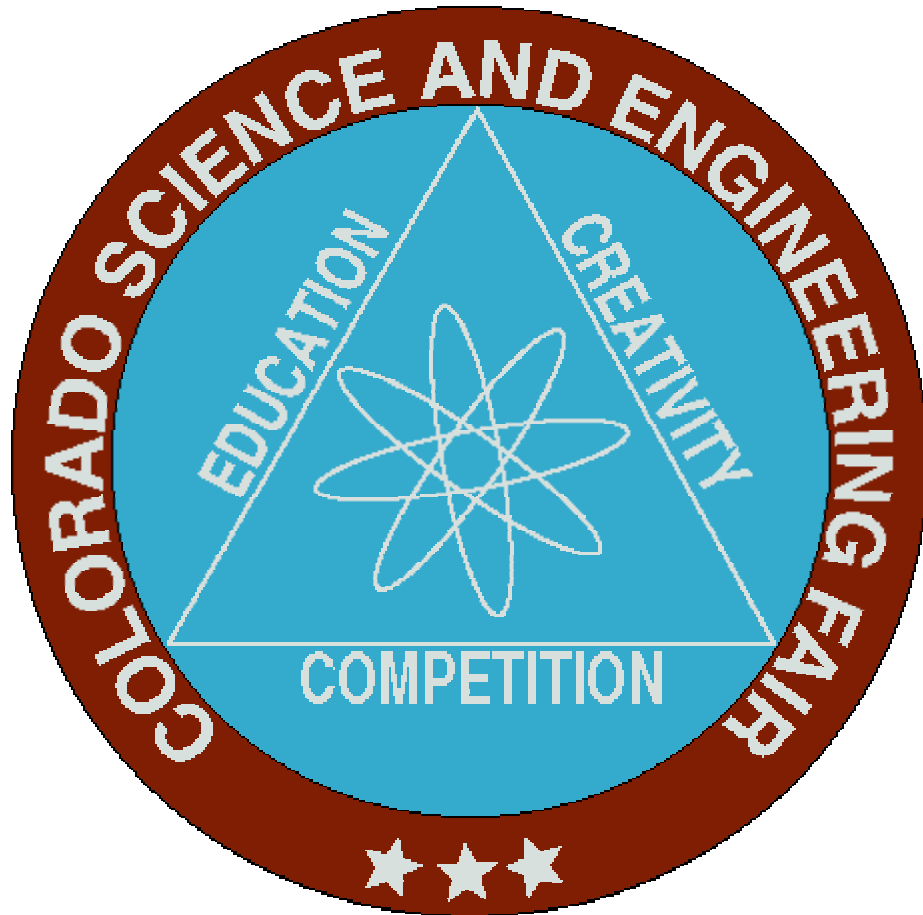


2000 Annual Report



August 31, 2000

2000 Annual Report

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 (CSEF) (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 participate 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 251 exhibits presented by 279 finalists from 12 regions within the state. This represented 86 schools throughout the state. More than 110 professional scientists, engineers and mathematicians interviewed the students and evaluated their projects before selecting the Grand Awards winners. In addition, there are currently over 50 business, professional societies, and government agencies that provided 130 of their own representatives to judge exhibits based on their own criteria. They judged 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 600 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 & Space Sciences, Environmental Sciences, Engineering, Health & Behavioral Sciences, Mathematics & Computer Sciences, Physical Sciences, and Zoology. There is also a team competition. 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 2000, the International Science and Engineering Fair was held in Detroit, Michigan, where Colorado students competed with their peers from the United States and 40 countries.

A number of 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 allow the students to interact with professional scientists and engineers. 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 Adams State College are also presented. Colorado State University offers a \$4,000 scholarship to the first place winner in each of the content categories in the Senior Division and \$1,500 scholarships to the Senior Division All Fair winners. The Colorado School of Mines awards a four-year full resident tuition scholarship, three four-year \$2,000 scholarships, and a one-year \$1,000 scholarship to 12th grade exhibitors based on criteria established by Colorado School of Mines. Adams State College offers eight four-year full in-state tuition scholarships to promising students in the Senior Division content categories.

