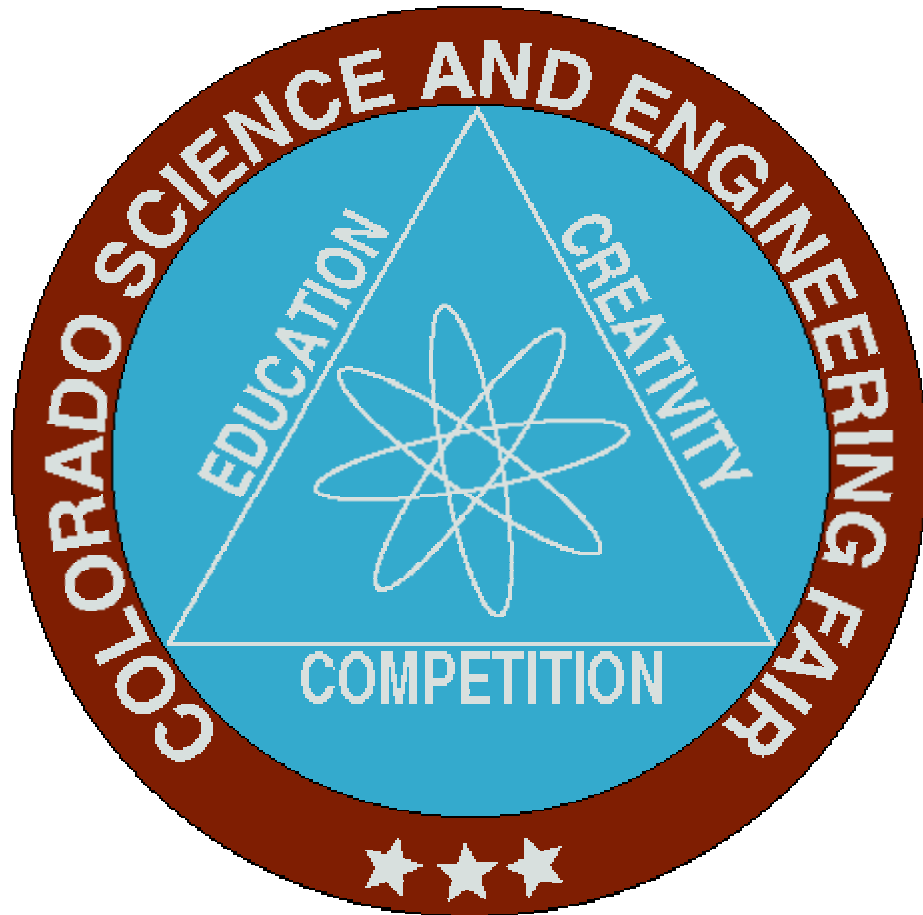


1998 Annual Report



September 12, 1998

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From start to finish, and at all levels of participation, the science fair experience is one not only of competition, but also of camaraderie, creativity, cooperation, and education. This is the essence of the logo for the Colorado Science and Engineering Fair.

Established in 1956, the Colorado State Science Fair, Inc. is a private, non-profit organization, which holds a statewide competition each year. This competition, known as the Colorado Science and Engineering Fair (formerly Colorado State Science Fair), is the state level event in a year-long process of local and regional science fairs. More than two thousand students from all over the state participated in the statewide science fair program. The purpose of the CSEF is to stimulate student interest and encourage them in science and engineering by recognition of their ability and achievement.

This year, state winners were chosen from among 245 exhibits presented by 274 finalists from 13 regions within the state. This represented 89 schools throughout the state. More than 130 professional scientists, engineers and mathematicians interviewed the students and evaluated their projects before selecting the Grand Awards winners. In addition, there are currently over 45 business, professional societies, and government agencies that provide over 150 of their own representatives to judge exhibits based on their own criteria. They judge the student finalists and conferred Special Awards, which represented an aspect of the bestowing organization. These included college scholarships, offers of summer employment, field trips, cash, savings bonds, and calculators. Over 800 people attended the Awards Ceremony this year.

