CYGNUS X-1 is believed to be associated with the star 21HDE 235064, the darkest and largest object in the center of this immense print of a small region of the sky. The photograph was made by Jerome Kristian with the 200-inch reflecting telescope on Palomar Mountain. The photograph plate was exposed so long that exceedingly faint stars (down to the 22nd magnitude) are visible. Superimposed on photograph are location of sources of radio emission (small cross) and of X-ray radiation (white outline). Position of Cygnus X-1 is not known very well from X-ray observations alone because X-ray telescopes have low sensitivity. During last week of March and first week of April 1971, however, Cygnus X-1 underwent a cataclysmic and so far permanent change that caused it to begin emitting radio waves and to double the average energy of its X rays. Because the positions of stellar sources can be measured accurately, the change in Cygnus X-1 assisted astronomers in identifying its location.

\[ \text{mass of the hole's square (in m^2)} = \frac{c}{a} \]

hole. Second, a rotating hole creates a