BEHAVIOR

Small households on rise

Despite signs of a rise in baby births (SN: 8/13/77, p. 101), the census bureau reports that more than half the nation's households consist of one or two persons. The data, compiled in March, 1976, represent the continuation of a trend begun in the 1960s, according to the bureau report, "Household and Family Characteristics."

Of all households surveyed, 20.6 percent consist of one person, an increase of 1 percent in a year, and 30.6 percent are made up of two people, about the same as 1975. "Low fertility, postponement of marriage ... the ability of young singles and the elderly to finance and maintain [a household] ... and marital dissolution are all contributors to the increase," the report states. In 1960, one and two-person households accounted for only 40.9 percent of the total. Despite more frequent divorce and later marriage, married couples still make up 65 percent of the country's 73 million households. However, the figure in 1970 was 71 percent. Figures show an increase of 9.5 million households between 1970 and 1976. About 7 of every 10 of those consisted of either persons living alone or with unrelated individuals, or of women maintaining a household with no man present. The number of families headed by a woman with no man present has increased one-third in the last decade, to 7.3 million.

One giant peck for duck-kind

In case you've ever wondered what they do around Des Moines on a slow day, it might be worthwhile to check out the psychology department at Drake University. It seems that Department Chairman Kenneth E. Lloyd and masters candidate Ruth Hurst have taught a mallard duck how to read. "Sir Lancelot," a two-year-old drake, can read "peck" and "turn," and subsequently perform each of those tasks, according to Hurst and Lloyd. They first trained "Lance" to perform in response to colored rectangles, then phased out the rectangles and substituted words, explains the 23-year-old Hurst. Other than reading, Lance is prone to eating, swimming and living with his "comparatively illiterate feminine companion, Lady Guinevere."

NY's looters: Many working, but poor

The widespread looting during New York City's recent blackout was largely attributable to unemployment and poverty among the looters, some observers reasoned. Now, a statistical profile of 2,706 adults arrested in connection with the July lootings indicates that joblessness may have had less of an impact than suspected. But the survey also indicates a low standard of living among most of the defendants.

According to the figures compiled by the independent New York City Criminal Justice Agency, 45 percent of those arrested had jobs—an employment 50 percent higher than among those generally arrested in the city. However, most of those suspects with jobs had take home pay of less than $150 a week, the statistics reveal.

The statistics also show that 10.4 percent of those arrested were on welfare and 30.2 percent were unemployed but not on welfare. That compares with 15.7 percent on welfare and 41.6 percent unemployed in the general defendant population. Of those seized during the blackout, 64.4 percent had records of at least one prior arrest, whereas nearly 70 percent of those arrested in general have similar criminal records. Women represented only 6.7 percent of the blackout defendants, compared with a 16.6 percent figure among those normally arrested.

Officials who conducted the survey caution that the figures refer to persons arrested, not convicted and that they contain no breakdown on the types of jobs held by the suspects.

ASTRONOMY

Tunguska: A comet after all

On June 30, 1908, a fireball came to ground in the remote Tunguska River valley of Siberia. One of the century's most famous mysteries, the Tunguska event has inspired attempted explanations that range from the commonplace to the supernatural. At first it was thought to be a meteorite fall, but visitors to the site found no crater. Among the weirder suggestions are a nuclear explosion, the crash of an alien spacecraft and the collision of the earth with a black hole.

Among the first suggestions was the collison of a comet with the earth, and now that seems to be regarded as the most likely explanation. In fact, the Aug. 11 NEW SCIENTIST calls it "the final answer." Arguments other than science fiction for the nuclear explosion hypothesis depended largely on evidence of fallout. Abnormal amounts of radiocarbon were found in tree-rings that grew in 1909 on a tree near Los Angeles and on one near Tucson. In 1965, Clyde Cowan, C.R. Atluri and Willard Libby published an interpretation of those data that attributed them to fallout from a nuclear explosion at Tunguska. In the Aug. 11 NATURE John Brown of Glasgow University and David Hughes of Sheffield University show that a comet could be responsible for the increased radiocarbon even though the plasma generated as the comet head collided with the atmosphere would have been too cool for the usual sort of thermonuclear effects. Nonthermal accelerations of particles in the plasma could have done enough to account for the observed nuclear effects. In the Aug. 11 NEW SCIENTIST, a report by Y. Vostrukhov sums up the results of several summers of work by expeditions from Tomsk University. Their conclusions, based on analyses of soil at the site as well as nuclear evidence, also support the cometary hypothesis. It seems the Tunguska event was caused by the impact of a comet head made of the same material as carbonaceous chondrite meteorites.

First cosmic X-ray line confirmed

Detection of the first X-ray spectral line emitted by an astrophysical object was reported last winter by a group of German astronomers led by J. Trumper. The line was found in the spectrum of the pulsating X-ray source Hercules X-1 at an energy around 50 kilo-electron volts. In the Aug. 11 NATURE, M. J. Coe, A. R. Engel, J. J. Quenby and C. S. Dyer of Imperial College, London, report that observations by the satellite Ariel confirm the existence of the line but differ somewhat on the exact energy.

A spectral line can give astrophysicists some handle on what's going on in the source. The Imperial College group suggests that this one is cyclotron radiation, which is the emission of electrons spiraling in a magnetic field. The usually quoted model for Hercules X-1 is a binary system composed of a more or less normal star and a neutron star revolving around each other. The X-rays are supposed to come from matter drawn from the normal star and falling onto the neutron star. The neutron star has a magnetic field, and this should set up cyclotron radiation by the infalling matter.

In the usual electromagnetic treatment the possible energies of electrons spiraling in a magnetic field can vary continuously, and this should produce a continuous X-ray spectrum. However, the Imperial College observers propose that a magnetic field as strong as that of Hercules X-1 demands a relativistic treatment, and under such conditions, the possible electron energies are separated into a hierarchy of discrete energy levels separated by quantum gaps. This circumstance should produce a spectrum of discrete lines. And, as the Aug. 11 NEW SCIENTIST points out, it suggests that other lines due to other permitted electron energy levels should appear. Hints of a second line are now coming out of Germany.