In addition to getting the rare opportunity to speak with working scientists, Colorado Science and Engineering Fair student participants compete for awards in a number of categories: Botany, Earth & Environmental Sciences, Engineering, Health & Behavioral Sciences, Mathematics & Computer Sciences, Physical Sciences, and Zoology. Recognition for outstanding exhibits in each of these categories as well as an award for technical writing are given to students at the Colorado Science and Engineering Fair Awards Ceremony. The top two Senior Division winners and the top Senior Division team winners at the state level are awarded trips to the International Science and Engineering Fair. In 1998, the International Science and Engineering Fair was held in Fort Worth, Texas, where Colorado students competed with their peers from the United States and 40 countries.

Many educational experiences are made available to students who participant in the CSEF. Tours of university and local corporate research facilities provide opportunities for students and their families to see research in action. The judges' interviews and the opening night Food, Fun and Friendship Mixer after judging allow the students to interact with professional scientists and engineers and with each other. Many students have said that having the chance to meet and speak with their peers about their science projects is the most beneficial aspect of the Colorado Science and Engineering Fair.

Scholarships from Colorado State University, Colorado School of Mines, and Colorado Northwestern Community College are also presented. Colorado State University offers a \$4,000 scholarship to the first place winner in each of the seven individual categories. The Colorado School of Mines offers a \$1,000 scholarship to a senior entrant who has declared their intention to attend the School of Mines. Colorado Northwestern Community College offers a 45% scholarship to first place winners in each Senior Division category who are in the 11th or 12th grades.

1998 Colorado Science and Engineering Fair

The 43rd Colorado Science and Engineering Fair was held at the Lory Student Center on the Colorado State University campus on April 9 - 11, 1998. Two hundred seventy-four students participated in this three day event and competed for honors in their respective categories. This year, the CSEF was honored to have as the guest speaker, former astronaut Bruce McCandless II, who is currently the Chief Scientist, Reusable Launch Systems with Lockheed Martin Astronautics. Mr. McCandless was the first astronaut to fly untethered while using a Manned Maneuvering Unit. His talk, "Science" Opening the Door to Your Future . . . Lessons from Space Flight," emphasized the value of science to the CSEF finalists.

The top exhibitor of the 1998 Colorado Science and Engineering Fair and winner of an all-expense paid trip to compete in the Intel/International Science and Engineering Fair was Katie Propst from Sterling, grade 11, of Merino High School for the project *Bacteriophage Therapy: Is It a Possible Alternative Treatment For Bacterial Infections?* The runner up for the best in the state science fair, also a winner of the all-expense pair trip to ISEF was Robin Schreiber from Last Chance, grade 12, of Woodlin School for the project *Molluscicidal Potency and Saponin Analysis of Cloned Endod Berries*. Awarded 3rd Place in the Senior Division, and alternate for the ISEF trip was Chad Lyman Goerzen from Colorado Springs, grade 12, of Palmer High School for the project *Aerodynamic Effects of Up-Turned and Down-Turned Tip Caps*.

The top winner of the Junior Division was Ryan Patterson from Grand Junction, grad 8, of Orchard Mesa Middle School for the project *Can Electronic Neural Network Compare With That Of A Biological Neural Network?* The exhibit judged second best in the Junior Division was Ian Overgard from Littleton, grade 7, home schooled for the project *Extending the Sugar Scape – patterns of addiction*. Third best in the Junior Division was Shannon George from Woodrow, grade 8, of Woodlin School for the project *The Interaction of IAA and BA in Cultured Peas*.

Winners of the scholarships given by the local universities were:

From Colorado State University - \$4,000 scholarships (\$1,000 for each year attended at CSU):

