

GENERAL SCIENCE

Health Awards Winners

Young scientists who demonstrated outstanding ability in dental, medical, pharmaceutical and veterinary sciences at the NSF-I received special recognition.

► SPECIAL HONORS were given to high school scientists for outstanding projects in dental, medical, pharmaceutical and veterinary sciences. The winners were announced at a Health Awards Banquet given by professional organizations as part of the program of the 16th National Science Fair-International.

Chosen from 418 finalists representing 221 affiliated fairs, health awards winners were selected by boards of judges from the American Dental Association, the American Medical Association, the American Pharmaceutical Association and the American Veterinary Medical Association.

The American Dental Association Certificates of Superior Achievement were presented to Kathlene A. Zimmerman, 15, Donegal H.S., Mount Joy, Pa., for "Experimental Teratogenesis" and to John S. Sabol, Jr., 18, Central Catholic H.S., Lafayette, Ind., for "Influence of P⁵³ on Amino Acid Metabolism." These winners will be the guests of the ADA at its annual meeting.

Certificates of Meritorious Achievement and \$50 for scientific equipment were awarded to Ray E. Stowers, 18, Enid H.S., Enid, Okla., for "Effects of Sodium Fluoride on Bone Deterioration Caused by a Female Hormone" and Dale J. Walther, 16, East Anchorage H.S., Anchorage, Alaska, for "Establishing Plant Immunity as a Tool in the Search for Cancer's Cure."

Certificates of Achievement were awarded to Donna Marie Ankrum, 18, Mesquite H.S., Mesquite, Texas; Noel Duvivant, Jr., 17, Whiteville H.S., Whiteville, N.C.; Evelyn D. Jankowski, 15, Immaculate Conception H.S., Lodi, N.J.; Cheryl Lea Leddy, 18, Central Catholic H.S., Reading, Pa.; Patricia McBride, 17, Raymondville H.S., Raymondville, Texas; Robert A. Phillips, 15, Booker T. Washington H.S., Shreveport, La.; Bill E. Stevens, 17, Junction City Sr. H.S., Junction City, Kans.; Marshall A. Taylor, 17, Everett H.S., Everett, Mass.; and Linda M. Jones, 17, Emporia H.S. Emporia, Kans.

The American Medical Association highest citations and plaques were presented to Johnna Lou Russell, 16, Sandia H.S., Albuquerque, N. Mex., for "DNA Isolation and Transformation in *Staphylococcus aureus*" and to Ronald G. Owens, 16, Sylacauga H.S., Sylacauga, Ala., for "Mental and Physical Effects of Acceleration on Mice." These winners will be the guests of the AMA at its annual meeting.

AMA Awards of Merit were given to Bernadine R. Bonfadini, 17, Trinidad Catholic H.S., Trinidad, Colo.; Carmen Y. Bonta, 16, Mother Cabrini H.S., New York, N.Y.; Robert J. Brock, 18, Arlington Heights H.S., Fort Worth, Texas; Arthur E. Frankel, 17, Stephen F. Austin H.S., Austin,

Texas; Gregory G. Marchand, 18, Longview Sr. H.S., Longview, Texas; John M. Shearman, 17, Lovington H.S., Lovington, N. Mex.; Felice R. Tillman, 17, Metairie Park Country Day School, Metairie, La.; and Kathlene A. Zimmerman, 15, Donegal H.S., Mount Joy, Pa.

The American Pharmaceutical Association first award was presented to Michael J. Telepchak, 17, Tamaqua Area Jt. Sr. H.S., Tamaqua, Pa., for "An Original Concept in Biophysics." He received a plaque and his choice of a trip to the annual meeting of the APhA or a cash award to further his scientific education.

The second APhA award, a plaque, was given to Doris L. Karon, 17, Bullard H.S., Fresno, Calif., for "Dissociation of *Staphylococcus Bacteria* in Tetracycline Environment."