2000 Colorado Science and Engineering Fair

The 45th Colorado Science and Engineering Fair was held at the Lory Student Center on the Colorado State University campus on April 13 - 15, 2000. Two hundred seventy-nine 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 Dr. Eric Cornell who is with the US Department of Commerce's National Institute of Standards and Technology. He is also a Fellow of the Joint Institute for Laboratory astrophysics and a Professor Adjoint in the Physics Department of the University of Colorado. His talk was on the characteristics of the Bose-Einstein Condensation, which is an ultra-cold mix of atoms.

The top exhibitor of the 2000 Colorado Science and Engineering Fair and winner of an all-expense paid trip to compete in the Intel/International Science and Engineering Fair was Ryan Patterson, Central High School, Grand Junction, grade 10, for the project *Sleuthbot: A Robotic Search Tool*. The runner up for the best in the state science fair, also a winner of the all-expense paid trip to ISEF was Milena Pastore, Monte Vista High School, Monte Vista, grade 10, for the project *Welcome to the Collembola Café*. Awarded 3rd Place in the Senior Division, and alternate for the ISEF trip was Thomas Liu, Cherry Creek High School, Englewood, grade 12 for the project *Mathematical Modeling of Fringe Patterns from Double Stars*.

The top winner of the Junior Division was Hildur Boylston from Summit Middle School, Boulder, grade 7 for the project *Beetle Juice*. The exhibit judged second best in the Junior Division was Kira Newman from Ricks Center for Gifted Children, Denver, grade 6 for the project *The Effects of Cadmium on Microphages*. Third best in the Junior Division was Kalen Meine from Mackintosh Academy, Littleton, grade 7 for the project *Talkin' Trash: From Garbage to Gas*.

Winner of the Ralph F. Desch Memorial Technical Writing Award of \$100 was Pavan Sekhar from Cherry Creek High School, Englewood, grade 12 for the project *Phytoextraction and Rhizofiltration of Toxic Materials*.

Winners of the scholarships given by the local universities and colleges were:

Colorado State University

- Pavan Sekhar from Cherry Creek High School, Englewood, grade 12 for the project *Phytoextraction and Rhizofiltration of Toxic Metals*.
- Thomas Liu from Cherry Creek High School, Englewood, grade 12 for the project *Mathematical Modeling of Fringe Patterns from Double Stars*.
- Milena Pastore from Monte Vista High School, Monte Vista, grade 10 for the project *Welcome to the Collembola Cafe*.
- Ryan Patterson from Central High School, Grand Junction, grade 10 for the project *Sleuthbot: A Robotic Search Tool*.
- Benjamin Staub from Greeley West Senior High School, Greeley, grade 10 for the project *Combating Resistance to Penicillin in Staphylococcus epidermis*.
- Kevin Christopher from Cherry Creek High School, Englewood, grade 11 for the project *Neural Networks for Constellation Identification*.
- Jessica Caver from Woodlin Undivided High School, Woodrow, grade 9 for the project *Determining the Effects of Annealing on a Metallurgical Explosive Bond*.
- Renae Sessions from Merino Jr/Sr High School, Merino, grade 11 for the project *Do Hemolymph and Cell Suspension Decrease Paralysis in *munduca sexta*?*

Adams State College

- Scott Lancaster from Walsh Jr/Sr High School, Walsh, grade 11 for the project *Microbial Fuel Cells*.
- Evan Burgess from Fairview High School, Boulder, grade 11 for the project *Predicting Avalanche Risk*.
- Mary Grace Beard from Walsh Jr/Sr High School, Walsh, grade 10 for the project *Microbial Decontamination of Soil*.
- Natalie Barnes from Woodlin Undivided High School, Woodrow, grade 11 for the Project *Oscar the Grouch's Fine Wine: The Conversion of Biomass to an Energy Intensive Fuel Source*.
- Jennifer Green from Merino High School, Merino, grade 11 for the project *Bouncing: A Sensory Integration Technique For Children With Autism*.
- Isabelle Zaugg from Centauri High School, La Jara, grade 11 for the project *Can Losing Strategies Win? Parrondo's Paradox*.
- Krista Davies from Brush High School, Brush, grade 12 for the project *The Effects of Varying Wavelengths on Liesegang Rings*.
- Eric Oestman from Wray High School, Wray, grade 11 for the project *Home for the Homeless Ladybugs*.