- Robin Schreiber from Last Chance, grade 12, of Woodlin School for the project *Milluscicidal Potency and Saponin Analysis of Cloned Endod Berries*.
- Pavan Sekhar from Englewood, grade 10, of Cherry Creek High School for the project *Phytoremediation of Heavy Metal Contaminated Soils Using Brassica Rapa*.
- Carol Kim from Greenwood Village, grade 11, of Cherry Creek High School for the project *Can Titanium Dioxide Produce a Self Cleaning Glass?*
- Katie Propst from Sterling, grade 11, of Merino High School for the project, *Bacteriophage Therapy: Is It A Possible Alternative Treatment For Bacterial Infections?*
- Natalia Toro from Boulder, grade 11, of Fairview High School for the project *Numerical Analysis of Non-Linear Mechanical Systems*.
- Chad Lyman Goerzen from Colorado Springs, grade 12, of Palmer High School for the project *Aerodynamic Effects of Up-Turned and Down-Turned Tip Caps*.
- Peter Freed from Denver, grade 12, of George Washington High School for the project *What are the effects of apoptotic cell uptake on macrophage cytokine production?*
- Casey China from Englewood, grade 12, of Cherry Creek High School for the project *An Examination of Phytoremediation in Various Parts of Brassica juncea*.
- Marti Page from Englewood, grade 12, of Cherry Creek High School for the project *An Examination of Phytoremediation in Various Parts of Brassica juncea*.

From Colorado School of Mines - \$1,000 scholarship

- Michelle Manichanh from Greeley, grade 12, of Greeley West High School for the project *The Environmental Effects of Organic Vs Chemical Insecticides*.

From Colorado Northwestern Community College – 45% scholarship

- Robin Schreiber from Last Chance, grade 12, of Woodlin School for the project *Milluscicidal Potency and Saponin Analysis of Cloned Endod Berries*.
- Carol Kim from Greenwood Village, grade 11, of Cherry Creek High School for the project *Can Titanium Dioxide Produce a Self Cleaning Glass?*
- Katie Propst from Sterling, grade 11, of Merino High School for the project, *Bacteriophage Therapy: Is It A Possible Alternative Treatment For Bacterial Infections?*
- Natalia Toro from Boulder, grade 11, of Fairview High School for the project *Numerical Analysis of Non-Linear Mechanical Systems*.
- Chad Lyman Goerzen from Colorado Springs, grade 12, of Palmer High School for the project *Aerodynamic Effects of Up-Turned and Down-Turned Tip Caps*.
- Peter Freed from Denver, grade 12, of George Washington High School for the project *What are the effects of apoptotic cell uptake on macrophage cytokine production?*
- Casey China from Englewood, grade 12, of Cherry Creek High School for the project *An Examination of Phytoremediation in Various Parts of Brassica juncea*.
- Marti Page from Englewood, grade 12, of Cherry Creek High School for the project *An Examination of Phytoremediation in Various Parts of Brassica juncea*.

Winner of the Ralph F. Desch Memorial Technical Writing Award of \$100 was Peter Freed from Denver, grade 12, of George Washington High School for the project *What are the effects of apoptotic cell uptake on macrophage cytokine production?*

1998 International Science and Engineering Fair

CSEF's top two winners, Katie Propst (from Sterling) and Robin Schreiber (from Brush) represented Colorado at the International Science and Engineering Fair that is the culmination of each year's science fair experience. The 49th Intel/International Science and Engineering Fair was held May 10 - 16th in Fort Worth, Texas. At the Intel/ISEF, more than 1000 finalists represented over 40 countries from around the globe. In addition, the CSEF third place winner, Chad Goerzen (from Colorado Springs) attended the ISEF as a student observer for the CSEF (and competed there for the Pikes Peak region).

Katie won a Fourth Place Award of \$500 in the ISEF Medicine and Health Category for her project on *Bacteriophage Therapy*. Chad won an Honorable Mention Award of \$100 from Eastman Kodak Company for his project on *aerodynamic Effects of Up-Turned and Down-Turned Tip Caps*. In addition, the tip team from Colorado Springs, Heather Matthews and Twila Paterson, won the 3rd highest award from the Intel/ISEF – a trip to Brazil for the 12th International South American Science Fair, plus 1st place in the team category, and two special awards. Janice Huang, from Greeley won 2nd place (\$1,500) in Zoology. Sonja Nedrud and Kara Brady, also from Greeley, won a 3rd place of \$1,000 in the team category. Cory Stevens, from Brush, won a 4th place of \$500 in Physics and a special award. In all Colorado students won \$10,000 in prizes.

