

Engineering & Technology

Director Jeff Marquis

Plaques donated by:

- Ron Birky Award For Best Aerospace Exhibit-Friends of Ron Birky
- Best Computer Exhibit-Bob King
- Outstanding Electrical Exhibit-Rafferty Farms
- Outstanding Electrical Exhibitor-Corn Belt Energy Corporation
- Best Woodworking Exhibit-Miller-Whiteside Woodworking
- Best Small Engine Exhibit-Aamco Transmission
- Garden Tractor Safety and Operation Age 8-12-Danvers Lions Club
- Garden Tractor Safety and Operation Age 13 & Up-Rafferty Farms
- Tractor Operator Contest-Birkey's Farm Store, Inc.
- Antique Farm Equipment Restoration-Cross Implement, Inc.
- Best Welding Exhibit-In Memory of Paul Graf
- Best Robotics Exhibit-Timeless Clovers 4-H Alumni Association
- Bicycle Rodeo Age 8-12-Mark & Stacey Schuler
- Bicycle Rodeo Age 13 & Up-The Kevin Pfoff Family

Premiums: Classes 2201-2311 A-\$6 B-\$4 C-\$2

Section CA—Aerospace

Check-in Tuesday, July 28, 5-8 p.m., Cloverleaf Hall
Judged at 9 a.m., Wednesday, July 29

Superintendent Bret Birky

Assistant Superintendents Mitch Birky, Loren Heusel

A member may enter one or more aerospace categories.

In order to be state fair eligible, Aerospace exhibits must meet the following size restrictions: Rockets or model aircraft can be no larger than 3'x3'. Table displays are limited to 2' wide by 15" deep. The maximum poster size is 22"x30".

Rocketry (4H20/10)

- A. Exhibit one model rocket that may be a kit or scratch built.
- B. Exhibit must be a rocket that is flyable, has balsa wood fins and a recovery system in place, but engines not installed.
- C. Bring with your project the printed directions for construction of the rocket, if applicable, in an envelope with your name on it.
- D. Bring with your project a 3x5 card with a short explanation of the most difficult problem you had building your rocket and include the number of years you have built a rocket. Do not include your name on the card.
- E. Judge will hold a post judging critique session immediately after the judging.

2201. **Rocketry Ages 8-9**

2203. **Rocketry Ages 12-14**

2202. **Rocketry Ages 10-11**

2204. **Rocketry Ages 15+**

There is a rocket launch open to all 4-Hers, on Sat. at 1 p.m., weather permitting. You may launch your display rocket or another from home. More information available at check-in.

Please see pages 15-17 for showcase details.

Kites: (4H20/I0) Member will be present for judging.

- A. A member may enter either or both classes in their age category for a total of two kites.
- B. Exhibit should be a handmade kite, not a kit, in good flying condition.
- C. The exhibit will be a static display.
- D. Conference judging will be scheduled at check-in.
- E. Detailed instructions on how to build the kite for classes 2205, 2207, and 2209 are in your project book. Members are encouraged to use creativity with the colors and materials used to create the sail and tail if applicable.

2205. **Diamond Kite Ages 8-11**

2206. **Create Your Own Kite Ages 8-11**

2207. **Nagasaki Hata Fighter Kite Ages 12-14**

2208. **Create Your Own Kite Ages 12-14**

2209. **Brouhaha Box Kite Ages 15+**

2210. **Create Your Own Kite Ages 15+**

Model Airplanes (4H20/I0) Member will be present for judging.

- A. Exhibit one **balsa wood** model airplane in good flying condition.
- B. Airplanes should be the balsa and fabric type (tissue, polyester) and may be either a kit or scratch built.
- C. Exhibit will be a static display and will not be flown.
- D. Conference judging will be scheduled at check-in. Members should bring the printed directions for construction of the plane if applicable.
- E. Suggested projects range from beginner balsa and tissue models to advanced R/C models.

2211. **Model Airplanes Ages 8-11**

2212. **Model Airplanes Ages 12-14**

2213. **Model Airplanes Ages 15+**

Aerospace Display (4H20/I0) Member will be present for judging.

- A. Any exhibit related to aerospace that does not fit into any other class.
- B. This may be one experimental or educational poster on display.
- C. Include an explanation of the poster or display for public understanding with explanation mounted directly on the poster or display.
- D. Conference judging will be scheduled at check-in.

2214. **Aerospace Display Ages 8-11**

2215. **Aerospace Display Ages 12-14**

2216. **Aerospace Display Ages 15+**

Section CB—Computers (4H20/10)

Conference judging sign-up will be available at check-in, Tuesday, 5-8 p.m.

Judged at 9 a.m., Wednesday, July 29, Cloverleaf Hall

Member will be present for judging.