Colorado School of Mines

- Thomas Liu (four-year full resident tuition scholarship) from Cherry Creek High School, Englewood, grade 12 for the project *Mathematical Modeling of Fringe Patterns from Double Stars*.
- Paul Valdez from John Mall High School, grade 12 for the project *Sands of Time*.
- Krista Davies from Brush High School, Brush, grade 12 for the project *The Effects of Varying Wavelengths on Liesegang Rings*.
- Michelle Lyons from Rifle High School, Rifle, grade 12 for the project *Single Celled Spelunkers: The Microbes of Glenwood Cavers*.

2000 International Science and Engineering Fair

CSEF's top two winners, Ryan Patterson (from Grand Junction) and Milena Pastore (from Monte Vista) represented Colorado at the International Science and Engineering Fair that is the culmination of each year's science fair experience. The 51st Intel/International Science and Engineering Fair was held May 7 – 13th in Detroit, Michigan. At the Intel/ISEF, more than 1200 finalists represented 46 states and 39 countries from around the globe.

Ryan took a 1st Place Category Award of \$3,000 and Intel/ISEF Best of Category Award of \$5,000 in the Engineering category. Intel presented the Best of Category and 1st Place winners with a \$1,000 grant for their school and the Intel/ISEF affiliated fair they represent. Ryan also took the award for Best Use of Personal Computer, present by Intel. He received a Dell Pentium III-based personal computer system. The American Association for Artificial Intelligence awarded Ryan \$1,000 for the best project in the area of computer science with an artificial intelligence component. The Axonn Corporation awarded Ryan a paid internship (including airfare and lodging) which offers a hands-on opportunity to explore electronics in a professional engineering environment. The IEEE – Region 4 awarded Ryan \$500 for Technical Excellence, Presentation and Display. Finally, the Eastman Kodak Company awarded Ryan and Honorable Mention for the Best Use of Photography to gather data, solve a problem, or to clearly explain the essence of their science project. Milena was awarded a 1st Place prize of \$500 by the American Phytopathological Society.

Other Colorado winners at the Intel/ISEF were:

Shalini Low-Nam, 17, Boulder High School, Boulder for the project *Screening for Protease Inhibitors to Block HIV Maturation and Infectivity* was awarded \$1,500 for 2nd Place in the Biochemistry category.

She was also awarded \$500 for an outstanding project related to infections disease, vaccinology or immunology by the Albert B. Sabin Vaccine Institute.

Aaron Taylor Burgess, 14, Fairview High School, Boulder for the project *Using GPS to Quantify the Relative Lightning Risk of Ridges and Mesas: Three-Year Study* was awarded a 3rd Place prize of \$250 for the best exhibit in the area of atmospheric and related oceanic and hydrologic sciences by the American meteorological Society. He was also awarded a scholarship in the amount of \$1,750, renewable for up to four years of full-time, undergraduate study by the New Mexico Institute of Mining and Technology.

Amanda Baker, 18, Woodlin High School, Woodrow for the project *Cancer Eye Probing the Squamous-Cell Carcinoma/Matrix Metalloproeinase Connection* was awarded \$500 and a plaque for outstanding project in animal health, public health, comparative medicine, biomedical research and/or food animal health by the American Veterinary Medical Association.

Amanda Davies, 18, Brush High School, Brush for the project *Effects of Varying Wavelengths on Liesegang Rings* was awarded a 1st Place prize of \$150 by the Patent and Trademark Office/US Department of Commerce.

Michelle Lyons, 17, Rifle High School, Rifle for the project *Single-Celled Spelunkers . . . Microbes of Glenwood Caverns* was awarded 3rd Place in the Microbiology category. Her prize was \$1,000.

Jamie Johnson, 16, and Jessica McAlister, 16, Palmer High School, Colorado Springs for the project *Colored Light at the End of the Tunnel* were awarded a 4th Place award in the Team category which carried the prize of \$500.

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.)

Colorado State University, Office of the Provost and College of Engineering

Gold Sponsors

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

Alcoa Foundation
Anheuser-Busch, Inc.
Ball Corporation
Colorado Medical Society
Colorado Medical Society Education and Research Foundation
Kodak Colorado Division
Lockheed Martin Astronautics
Old Chicago Restaurant
Rocky Mountain Remediation Services
Safe Sites of Colorado, LLC
StorageTek Foundation
US Department of Commerce/NOAA

Silver Sponsors

(Providing \$750 to \$1,000 in support for the CSEF.)