The American Veterinary Medical Association Science Youth Award and an invitation to the annual meeting of the Association were presented to Dennis T. Crowe, Jr., 18, Clintonville Sr. H.S., Clintonville, Wis., for "Gastroenteritis Complex." Cheryl L. Normann, 18, Wahpeton Sr. H.S., Wahpeton, N. Dak., was given the AVMA Meritorious Achievement Award for "Hyperthermic Response to Chlorpromazine and Pentobarbital Sodium Influenced by 2,4 Dinitrophenol."

Presentations of the awards were made for the American Dental Association by Dr. Fritz A. Pierson, president of the association; for the American Medical Association by Dr. Donovan F. Ward, president of the association; for the American Pharmaceutical Association by Grover C. Bowles, president of the association; and for the American Veterinary Medical Association by Dr. M. R. Clarkson, president of the AVMA.

Announcement of the awards was followed by a Health Awards dance for the finalists and members of the Official Party, given at the Sheraton-Jefferson Hotel by the professional associations.

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Operation Cherry Blossom Participants Selected

► THREE TEEN-AGED finalists at the 16th National Science Fair-International will go to Japan to exhibit their winning science projects as special representatives of the U. S. Armed Forces.

The special award was sponsored jointly by the three services and was announced at an awards ceremony.

Barbara Ann Bennett, 18, Garfield H.S., Terre Haute, Ind., selected by the U.S.

Army for her project "Mushroom Production by Tissue Culture and Fermentation—Related Nutritional Studies," John R. Gott III, 18, Mayme S. Waggener H.S., Louisville, Ky., selected by the U.S. Navy for his project "Pseudopolyhedrons—A New Class of Geometric Figures"; and William A. Voelkle, 18, Sam Houston Sr. H.S., Houston, Texas, selected by the U.S. Air Force for his project "Advanced Space Propulsion—The Ion Electrostatic Thruster," will be flown to Japan to exhibit at the 9th Annual Japan Student Science Awards' Science Fair in Tokyo early in November 1965.

Alternates for "Operation Cherry Blossom" are: Gregory W. Kozlik, 16, Lane Technical H.S., Chicago, Ill., for "Field Emission Microscopy"; Dale J. Walther, 16, East Anchorage H.S., Anchorage, Alaska, for "Establishing Plant Immunity as a Tool in the Search for Cancer's Cure"; and Robert Stephens, 18, Brookfield East H.S., Brookfield, Wis., for "Force Analysis of the Bermudan Mainsail."

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Despite Quakes, Snarls, El Salvadoran Makes Fair

► THE PERSISTENCE of a true scientist and an assist from two governments took a 16-year old El Salvadoran boy through a series of earthquakes to the 16th National Science Fair-International.

Roberto Mesferrer, San Salvador, was scheduled to leave for the opening of the fair when the quakes hit the Central American nation, disrupting travel and communications.

For two days he waited. Travel was snarled. There was no telephone service to the United States.

Meanwhile, officials of SCIENCE SERVICE, sponsors of the fair, tried to locate him through United States and El Salvadoran diplomatic channels.

Finally, the U.S. embassy in San Salvador cabled that transportation has been rearranged. The boy arrived too late to compete with his "apparatus for maintaining a frog's heart after removal from the body," but not too late to set up his exhibit for the crowds, and became his country's first exhibitor in NSF-I.