Superintendent Don Spaulding

Assistant Superintendent Dave Haab

More than one class may be entered. Classes are not project book specific. Conference judging is very important to help our judges discover precisely what each 4-Her learned. Often, being able to demonstrate what was learned is better than having a perfect display.

2221. **Using Computers:** For those who are learning the basics of a computer and computer programs. Typical entries may include a poster, slide-show or display, approx. 22"x28". Exhibit should show knowledge of one or more of the following: the main hardware parts of a computer, use of the operating system, the use and workings of common applications such as word processors or graphics drawing programs.

2222. **High-Tech Communications:** For those who have moved beyond the use of a single computer, and who have connected multiple machines (or the people using them) together in an interactive way. A poster, slide-show, or display should show knowledge of one or more of the following: how the internet (or a network in general) operates, setting up a local network, installing and using software programs that enabled communication from separate physical locations, (blogs, servers, VPNs, chat services), writing or maintaining a web page.

2223. **Early Programming:** For those who are using software to make new software at a beginning or intermediate level. Any language is acceptable (ie. web sites with interactive behavior). Exhibitors should be able to demonstrate common programming techniques, such as control loops, if statements, and variables. Exhibit should consist of any source code the exhibitor has created and/or a demonstration of the actual program. All entries should be written by the exhibitor alone and exhibitors are expected to show an understanding of what they've written. Examples include, but are not limited to : Hello World! style programs that show off the basic syntax of the language, a simple game that is played by the user, calculations done based upon user input, etc.

2224. **Advanced Topics:** For those who have an exhibit that displays a deep level of knowledge or experience in any area of computers (hardware, software, networking, programming). Examples include, but are not limited to : a database-backed web application, a 3D model you've made of a physical object, a computer-based service or business you operate, a game engine that you've altered (video game mods), etc.

Note - 4-Hers that require computers for their display must bring their own computer on Wednesday before 9 a.m. and should remove the computer from the judging area following judging. Someone will monitor exhibitors' computers during judging time. Computers left after judging will be taken to the 4-H office.

Section CC—Electricity (4H20/10)

Conference judging sign-up will be available at check-in, Tuesday, 5-8 p.m.

Judged at 9 a.m., Wednesday, July 29, Cloverleaf Hall

Member will be present for judging.

Superintendent Chris Grotbo

Assistant Superintendents Debbie Marquis, Rod Sabick

- A. All exhibits must be constructed by the exhibitor during the 2008-2009 4-H year.
- B. Exhibitors are limited to a maximum of one entry per class and four entries in this section.
- C. A written explanation of project construction and parts list must accompany each exhibit.
- D. Schematic/wiring diagram recommended for all projects.
- E. In order to be State Fair eligible, table displays must be no larger than 2' wide by 15" deep. Projects using paper clips, cardboard, thumbtacks, & brads are not eligible for state fair exhibits.

Exploring the Magic of Electricity

2231. Simple Switch

2232. Simple Motor (coils must be hand wound, no kits)

2233. Magnetic Telegraph/Buzzer Devices (coils must be hand wound, no kits)

Investigation of Electricity

2234. DC Circuit Board (series/parallel)

2235. DC 3-way or 4-way switch circuit board

2236. Basic Electrical Device (ie. alarm, rocket launcher, etc.)

Wired for Power

2237. Outdoor Utility Lamp

2238. Indoor Lighting Fixture

2239. Motor Driven Device (alternating current only)

2240. AC Circuit Board

Entering Electronics

2241. Electronic and/or Solid State Devices

Advanced

2242. Heating Equipment

2243. Alternative Energy Devices or Models

2244. Any devices that do not fit into the above categories

Note: Please refer to Electricity Supplement Sheet available at Extension office or online for more information about what is expected to meet county guidelines.

www.mcleanextension.org Under Quick Links, go to McLean County Fair/Forms & Downloads.

Please see pages 15-17 for showcase details.

Section CD—Woodworking (4H20/10)
Check-in, Tuesday, July 28, 5-8 p.m., Cloverleaf Hall
Judged at 9 a.m., Wednesday, July 29

Superintendent Jill Mohr
Assistant Superintendents Ray Mohr

Rules:

- A. An exhibitor may enter one project per class in their age group.
- B. A 3x5 card must be attached to the exhibit before check-in, explaining in detail, materials used, tools used, and process used to make the exhibit. If the exhibit has a rustic or outdoor finish, note why that finish was chosen. The class number MUST be written in the upper lefthand corner of the card. ***Failure to meet these project requirements will result in lowering placing one grade.***
- C. All refinished exhibits must include a labeled picture(s) of the item prior to refinishing and pictures of the refinishing in progress. Only original wood species used when the item was made are allowed.
- D. Precut kits are not allowed in any class.
- E. All 4-H non-manual exhibit classes (2252, 2254, 2255, 2257, 2258, 2259, 2261, 2262, 2264, 2265) will be ***conference judged***. Conference judging times will be available at check-in. Exhibits in all other classes may sign up for optional conference judging if extra conference judging times are available.
- F. **For manual projects - exhibitors are encouraged to enhance their projects, (for example stain, paint, embellish with decorations, etc.).**