US Department of Commerce/NIST
US West Foundation

Sponsors

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

Amgen, Inc.	National Renewable Energy Lab
Colorado Engineering Council	Norgren
Hach Scientific Foundation	OEA, Inc.
Hewlett-Packard Company	Raytheon Engineers and Constructors
IEEE/LEOS Denver Chapter	San Luis Valley Regional Science Fair, Inc.
LSI Logic	University of Colorado, CEAS
Marathon Oil Company	

Financial Contributors

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

Lucy Adams	Cooperative Institute for Research in the Atmosphere
A & L Coors	Denver Nuggets
ASM, International, Rocky Mountain Chapter	Gina Holland
Dan & Carol Blake	Kaiser-Hill Company
COBE Laboratories, Inc.	King Soopers
Colorado Association of Soil Conservation Districts	Laurie Precision Technology, Inc.
Colorado Avalanche	New Century Energies Foundation
Colorado State University, CSMATE	Sigma Xi, CSU Chapter
USR Greiner Woodward Clyde	Utility Engineering Corporation

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.

Colorado State Science Fair, Inc. - Board of Directors

President: Harvey Teyler

Vice President: Gina Holland

Secretary: David Holm

Treasurer: Sue Refner

Fair Director: Courtney Butler

Colorado Dental Association – Robert Morrow, Dolly Morrow

Colorado Engineering Council – Gina Holland, Paul Cheng

Colorado Medical Society – William Pierson, John Farrington

Colorado State University – Tom Sneider, David Brinkley

Kodak Colorado Division – Sue Refner

IEEE/LEOS – Gary Wilson

Lockheed Martin Astronautics – Paul Cheng

LSI Logic – Don Kirkland

National Renewable Energy Lab – Dan Blake, Bonnie Hames

Rocky Mountain Remediation – Ed Brody, Asa Reed

Safe Sites of Colorado – Mile Korenko, Bob Suyama

San Luis Valley Regional Science Fair – David Holm, Harvey Teyler

StorageTek Foundation – Dan McCamman

US Department of Commerce/NOAA – Dave Clark, Al Bedard

US Department of Commerce/NTIA – Amy Weich

US West Technologies – Radford Walker, Dorinda Gonzalez

University of Colorado, College of Engineering and Applied Science – Sherry Snyder

Advisory Council Members At Large

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Gary Church

Carl Edstrom

Lisa Hatcher

Cameron Holm

Larry Jakel

Charles Johnson

Beverly Meier

Jody Oaks

Kelly Reed

Jim Sites

James Stevens

Doug Steward

Dan Van Gorp

Regional Science Fairs

Arkansas Valley

Joel Gray and Jim Herrell, Co-Directors

Boulder Valley

Kym Monacelli, Director

Denver Metro

Radford Walker, Director

East Central

William Mallory, Director

Longs Peak

Terry Scott and Courtney Willis, Co-Directors

Morgan/Washington Bi-County

Elemer Bernath, Don Gabriel, Nancy Gettman Co-Directors

Northeast Colorado

Ann Pomeroy, Director

Pikes Peak

Georgia Matteson, Director

San Juan Valley

Martha Iverson, Director

San Luis Valley

Lucy Adams, Director

Southeast Colorado

Robert Williams and David Northrup, Co-Directors

Western Colorado

Forbes Davidson and Rob Robison, Co-Directors

Working Committees

Alumni – Bob Morrow

Awards Ceremony – Tom Sneider, Gina Holland, Kelly Reed, Beverly Meier, Sue Refner, Eileene Gooding (photography)

Display & Safety – Elemer Bernath, Dan Van Gorp, Jim Sites, Don Gabriel, Nancy Gettman, Al Bedard, Doug Steward, Katie Propst, Carol Morrow

Facilities/Monitors – Nancy Gettman, Gina Holland, Jim Sites, Harvey Teyler, Al Bedard

Finance – Dan Blake, Carl Edstrom, Bob Morrow, David Holm, Al Bedard, Harvey Teyler

Photography – Doug Steward, Larry Jakel, Amy Weich, Ray Alvarado, plus Kodak volunteers

