bush H.S. 5102 E. Farnhurst Rd. 24
Hexose-Monophosphate Shunt in Glucose Metabolism
by *Penicillium chrysogenum*
*Danke, Carol Ann 17 Lourdes Academy 3518 W. 137th St. 11
Construction and Use of Polarograph in Determining a Table
of Reduction Potentials for Study of Quinoid System of
Organic Compounds
*Martin, Alice Marie 16 Lourdes Academy 1396 E. 45th St. 3
Isolation and Purification of Propionyl Carboxylase
Cleveland
*Sepeta, Phyllis Ann 17 Beaumont School for Girls 12511 Oakfield Ave.,
Construction of a Geiger-Muller Tube Coincidence Cleveland 5
Counter to Detect Origin of Cosmic Radiation and Determine
Relationship of Cosmic Radiation to Earth's Topography
Elyria
Daney, Charles Gary 16 Elyria H.S. 971 E. River St.
Effects of Additives on Crystal Growth
Huron
Steinmetz, Wayne Edward 17 Huron H.S. 407 Huron St.
Reactions of Trichloromethanesulfonyl Chloride with
Isatoic Anhydride and Propanone
Shaker Heights
Knoll, Mark Sador 17 Shaker Heights H.S. 3102 Van Aken Blvd. 20
Laminarase of *Euglena gracilis*
Uhrichsville
*Roth, Carol Ann 16 Uhrichsville H.S. 511 N. Main St.
Acceleration of Fluid Particles in a Centrifugal Pump Impeller
West Alexandria
Greenfield, John Charles 17 West Alexandria H.S. 66 W. 3rd St.
Comparative Wave-Length Effects on Photosynthesis
Sweeney, Richard Wayne 17 West Alexandria H.S. 40 Smith St.
Observations of Alpha-Particle Emission

OKLAHOMA

Muskogee
Barrett, John Lee 17 Central H.S. 2821 Oklahoma St.
P-N Junctions Depending upon Surface State Properties
Oklahoma City
*Smith, Diane Marie 18 Classen H.S. 525 N.W. 17th St. 3
Thymus - Its Effect on Resistance to a Parasitic Infection
*Birkhead, Jo Lynne 17 Harding H.S. 1505 N.W. 40th St. 18
Effects of Puffball Extracts on Bacteriophage
Daughterity, Walter Chisholm 16 Putnam City H.S. 5944 N. Redmond 22
Method for Generation of Primes and Tests for Primeness
of Mersenne Numbers
Ponca City
*Clarke, Linda Darlene 17 Ponca City Sr. H.S. 2403 Bluebird Lane
Quantitative Study of Mitochondria in Lymphocytes of Mice
Tulsa
Hawley, Fred Graham 17 Thomas Edison Jr.-Sr. H.S. 5811 E. 71st St. 35
Study of Surface Active Agents

OREGON

Corvallis
Gaskell, Robert Weyand 17 Corvallis Sr. H.S. 416 Crescent Valley Dr.
The Vortex Theory of Matter
Salem
*Roberts, Sarah Carlisle 17 South Salem H.S. 1740 Fir St. S.
Acetic Anhydride-Water Reaction in Relation to Hydrates

PENNSYLVANIA

Carlisle
Hatfield, Robert Andrew 17 Carlisle Sr. H.S. 1818 Spring Rd.
A 3-MEV Neutron Generator and 100 KEV X-Ray Source

