High Schoolers:

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Kodak

Good use of photography makes the most of a good project —even if you have to make your own camera.

Elizabeth Davis, junior at Commerce (Texas) High School, daughter of musicians, did just that. Her project impressed the regional judges enough to send her to the 1975 International Science and Engineering Fair, where we laid further honors and a little cash on her for her photography, to say nothing of her science. She extracted Eocene pollens from an open-pit quarry, and her beautiful side-by-side color photomicrographs compared them with pollens she collected from living plants. No difference in pollens.

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ASTRONOMY

Barnard's star and company

Astronomers have been generally willing to accept that the wobble in the motion of Barnard's star is caused by the presence of a dark companion orbiting the star. It also seemed plausible that the size of the companion was nearer to that of a planet than that of a burned-out star. But when the chief calculator of Barnard's star, Peter van de Kamp of Swarthmore College's Sproul Observatory, asserted that there were two planets rather than one, he ran into flak from his colleagues.

He has spent some time reworking the evidence to meet their objections. It involved remeasuring 30 years worth of photographic plates of Barnard's star (10,000 exposures) on a more versatile measuring machine. In the August ASTRONOMICAL JOURNAL he maintains that there are nevertheless two planets, though he changes their parameters somewhat and concedes that the second planet is a bit less certain than the first.

The two planets, he says, have highly elongated orbits. One takes 11.5 years to go around; the other 22 years. Their orbits are very close to being in the same plane, and there is a 50-50 chance that the planets both revolve in the same sense. The heavier planet, van de Kamp figures, has a mass of 0.00094 that of the sun or about equal to Jupiter's. The lighter is 0.00035 solar masses, slightly heavier than Saturn.

X-ray source in a Magellanic Cloud

The two Magellanic Clouds are the nearest galaxies beyond our own. It is possible to distinguish individual objects in them, and such studies bear a part in convincing earthlings that the make-up of other galaxies is much like that of our own. The Magellanic Clouds, like our Milky Way, have stellar X-ray sources, and in the Sept. 11 NATURE Patrick B. Byrne of the Dunsink Observatory in Dublin identifies the most recently discovered of these, X-5 in the Large Magellanic Cloud, with a possible supernova remnant.

The basis of his contention is the proximity of LMC X-5 to the radio sources called MC32 and MC33. These have the structure expected of a supernova remnant, and Byrne suggests the X-ray source is a compact object, possibly a neutron star associated with the remnant. A number of X-ray sources in the Milky Way are identified as neutron stars. Theory often regards neutron stars as the remains of stars that have suffered supernova explosions.

The little secrets of 3C 236

Many of the giant radio galaxies consist of double lobes with tails pointing at each other. Between them sometimes appears a compact radio source. One of the most interesting of these is 3C 236, according to E.B. Fomalont of the U.S. National Radio Astronomy Observatory and G.K. Miley of the Leiden Observatory in the Netherlands, because its central component is big enough for its structure to be studied in detail.

In the Sept. 11 NATURE Fomalont and Miley report that they observed 3C 236's central piece at frequencies of 0.4, 2.7 and 8.1 gigahertz with resolution up to 0.13 seconds of arc. They find the central component also has a double structure. The two parts are assymetrically shaped, but they lie along roughly the same axis as the two giant outer lobes. Fomalont and Miley conclude that their observations are compatible with models in which these radio galaxies are formed by continuous flow of matter outward from a small central body along an axis whose alignment remains much the same during the lifetime of the source. Hypotheses of this sort play an important role in recent attempts to classify the radio galaxies and establish an evolutionary sequence (see, for example p. 204).

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