Organization

The Colorado Science and Engineering Fair would not be possible without the dedication and tremendous efforts of many committed individuals and organizations including school districts, universities, government agencies, corporations, and professional associations. These groups sustain the CSEF through financial and resource support, special awards and most importantly, through providing dedicated volunteers to serve on the fair's many working committees.

It is no exaggeration to say that the state science fair volunteers indeed make the fair possible each year by serving on the Advisory Council and its various committees. They and others also serve as judges for the Colorado Science and Engineering Fair. Prior to the statewide event, thirteen regional science fairs and a great number of local school science fairs are conducted throughout the state; each of these fairs is supported and promoted by hardworking and dedicated educators at the local level. Before a student's exhibit even makes it to a local fair, it requires the encouragement and support from individual teachers, sponsors, and parents to help students see their projects through from inception to finished exhibit. The Colorado Science and Engineering Fair is a product of all of these people.

The success of each year's fair is directly dependent upon the support of public and private organizations, government agencies, school districts, universities, and the efforts and coordination of more than three hundred dedicated volunteers. To organize and stage the fair each year requires a great effort, but it also offers many personal challenges and rewards. To witness the level of achievement, pride and excitement of these bright young people in their scientific endeavors is one of the rewards that all of the volunteers share, and it also speaks to the high level of students' aptitude and enthusiasm for science in Colorado.

Mission Statement

The Colorado Science and Engineering Fair is an organization that:

- Honors winners from Colorado regional science fairs at an annual state science fair.
- Provides an opportunity to send finalists from the State of Colorado to the International Science and Engineering Fair (ISEF).

We support regional science fairs by:

- Providing an alternative to the ISEF affiliation as a means of attending the ISEF.
- Providing a forum where regional science fairs can influence policies, rules, and by-laws of the state science fair.
- Providing rules and requirements for participation in the state science fair.
- Facilitating communication, where practical, regarding science fairs and their participants.

Colorado Science and Engineering Fair Sponsors provide the majority of the financial and resource support. In addition, each sponsor also provides two volunteers to serve on the CSSF, Inc. Board of Directors.

Platinum Sponsors

(Providing over \$2,500 in support for the CSEF.)

Lockheed Martin Astronautics
Colorado State University

Gold Sponsors

(Providing \$1,000 to \$2,500 in support for the CSEF.)

Anheuser-Busch, Inc.
Colorado Medical Society
Eastman Kodak Company, Colorado Division
Old Chicago Restaurant
Rocky Mountain Remediation Services
Safe Sites of Colorado, LLC
US West Information Technologies, Inc.

Sponsors

(Providing \$500 to \$750 in support for the CSEF.)

American Cancer Society	Colorado State University, College of Engineering
Amgen, Inc.	Comlinear Cortech, Inc.
COBE Laboratories, Inc.	Hach Company
Colorado Dental Association	Hewlett-Packard Company
Colorado Engineering Council	StorageTek Foundation
Marathon Oil Company	Symbios Logic
IEEE/LEOS Denver Chapter	University of Colorado, CEAS
National Renewable Energy Lab/Midwest Research Institute	National Telecommunications & Information Administration
Norgren	National Oceanic and Atmospheric Administration
OEA, Inc.	San Luis Valley Regional Science Fair

Financial Contributors

(Providing up to \$500 in support for the CSEF.)

Applied Hydrology Association, Inc.
Kaiser-Hill Company
Ball Aerospace Technology Corp
Dan & Carol Blake
Colorado State University, Department of Physics
Gina Holland
King Soopers
Lockheed Martin Command and Control Systems
Science Applications International Corporation, Energy Products Division
Utility Engineering Corporation
Woodward-Clyde Consultants

Many Federal employees contribute monthly through the Combined Federal Campaign.

Lynn Butler Memorial Scholarship

The CSSF, Inc. Board of Directors has established the Lynn Butler Memorial Scholarship Fund to assist low-income finalists in paying their CSEF registration fee. Lynn Butler was the CSEF Director

for the 1991 fair, as well as a hard working, dedicated volunteer for CSEF and for science students statewide until her death in 1996.

