

Quasars as galaxy cores: Support from the past

One of the theories of what quasars are regards them as violent events that take place in the centers of galaxies. It is true that quasars look like stars, not galaxies, but proponents of the theory suggest that this is because the bright galactic center, which is star-like in appearance, so outshines the rest of the galaxy that the outlying parts become invisible. Earlier this year Jerome Kristian of the Hale Observatories reported that he had been able to see galaxy-like features under the images of some quasars (SN: 1/20/73, p. 46).

Now, in the Nov. 1 *ASTROPHYSICAL JOURNAL LETTERS* comes news of a known variable galaxy that apparently suffered a quasar-like outburst in the year 1911. Howard E. Bond of Louisiana State University Observatory and Wallace L. W. Sargent of the Hale Observatories report on a historical search of the appearance of the galaxy X Comae Berenices. X Comae Berenices is usually a faint object with an apparent photographic magnitude of 17.5. Most of its light comes from a bright star-like nucleus.

Recent studies have shown that X Comae Berenices occasionally brightens for a few months, and then settles back to long periods of quiescence. But the most interesting event in its history is shown on two plates taken by Max Wolf on the night of March 31, 1911. From these Wolf calculated magnitudes of 12.5 and 12.6. This was a particularly violent outburst, and even allowing for some error in Wolf's measurements, it would have made the nucleus of X Comae Berenices brighter than some known quasars. Looking at the image of X Comae Berenices on present-day Palomar *Sky Atlas* prints and imagining the nucleus that much brighter, Bond and Sargent conclude that it would have washed out the surrounding parts of the galaxy and would have looked like a quasar. They therefore suggest that "in 1911 a quasi-stellar object temporarily appeared in the nucleus of the Seyfert galaxy X Comae."

It would have been very temporary for a quasar. The length of the outburst is not precisely known, but it is established that in 1910 and 1912 the galaxy was at its normal low brightness. Most quasars that are known have lasted as quasars at least for a few years to a decade. Nevertheless Bond and Sargent conclude that "The existence of X Com—an object that apparently can change temporarily from an N-type galaxy to a [quasar] that obliterates the image of its 'host' galaxy"—clearly supports the hypothesis that quasars are events in the nuclei of galaxies. □



New York Zoological Society

Why is this whale smiling?

Only she knows whether or not she is pregnant. Last year, Francis, the Beluga or White whale at the New York Aquarium in Brooklyn, kept her keepers guessing before she went down in history as the first whale to give birth in captivity. Her calf, however, died shortly after birth of a cerebral hemorrhage. Disoriented and frightened by crowds of humans, the young whale had continually butted its head against the walls of the tank.

This year, Francis's keepers think she may be pregnant again. She has gained considerable weight and has proved positive on some of the tests that indicate a human pregnancy. But she has proved negative on other tests, so no one is really sure. To be on the safe side, Francis's keepers have posted a 24-hour watch over her, and her mate has been removed from the tank. If and when Francis gives birth, she and her offspring will be given complete privacy. Mating behavior was noticed in October 1972. Here again there is uncertainty, but whale watchers think the gestation period for White whales is about 14 months. The blessed event is therefore expected right around Christmas time.

Stress and the heart: Direct effects shown

The famous heart surgeon Paul Dudley White, who died recently at the age of 87, once said: "If stress alone could kill you, I would have been dead long ago." But even Dr. White did not rule out the possibility that stress plays a role in heart attack deaths.

Now a team of investigators at the Harvard School of Public Health reports in the Nov. 23 *SCIENCE* that psychologic stress indeed triggers electrical instability (fibrillation) in the ventricles of the heart. Ventricular fibrillation is presumably a major cause of acute heart attacks.

Bernard Lown, Richard Verrier and Ramon Corbalan exposed five dogs to a nonstressful, then stressful environment. During the nonstressful period the dogs had normal heart beats and showed no adverse behavioral effects. But during the stressful period, which consisted of giving them low-energy shocks, they were restless, salivated, experienced tremors, and the ventricles of their hearts showed marked fibrillation. In fact the stress (shocks) lowered the dogs' ventricular fibrillation threshold to only one-third of its control

value. Reductions of such magnitude have been observed during acute heart attacks.

"These findings," the authors conclude, "suggest that psychologic stress can exert a profound effect on the threshold for ventricular fibrillation." As a consequence, psychologic stress may very well be a major factor in heart attack deaths. □

Paris to London chunnel shuttle

After more than 170 years of debate, the English Channel tunnel is about to become a reality (SN: 9/22/73, p. 180). Last week, French President Georges Pompidou and British Prime Minister Edward Heath officiated at the signing of an agreement that calls for the joint construction of a tunnel under the English Channel—a project proposed by Napoleon's engineers in 1802.

The channel tunnel (nicknamed chunnel) will provide a rail bed from Calais, France, to Folkestone, England. By 1980, high-speed trains are expected to be carrying shuttle commuters between Paris and London in less than three hours. □