Galleried cells [HBT, 166]. The prison was built 1816-25.
An early drawing. The prison was dark and dismal since these cells had no outer windows, receiving light from the general area.
An early stereoscopic photographic pair.
Also known as the Eastern Penitentiary, designed 1825 by John Haviland [print of 1855]
The architectural historian Nikolaus Pevsner stated that in the first quarter of the 19th century it was the United States that took the lead both architecturally and functionally in prison design. There were at this time two competing functions. The first was at Auburn in New York State (1816–25) built on the principle of cells for the night but common work rooms for the day. However, Cherry Hill, the Eastern Penitentiary, in Philadelphia, was designed in 1825 on the principle of solitary confinement day and night. The designer was the Englishman John Haviland. His design comprised of three single-storey wings and four wings with galleried cells opening onto a central hall, open from ground to roof.

Around 1833 William Crawford was sent by a British Parliamentary Select Committee to tour US prisons and report on the merits or otherwise of the silent- and separate systems. Contrary to the conclusions of an earlier Select Committee he condemned the silent system while praising many of the features of Cherry Hill. But the 1835 Prisons Act still required enforcement of silence. Later, Crawford with Whitworth Russell (nephew of the Home Secretary) and Captain Joshua Jebb (seconded from the Royal Engineers) produced a series of annual reports for the Home District of prisons (1837–39). “The basis of the system was that each prisoner should sleep and work alone in a large cell which contained all the necessary facilities for prison life including lighting, ventilation, a toilet and basin, and the means to call an officer” [EP, 89].

These ideas, clearly influenced by Cherry Hill, and another Haviland design for the New Jersey State Penitentiary, were embodied in Jebb’s design for a model prison, built at Pentonville in London (1840–42) where he enlisted the help of G & J Haden to provide the heating and ventilating system.

[HBT, 166–68]

*Charles Dickens on his American Journey in 1842 called the Eastern Penitentiary “hopeless...cruel and wrong.” However, many considered the equipment in the cells to be progressive: “Each had hot-water heating, a latrine and a tap.”*
Cherry Hill prison (Eastern Penitentiary), Philadelphia, Pa.: section and plan; John Haviland, 1823–9. 1 warders' room; 2 corridor; 3 cells; 4 small courtyard; 5 heating ducts; 6 administration.

Section and Plan [ANC, 217]
Section showing heating and ventilating arrangements.
[VII, 486, from The Sanitary Engineer, 26 April 1883].
The prison design is modelled on the Pentonville system.
“The Elmira Reformatory, or Penitentiary, is modelled on the Pentonville (or Auburn-the American equivalent) system where the cells are arranged in blocks of several tiers in height, this block being surrounded by an outer building. Between the walls of the outer building and the doors of the tiers of cells and their walkways is an open hall, stretching in height from the lowest to highest levels of the tiers of cells.

Heating is provided by round, vertical tube steam radiators set under the windows, with openings in the centre of the bases. In corresponding openings in the stone flags are set strong cast-iron pipes, with flanges built into the masonry. These pipes extend up through the openings in the bases of the radiators which they fit closely, connecting the fresh-air ducts with the radiators and preventing water (when washing the floors) from entering the ducts.

The number of concentric rows of tubes in the radiator is four. The two outer rows are separated from the inner pair by a galvanized sheet-iron partition, the object being to divide the inside rows from the outer ones so as to make each radiator practically an indirect heater, the air from the duct coming only in contact with the inner rows, while the outer rows warm the air already within the halls and give direct radiation.

Elmira has 500 cells, each with two 4x4-inch flues, one near the ceiling, the other in a cast-iron niche near the floor. The one near the ceiling is fitted with a heavy cast-iron frame built into the walls, while the lower one connects with the top of the “night-bucket” niche. The flues are separate their whole length, each terminating in and main exhaust chamber. There are no means of closing them. Steam coils of $\frac{1}{4}$-inch tubes within the exhaust chamber extend over the upper ends of all the flues, providing heat-assisted ventilation This exhaust air is discharged through a series of roof chimneys (aspirators).

Fresh air is drawn in near the top of a ventilation intake tower (left on drawing) and descends to basement tunnels where it is discharged upwards through the under-window radiators into the hall, being drawn through the cells by the action of the independent flues and out through the aspirator. The aspirator steam coils are on a separate steam system to enable summer ventilation where the radiator system is off. It is recorded that this system caused difficulties in cell temperature control, either overheating the upper cells, or underheating the lower ones.”

[VH, 485-87]