Woodworking IA Ages 8-9

- 2251. Exhibit made from 4-H manual
- 2252. Exhibit (non-manual)

Woodworking IB Ages 10-11

- 2253. Exhibit made from 4-H manual
- 2254. Exhibit (non-manual)
- 2255. Refinishing exhibit

Woodworking II Ages 12-14

- 2256. Exhibit made from 4-H manual
- 2257. Furniture (non-manual)
- 2258. Non-furniture (non-manual)
- 2259. Refinishing exhibit

Woodworking III Ages 14 & older

- 2260. Exhibit made from 4-H manual
- 2261. Exhibit (non-manual)
- 2262. Refinishing exhibit

Woodworking IV Ages 14 & older

- 2263. Exhibit made from 4-H manual
- 2264. Exhibit (non-manual)
- 2265. Refinishing exhibit

Please see pages 15-17 for showcase details.

Section CE—Small Engines (4H20/10)

Conference judging sign-up will be available at check-in, Tuesday, 5-8 p.m.

Judged at 9 a.m., Wednesday, July 29, Cloverleaf Hall

Member will be present for judging.

Superintendent Katie Poppe

2271. **Small Engine Display:** Exhibit a display no larger than 4'x4', selecting one of the following options:

- 1.) A display identifying different engine or lawn and garden equipment parts or a display showing the function of the various engine or lawn and garden equipment parts; **OR**
- 2.) A display identifying and explaining the function(s) of different specialty tools needed for small engine work; **OR**
- 3.) A display illustrating and providing the results of any one of the experiments included in the project books.

The exhibitor should be prepared to discuss their project during conference judging.

2272. **Small Engine Maintenance:** Demonstrate one of the following on an engine (no more than 20HP): 1. Perform routine maintenance on an engine or piece of lawn and garden equipment **OR** 2. Diagnose and troubleshoot specific problems with an engine, short of a complete overhaul. The exhibitor should be prepared to discuss their project during conference judging.

2273. **Small Engine Operation:** Exhibit an operable small engine (no more than 20HP) overhauled or rebuilt by the 4-H member. Include a maintenance schedule for the engine and a brief description of steps taken by the member in overhauling or rebuilding the engine. During conference judging, the exhibitor should be prepared to discuss their engine overhaul or rebuilding experience and to operate the engine for a short time.

Garden Tractor Safety & Operation (4H20/10)

Check-in and Judging 9 a.m., Wednesday, July 29

Meet at 4-H office in Cloverleaf Hall

Superintendent Matt Wertz

Rules:

- A. Exhibitors will be required to operate a garden tractor and **may be required to complete a test on safety and maintenance of equipment.**
- B. Exhibitor must be present during judging.
- C. Equipment will be furnished.

2275. **Garden Tractor Ages 8-12**

2276. **Garden Tractor Ages 13+**

Fair entries must be postmarked by Wednesday, July 1 or delivered to the Extension Office by 5 p.m. July 1.

Section CF—Tractor

Tractor Operator Contest (4H20/10)

Check-in and Judging 9 a.m., Thursday, July 30

Meet at 4-H office in Cloverleaf Hall

Superintendent Carl Graf, Jr.

Assistant Superintendents Joe Graf, Michael Graf, James Lindsey, John Lindsey

Rules:

- A. Tractors will be furnished by dealers.
B. Contest will utilize the National and Illinois contest courses. Additional information is available on the web at http://www.mcleanextension.org.
C. All drivers must participate in safety exercise held prior to operator contest.

2281. Tractor Operator

2282. Tractor Maintenance

Tractor Project Display

Check in Tuesday, July 28, 5-8 p.m. Cloverleaf Hall

Conference judging sign-up will be available at check-in

Judged at 9:00 a.m., Wednesday, July 29, Cloverleaf Hall

Member will be present for judging.

Superintendent John Lindsey

Displays are limited to 2' wide by 15" deep. Posters are limited to 22"x30". All items in the display should be affixed to the display board. NO additional items should be included.