- Philadelphia Bilk, Mark Steven 17 Central H.S. 6732 Lynford St. 49
Electrical Potentials and Responses in Ciliates
Shapiro, Arthur Maurice 17 Central H.S. 7636 Thouron Ave. 50
Genetics and Variation of Colias Butterflies
- Wilkes-Barre *Yevitz, Marguerite Mary 16 St. Nicholas H.S. 825 E. Northampton St.
Protection from Total-Body Irradiation
- Wyomissing Anderson, Erik Bror 18 Wyomissing H.S. 1217 Van Steffy Ave.
Factors Affecting Hydrogen Peroxide Decomposition by Catalase
- TENNESSEE
- Memphis Casini, Michael Peter 18 Christian Brothers H.S. 3205 S. Waynoka Circle
Use of Turtle Red Blood Cells in Hemagglutination Test 11
Kitchens, Charles Herschell 17 Messick H.S. 203 Perkins Ext. 17
Petrology and Structural Aspects of Precambrian Sills in the
Pony Gneiss of South London Hills, Madison County, Montana
Emerick, Phillip Terry 17 Treadwell H.S. 1024 Treadwell St. 22
Measurement of Lunar Formations
*Newton, Shirley Louise 17 Treadwell H.S. 2351 Hubbard St. 8
Is Irradiation of Seeds Beneficial to Plant Growth?
Carney, Robert Spencer, Jr. 17 White Station H.S. 500 Colonial Rd. 17
Nerve and Muscle Tissue Responses to Alternating Current
- Oak Ridge Culver, David Alan 17 Oak Ridge H.S. 110 Carnegie Dr.
Effects of Infrared and Ultraviolet Light on
Germination and Growth of Lettuce Plants
*Savage, Serena 17 Oak Ridge H.S. 108 Norman Lane
Color and Eye Adaptation
Teague, Benjamin Harrison III 17 Oak Ridge H.S. 120 W. Maiden Lane
Non-Standard Matrix Operations
- TEXAS
- Austin Ellison, John Robert 17 Stephen H. Austin H.S. 3303 Oakmont St. 3
Effect of Magnetism on Living Organisms
Fruchter, Jonathan Sewell 17 Stephen H. Austin H.S. 1216 Norwood Rd. 22
Conditions of Biosynthesis of Betacyanin Pigments in *Beta vulgaris*
- Cleburne Jordan, Lawrence Monroe 18 Cleburne H.S. 202 Circle Dr.
Esterification Reaction
- Corpus Christi *Kennedy, Kathleen Elizabeth 16 Incarnate Word Academy 438 Del Mar Blvd.
Investigation of Pigmentation and Antibiotic Properties
of Multicellular Marine Algae in Corpus Christi Bay Area
- Dallas Ash, James Lee, Jr. 17 Bryan Adams H.S. 9209 Sorrento St. 28
Effects of X-Rays on Living Cells
Granek, Harold 17 Thomas Jefferson H.S. 3933 Cortez Dr. 20
Rond Una-Dilateral Geometry
Thornton, William Keith 18 Thomas Jefferson H.S. 5523 Greenbrier St. 9
Mandibular Condylar Fracture Dislocations
- Harlingen Alexander, Gerald Morris 17 Harlingen H.S. 1638 Murrah St.
Study of Subliminal Stimulation
- Houston Timme, Robert Howard 18 Jesse H. Jones H.S. 6322 Southbrook Dr. 17
Nutrient Passage Through Plant Grafts as Tested with Radioisotopes
*Bybee, Ann Marie 17 Memorial H.S. 9301 Wickford St. 24
Drug Effect on Normal Tissue Respiration
*Reifel, Catherine Lee 17 Memorial H.S. 12118 Queensbury St. 24
Pigment of *Sarcina lutea*
- Plains Tippet, James Milton 17 Plains H.S. Box 454
Possible Correlation Between Jupiter's 18 Megacycle
Radiation and Its Atmospheric Features
- UTAH
- Salt Lake City *Dickman, Susan J. 17 Highland H.S. 1882 Nevada St. 8
Histamine and SRS Release During Anaphylaxis
Firmage, Robert Darrell 18 Highland H.S. 2694 Eagle Way 8
Theory of Origin of Craters of the Moon
- VIRGINIA
- Alexandria Edmonds, William Lester 17 George Washington H.S. 2909 Hickory St.
Work with Organosilicon Intermediates and Silicone Elastomers

- Arlington Zalkind, David Laster 17 Wakefield H.S. 1510 S. Edgewood St. 4
Development of a Method of Mathematical Sieving with
Application to Prime Numbers
Lord, Charles Ellis 17 Washington-Lee H.S. 2000 N. Adams St. 1
Gas Clathrate Stability as an Index to Anesthetic Potency
Baker, James Karl 17 Yorktown H.S. 6301 15th Rd. N. 13
Computational Methods for the Theory of Games
- Ashland Miller, James Carson 18 Patrick Henry H.S. Box 601
Transformations in Artificially Induced Non-Luminous Mutant
Cultures of *Photobacterium fischeri* by Treatment with DNA
Extracts Taken from Normal Cultures
- McLean Hodgson, John Alfred 17 McLean H.S. Rt. 2, Box 452
Study of Pythagorean Triplets
*Lynch, Lucy Ann 17 McLean H.S. 4638 Tompkins Dr.
Investigation of Metabolism Changes of Albino Rats Under Stress
- Newport News Maynard, Julian Decatur, Jr. 17 Warwick H.S. 25 Douglas Dr.
Mathematical Game Played by an Analog Computer
- Richlands Gillespie, James Earnest 18 Richlands H.S. Box 364
Effects of Synthetic Detergent on White Mice
- WASHINGTON
- Bothell Wegner, Gary Alan 18 Bothell H.S. 9309 N.E. 191st St.
Clues to the Origin of Planets' Markings
- Port Townsend Milton, Kimball Alan 18 Port Townsend H.S. 1208 Jackson St.
Rectification Properties of Halide-Ion Contaminated Ice
- Seattle Kauffman, Peter Carr 17 Ballard H.S. 7721 33rd St. N.W. 7
Determination of Chromium-51 in Sea Water Samples
- WEST VIRGINIA
- Charleston *Frame, Brenda Karen 17 Stonewall Jackson H.S. 406 Donally St. 1
Do Cigarettes Have a "Fowl" Effect on Chickens?
- WISCONSIN
- Beaver Dam Whitner, Roger Dean 17 Beaver Dam Sr. H.S. R.R. 3
Theoretical Investigation of the Oblique Telescope