Publicity – Dave Clark, Al Bedard, Gary Wilson, Dolly Morrow

Registration – Lucy Adams, Beverly Meier, Dolly Morrow, Amy Weich

Grand Awards Judging – Gina Holland, Bonnie Hames

Room Set-Up – Jim Site, Elemer Bernath, Dan Van Gorp, Bob Morrow, Tom Sneider

Scholarships – David Holm, Lucy Adams

Scientific Review – Elemer Bernath, Charles Johnson, Gary Church, Doug Steward, Jody Oaks, Lucy Adams

Special Awards Judging – Paul Cheng, Jane Cowden, Beverly Meier

Student Activities/Speaker – Lucy Adams, Amy Weich, Gary Wilson

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
Lucy Adams	1999
Courtney Butler	2000

Annual Budget Report

9/1/99 through 8/31/00

Category Description	Actual	Budget	Difference
INCOME			
Sponsors	\$19,300.00	\$20,000.00	(\$700.00)
Contributions	\$1,912.09	\$2,500.00	(\$587.91)
Registrations	\$10,150.00	\$10,000.00	\$150.00
Interest	\$96.49	\$50.00	\$46.49
General Sales	\$325.00	\$400.00	(\$75.00)
Tour Tickets	\$204.50	\$200.00	\$4.50
TOTAL INCOME	\$32,108.08	\$33,150.00	(\$1,041.92)
EXPENSES			
Communications			
Copying	\$991.75	\$150.00	(\$841.75)
Other	17.71	\$0.00	(\$17.71)
Postage	\$307.43	\$750.00	\$442.57
Postage Box Rental	\$45.00	\$50.00	\$5.00
Telephone	<u>\$287.59</u>	<u>\$400.00</u>	<u>\$112.41</u>
TOTAL Communications	\$1,649.48	\$1,350.00	(\$299.48)
Expenses			
Fair Directors, Student	\$3,000.00	\$3,000.00	\$0.00
Judging Communications	\$902.93	\$950.00	\$47.07
Judging Meals, Room Rent	\$3,714.00	\$4,250.00	\$536.00
Medals, Plaques, Pins	\$746.79	\$740.00	(\$6.79)
Photos, Film, Postage	\$167.72	\$150.00	(\$17.72)
Student Awards	\$3,456.99	\$3,450.00	(\$6.99)
Student Publicity	\$0.00	\$250.00	\$250.00
Student Printing	\$980.23	\$500.00	(\$480.23)
T-Shirts	\$1,154.00	\$1,600.00	\$446.00
Other	<u>\$308.43</u>	<u>\$0.00</u>	<u>(\$308.43)</u>
TOTAL Expenses	\$14,431.09	\$14,890.00	\$458.91
ISEF			
Affiliation	\$500.00	\$500.00	\$0.00
Booklets	\$1,000.00	\$500.00	(\$500.00)
Freight	\$564.88	\$125.00	(\$439.88)
Lodging	\$969.57	\$1,600.00	\$630.43
Per Diem	\$450.00	\$750.00	\$300.00
Registration	\$225.00	\$375.00	\$150.00
Travel	<u>\$1,100.00</u>	<u>\$2,250.00</u>	<u>\$1,150.00</u>
TOTAL ISEF	\$4,809.45	\$6,100.00	\$1,290.55
Office and Board			
Board Administration	\$517.90	\$300.00	(\$217.90)
Board Training	\$95.00	\$150.00	\$55.00
Contingency Funds	\$1,022.60	\$3,535.00	\$2,512.40
Corporate Report	\$0.00	\$25.00	\$25.00
Director	\$3,050.00	\$3,000.00	(\$50.00)
Transition Director	\$520.00	\$1,000.00	\$480.00
Fair Supplies	\$422.93	\$200.00	(\$222.93)
Insurance	\$1,789.18	\$2,000.00	\$210.82
Office Supplies	\$524.92	\$300.00	(\$224.92)
Recording Secretary	<u>\$312.08</u>	<u>\$300.00</u>	<u>(\$12.08)</u>
TOTAL Office and Board	\$8,254.61	\$10,810.00	\$2,555.39
TOTAL EXPENSES	\$29,144.63	\$33,150.00	\$4,005.37
TOTAL INCOME – EXPENSES	\$2,963.45	\$0.00	\$2,963.45