- 2283. Tractor I, Starting Up: Exhibit a display or poster that illustrates one of the following topics: tractor safety; care and maintenance; the tractor as a valuable farm machine; OR an activity listed in the project manual.
2284. Tractor II, Tractor Operation: Exhibit a display or poster that illustrates one of the following topics: cause and prevention of rollovers, diagram how an air cleaner works; diagram & identify an engine cooling system; regulations for battery & oil disposal; OR another activity listed in the 4-H project manual.
2285. Tractor III, Moving Out: Exhibit a display or poster that illustrates one of the following topics: wagon and bin hazards; diagram and identify open and closed hydraulic systems; mower types and safety features; conveyor types and safety features; OR another activity listed in the 4-H project manual.
2286. Tractor IV, Learning More: Exhibit a display or poster that illustrates one of the following topics: method of winterizing a tractor; chemical uses and required safety equipment; parts and process of internal combustion engine; procedure for cleaning and flushing tractor radiator; or another activity listed in the 4-H project manual.

Antique Farm Equipment Restoration (4H20/10)

Conference judging sign-up will be available at check-in, Tuesday, 5-8 p.m.

Judged at 9 a.m., Wednesday, July 29, Cloverleaf Hall

Member will be present for judging.

Superintendent Bruce Monson

Rules:

- A. Equipment must have been manufactured before 1965.
- B. Notebook detailing steps taken must accompany exhibit.
- C. An Antique Farm Equipment Restoration form must be submitted with fair entry.
(available from Extension office or online at www.mcleanextension.org)
- D. Due to space limitations, some exhibits may be displayed outdoors under tent cover.
- E. Implements must be detached from tractors.
- F. Exhibitors limited to one entry per class.

2287. **Antique Tractors**

2288. **Antique Lawn & Garden Tractors 25 years old or older**

2289. **Antique-all other equipment**

Section CG—Welding (4H20/10)

Conference judging sign-up will be available at check-in, Tuesday, 5-8 p.m.

Judged at 10:30 a.m., Wednesday, July 29, Cloverleaf Hall

Member will be present for judging.

Superintendent Katie Poppe

Exhibits displayed in the welding classes must have prior permission of the superintendent due to size and space requirements. Classes are open to items that could not be made without the use of a welder. Exhibit can be made with any type of welder. Include a 3x5 card describing the type of welder and materials used, and explaining the use of the project.

2291. **Welding Ages 10-14**

2292. **Welding Ages 15+**

4-H Teen Dance - Ages 13 and older

Friday, July 31, 7:30-10:30 p.m. in Cloverleaf Auditorium
4-H wristbands must be worn for admission to the dance
(Two non 4-H friends admitted with 4-Her.)
Sponsored by Leadership Design Team

Section CH—Robotics (4H20/10)

Conference judging sign-up will be available at check-in, Tuesday, 5-8 p.m.

Judged at 1 p.m., Wednesday, July 29, Cloverleaf Hall

Member will be present for judging.

Superintendent Stephen Gibson

Conference judging sign-up for all classes will be done at check-in on Tuesday, July 29.

Exhibitors may bring their own robot or use a base robot provided by McLean County Extension for the demonstration class. Exhibitors should bring their robot Wednesday at 1:00 pm and will take it home after judging. They should still check-in Tuesday night to receive a conference judging time.

2301. **Robotics Display:** Exhibit one of the following - A display describing 3-5 examples of robots and their uses in the real world. Label and describe what makes each robot more than a machine or computer. **OR** A display describing a program you wrote to make a robot travel a square track or a display describing a line tracking program which uses input from one or more sensors. The display should also include a 1 page narrative that describes your experience designing and troubleshooting this program.

2302. **Robotics Demonstration:** Exhibit one of the following - Use a robot to demonstrate a program you wrote to make a robot travel a square track or a line tracking program which uses input from one or more sensors. The exhibit should also include a 1 page narrative that describes your experience designing and troubleshooting this program. **OR** Show a robot you built, and demonstrate a program you wrote for it to complete a task. The exhibit should also include a 1 page narrative that describes your experience designing and troubleshooting the robot, and its program.

Section CI—Bicycle Safety Rodeo (4H20/10)

Superintendents Ralph Gibson, David Rowden, Karen Rowden

Check-in & Judging begins at 10 a.m., Saturday, August 1

Interstate Center Parking Lot

Optional Practice/Review, 9 a.m.

- A. Bicycles must be owned by the participants. **Helmets and safe clothing/shoes are required** while participating.
- B. Placing for each class will be determined by scores on riding events, bicycle inspection (a bell or horn is required by the Illinois Bicycle Rules of the Road), and a written test taken from the appropriate project manual.
(If you did not receive a copy of Illinois Bicycle Rules of the Road with your project manual, ask for one at the Extension Office.)
- C. Bicycles will remain at the fairgrounds only for the duration of the bicycle rodeo. Bicycles are not permitted on the grounds at any other time.

2310. **Bicycle I Ages 8-12**

2311. **Bicycle II Ages 13+**