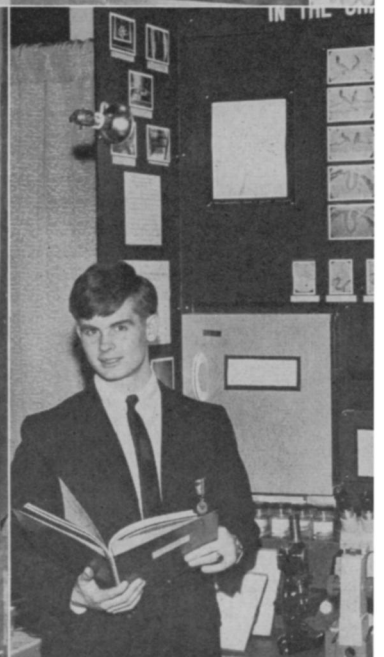
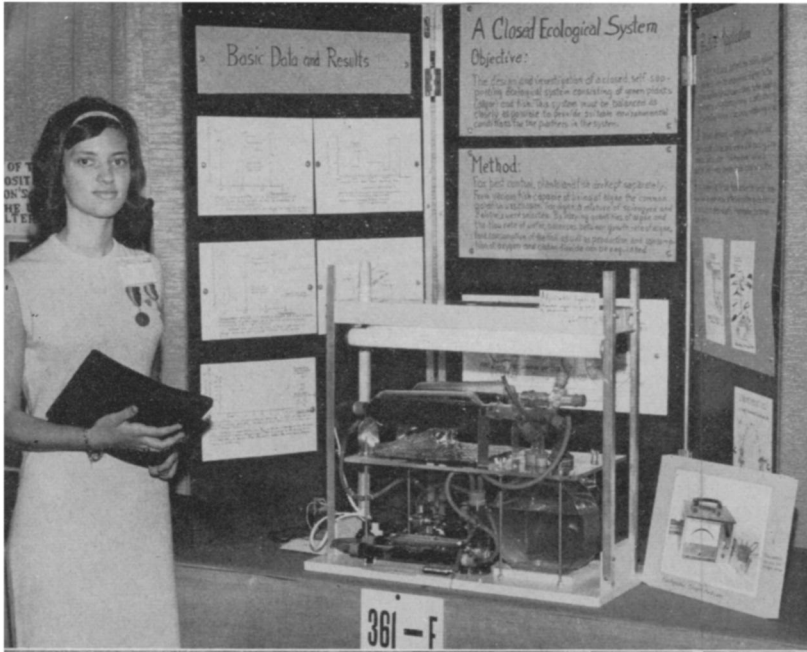
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FIRST AWARD WINNERS—The 13 top winners of the 16th National Science Fair-International are shown with their exhibits on the following two pages.

Reading from left to right, top row: Carin C. Clamann, Letantia B. Jankowski, John R. Gott III, Curtis Bryant.

Middle row: Frank B. Lutz, Jr., Kennon R. Strauss, Beverly A. Shoenberger, David E. Lunsford, Jr.

Bottom row: Virginia L. Delaney, Robert J. Sanders, John M. Grabam, Jr., Toshiko Fujitsu, Randy B. Wright.



PSEUDO-POLYHEDRONS

A NEW CLASS OF GEOMETRIC FIGURES

POLYHEDRON $< 360^\circ$

PLANAR NETWORK $= 360^\circ$

PSEUDOPOLYHEDRON $> 360^\circ$

SUM OF FACE ANGLES AROUND EACH VERTEX

COMPARISON OF PROPERTIES

PROPERTY	POLYHEDRON	PLANAR NETWORK
NUMBER OF FACES	ANY	ANY
NUMBER OF EDGES	ANY	ANY
NUMBER OF VERTICES	ANY	ANY
INTERNAL ANGLE	LESS THAN 180°	LESS THAN 180°
EXTERNAL ANGLE	LESS THAN 180°	LESS THAN 180°
INTERNAL ANGLE	LESS THAN 180°	LESS THAN 180°
EXTERNAL ANGLE	LESS THAN 180°	LESS THAN 180°

CZERNY-TURNER SPECTROKELIOSCOPE

RESULTS

DETAILS

DIFFERENTIALS

OPTICS

AN ANALYSIS OF THE RAPID GROWTH OF PUERARIA LOBATA

PROCEDURE

RESULTS: CONCLUSIONS

THE GROWTH OF PUERARIA LOBATA

EXPLANATION OF RESULTS

X-RAY DIFFRACTIONS

$$M_1 + E_1 + \frac{1}{2}m_1^2 = M_2 + E_2 + \frac{1}{2}m_2^2$$

$$M_1 c + m_1 = M_2 c + m_2$$

$$\frac{1}{2}m_1^2 = \frac{1}{2}m_2^2 = \frac{1}{2}m_1 c^2$$