Advisory Council

The CSEF Advisory Council includes all Regional Fair Directors, the CSSF, Inc. Board of Directors and members at large.

Board of Directors

President: Bob Morrow
Vice President: Harvey Teyler
Secretary: Dave Lovering
Treasurer: Jim Sites
Fair Director: Kate Taylor
A Foundation for Basics – Ruth Taylor, Ken Yoder
American Cancer Society – Richard Shipman, Heather Tolby
Anheuser-Busch, Inc. – Skip Beck
Colorado Dental Association – Robert Morrow, David Wright
Colorado Engineering Council – Gina Holland, Paul Cheng
Colorado Medical Society – William Pierson, John Farrington
Colorado State University – Tom Sneider, Jim Sites
Eastman Kodak Company – Sue Refner
Hewlett-Packard Company – Rob Yockey, Kristin Howerton
Lockheed Martin Astronautics – Paul Cheng
National Renewable Energy Lab – Dan Blake, Mohamed Ibrahim
Rocky Mountain Remediation – Gary Guinn, Linda Guinn
Safe Sites of Colorado – Mile Korenko, Bob Suyama
San Luis Valley Regional Science Fair – David Holm, Harvey Teyler
StorageTek Foundation – Dan McCamman
Symbios Logic – Don Kirkland
US Department of Commerce/NIST – Dave Lovering
US Department of Commerce/NOAA – Dave Clark, Al Bedard
US Department of Commerce/NTIA – Carrie Shaw
US West Technologies – Radford Walker
University of Colorado, College of Engineering and Applied Science – Sherry Snyder

Advisory Council Members At Large

Carl Edstrom	Blayne Friehauf	Nancy Gettman
Cameron Holm	Laurie Howard	Larry Jakel
Charles Johnson	Beverly Meier	Jody Oaks
Kelly Reed	Lisa Rothe	Gary Stetler
James Stevens	Doug Steward	Donald Taylor
Dan Van Gorp		

Regional Science Fairs

<u>Arkansas Valley</u> Joel Gray and Jim Herrell, Co-Directors	<u>Pikes Peak</u> Georgia Matteson, Director
<u>Boulder Valley</u> Cheryl Rapp, Director	<u>San Juan Valley</u> Martha Iverson, Director
<u>Denver Metro</u> Radford Walker, Director	<u>San Luis Valley</u> Lucy Adams, Director
<u>East Central</u> William Mallory, Directors	<u>Southeast Colorado</u> Robert Williams and Dan Temple, Co-Directors
<u>Longs Peak</u> Terry Scott and Courtney Willis, Co-Directors	<u>Spanish Peaks</u> Robert Phillbin, Director
<u>Morgan/Washington Bi-County</u> Elemer Bernath & Don Gabriel, Co-Directors	<u>Western Colorado</u> Forbes Davidson and Rob Robison, Co-Directors
<u>Northeast Colorado</u> Donald Hurt, Director	

Working Committees

Alumni – Bob Morrow, Cameron Holm

Awards Ceremony – Ken Yoder, Kelly Reed, Beverly Meier, Kate Taylor, Sue Refner, Doug Steward

CSEF 2000 – Bob Morrow, Rich Shipman, Harvey Teyler

Display & Safety – Elemer Bernath, Dan Van Gorp, Don Gabriel, Don Hurt, Rich Shipman, David Holm, Paul Josephson, Leo Armstrong, Al Bedard, Kate Taylor, Doug Steward, Larry Jakel, Mindy Frieauf, Blayne Frieauf, Sue Refner, Mohamid Ibrahim, Rob Yockey, Tony Jorstad, Robert Keenan

Facilities/Monitors – Tom Sneider, Ruth Taylor, Paul Josephson, Sue Refner, Harvey Teyler, Nancy Gettman, Larry Jakel, Jim Sites

Finance – Dan Blake, Carl Edstrom, Kristin Howerton, Bob Morrow, David Holm, Dave Lovering, Al Bedard, Harvey Teyler, Kate Taylor