* * *

Grassian, Stuart Edwin 16 Bronx H.S. of Science 125 E. 168th St. 52
Smilowitz, Henry Martin 16 Stuyvesant H.S. 815 Sutter Ave.,
Brooklyn 7

OHIO

Cleveland *Martin, Alice Marie 16 Lourdes Academy 1396 E. 45th St. 3

OKLAHOMA

Oklahoma City *Birkhead, Jo Lynne 17 Harding H.S. 1505 N.W. 40th St. 18

OREGON

Salem *Roberts, Sarah Carlisle 17 South Salem H.S. 1740 Fir St. South

PENNSYLVANIA

Philadelphia Shapiro, Arthur Maurice 17 Central H.S. 7636 Thouron Ave. 50

TEXAS

Austin Fruchter, Jonathan Sewell 17 Stephen F. Austin H.S. 1216 Norwood Rd. 22

VIRGINIA

Arlington Zalkind, David Laster 17 Wakefield H.S. 1510 S. Edgewood St. 4

WASHINGTON

Bothell Wegner, Gary Alan 18 Bothell H.S. 9309 N.E. 191st St.
Seattle Kauffman, Peter Carr 17 Ballard H.S. 7721 33rd St. N.W. 7

* indicates girls
H.S. indicates High School

HOME ADDRESS follows name of school
AGE of winner follows name



SCIENCE SERVICE - 1719 N Street, N.W. - Washington 6, D.C.

Washington Trip Winners

FILE COPY

of the

Twenty-second Annual Science Talent Search® for the Westinghouse Science Scholarships and Awards

The forty Washington trip winners of the 22nd Annual Science Talent Search, among whom \$34,250 of Westinghouse Science Scholarships and Awards will be distributed, represent about 1% of those who completed entries in this scientific and educational competition.

Designed to discover and develop scientific ability among high school seniors, the Science Talent Search is conducted annually for the Westinghouse Science Scholarships and Awards by Science Clubs of America, administered by Science Service, 1719 N Street, N.W., Washington 6, D.C.

Nine girls and 31 boys (proportion determined by ratio of boys and girls completing entries) are being invited to Washington, D.C., for an all-expense trip February 27 through March 4, 1963, to attend the Science Talent Institute. Here five winners will be selected by the board of judges to receive one of the following Westinghouse Science Scholarships: \$7,500 (\$1,875 a year), \$6,000 (\$1,500 a year), \$5,000 (\$1,250 a year), \$4,000 (\$1,000 a year), \$3,000 (\$750 a year). The remaining 35 contestants will be given Westinghouse Science Awards of \$250 each.

The trip winners are 15 to 18 years of age and come from 33 cities in 19 states and the District of Columbia. They were picked by the judges from among 22,477 contestants of whom 3,274 completed their entries by taking a science aptitude examination, obtaining recommendations and writing a report on their science project. Completed entries were received from 48 states and the District of Columbia.

Of the 40 Twenty-second Annual Science Talent Search Winners, 32 ranked in the top 5% of their graduating class and 23 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 23.3% of the entries this year.

Washington Trip Winners

ARIZONA

Phoenix Royce, Ronald Richard 17 North H.S. 4741 E. Oak St. 8

CALIFORNIA

Palos Verdes Estates *Gregory, Alina Elizabeth 17 Marymount H.S. 309 Via Linda Vista, Redondo Beach
Pasadena Kyle, Jack Ernst 16 Pasadena H.S. 1425 N. Chester Ave.
Rialto *Ware, Anita Faye 17 Eisenhower H.S. 201 E. Valencia St.
San Francisco Vince, Andrew Joseph 17 Lowell H.S. 1642 30th Ave. 22
San Jose Kugelmass, Joel Nathaniel 16 Del Mar H.S. 2301 Stokes St. 28

CONNECTICUT

Fairfield Campbell, Alan Stuart 16 Roger Ludlowe H.S. 232 Dunnlea Rd.

DISTRICT OF COLUMBIA

Washington Miller, Karl Henry 17 Woodward School for Boys 4404 Albemarle St., N.W. 16

FLORIDA

Coral Gables Weiss, Mark 17 Coral Gables Sr. H.S. 3128 Coconut Grove Dr. 34
Stuart Fox, John Frederick 17 Martin County H.S. 633 Osceola Ave.

GEORGIA

Atlanta Pickard, William Leonard, Jr. 17 Daniel C. O'Keefe H.S. 344 Hunerkopf St., N.W. 13
Muchnick, Steven Stanley 17 Henry Grady H.S. 1229 Beech Valley Rd. N.E. 6

HAWAII

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