Host Families – Sue Refner, David Wright

Photography – Ray Alvarado, Carrie Shaw, Sue Refner, plus Kodak volunteers

Publicity – Dave Clark, Al Bedard, Carrie Shaw

Registration – Kate Taylor, Ruth Taylor, Carl Edstrom, Beverly Meier, Lucy Adams

Regular Judging – Gina Holland, Carl Edstrom, Russell Stoner, Tom Sneider

Room Set-Up – Jim Sites, Ken Yoder, John Lehman, Elemer Bernath, Paul Josephson, Dan Van Gorp, Doug Steward, Tom Sneider, Rob Yockey, Kate Taylor

Scholarships – David Holm, Ken Yoder, Lucy Adams

Scientific Review – Elemer Bernath, Charles Johnson, Steve Iona, Kate Taylor, Lisa Rothe, Doug Steward, Jody Oaks

Special Awards Judging – Ken Yoder, Beverly Meier, Paul Cheng

Student Activities/Speaker – Lucy Adams, Al Bedard, Ruth Taylor, Cameron Holm

Tours – Rich Shipman, Kristin Howerton, Skip Beck, Laurie Howard

Past Colorado Science and Engineering Fair Directors

Charles Bragaw	1956-1967
Calvin Fisher	1968-1974
Sam Shushan	1975-1977
Gordon Moore	1978
Russell B. Stoner	1979-1981
Virgil Sandborn	1981-1983
James Sites	1984-1985
Llyod Walker	1986-1988
Connie Vader-Lindholm	1989-1990
Lynn Butler	1991
Kate Taylor	1992-1994
Christal McDougall	1995-1996
Kate Taylor	1997-1998

Annual Budget Report

9/1/97 through 8/31/98

Category Description	Actual	Budget	Difference
INCOME			
Sponsors	\$20,700.00	\$19,900.00	\$800.00
Contributions	\$1,781.27	\$2,500.00	(\$718.73)
Registrations	\$10,010.00	\$8,750.00	\$1,260.00
Interest	\$0.00	\$50.00	(\$50.00)
Tour Tickets	<u>\$224.30</u>	<u>\$200.00</u>	<u>\$24.30</u>
TOTAL INCOME	\$32,715.57	\$31,400.00	\$1,315.57
EXPENSES			
Student Awards			
Cash Awards	\$3,075.00	\$3,100.00	\$25.00
ISEF			
Affiliation	\$500.00	\$500.00	\$0.00
Lodging	\$723.35	\$1,600.00	\$876.65
Per Diem	\$200.00	\$840.00	\$640.00
Registration	\$225.00	\$450.00	\$225.00
Travel	<u>\$470.69</u>	<u>\$1,700.00</u>	<u>\$1,229.31</u>
TOTAL ISEF	\$2,119.04	\$5,090.00	\$2,970.96
Medals	\$826.31	\$1,350.00	\$523.69
Misc.	<u>\$2,153.23</u>	<u>\$1,400.00</u>	<u>(\$753.23)</u>
TOTAL Student Awards	\$8,173.58	\$10,940.00	\$2,766.42
Student Meals	\$4,640.00	\$2,800.00	(\$1,840.00)
Student Publications	\$349.83	\$900.00	\$550.17
Student Rent	\$1,079.00	\$1,800.00	\$721.00
Student Tours	\$123.08	\$500.00	\$376.92
Student Printing	\$1,693.18	\$2,250.00	\$556.82
Operations			
Communications	\$1,703.02	\$2,050.00	\$346.98
Insurance	\$1,570.55	\$1,200.00	(\$370.55)
Meals	\$463.88	\$700.00	\$236.12
Personnel	\$6,050.00	\$6,000.00	(\$50.00)
Printing	<u>\$550.00</u>	<u>\$350.00</u>	<u>(\$200.00)</u>
TOTAL Operations	\$10,337.45	\$10,300.00	(\$37.45)
Savings	\$0.00	\$1,900.00	\$1,900.00
TOTAL EXPENSES	\$26,396.12	\$31,390.00	\$4,993.88
TOTAL INCOME-EXPENSES	\$6,319.45	\$10.00	\$6,309.45