

SCIENTIFIC AMERICAN

[Entered at the Post Office of New York, N. Y., as Second Class Matter.]

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

Vol. XLVI.—No. 20.
[NEW SERIES.]

NEW YORK, MAY 20, 1882.

[\$3.20 per Annum.
[POSTAGE PREPAID.]

HYDRAULIC LIFT ON THE MORRIS CANAL.

In passing from the waters of the Hudson River, opposite New York, to the waters of the Delaware River, opposite Easton, Pa., by the way of the Morris Canal—a distance of 103 miles—the boats are carried over hills to the altitude of 760 feet above tide water level.

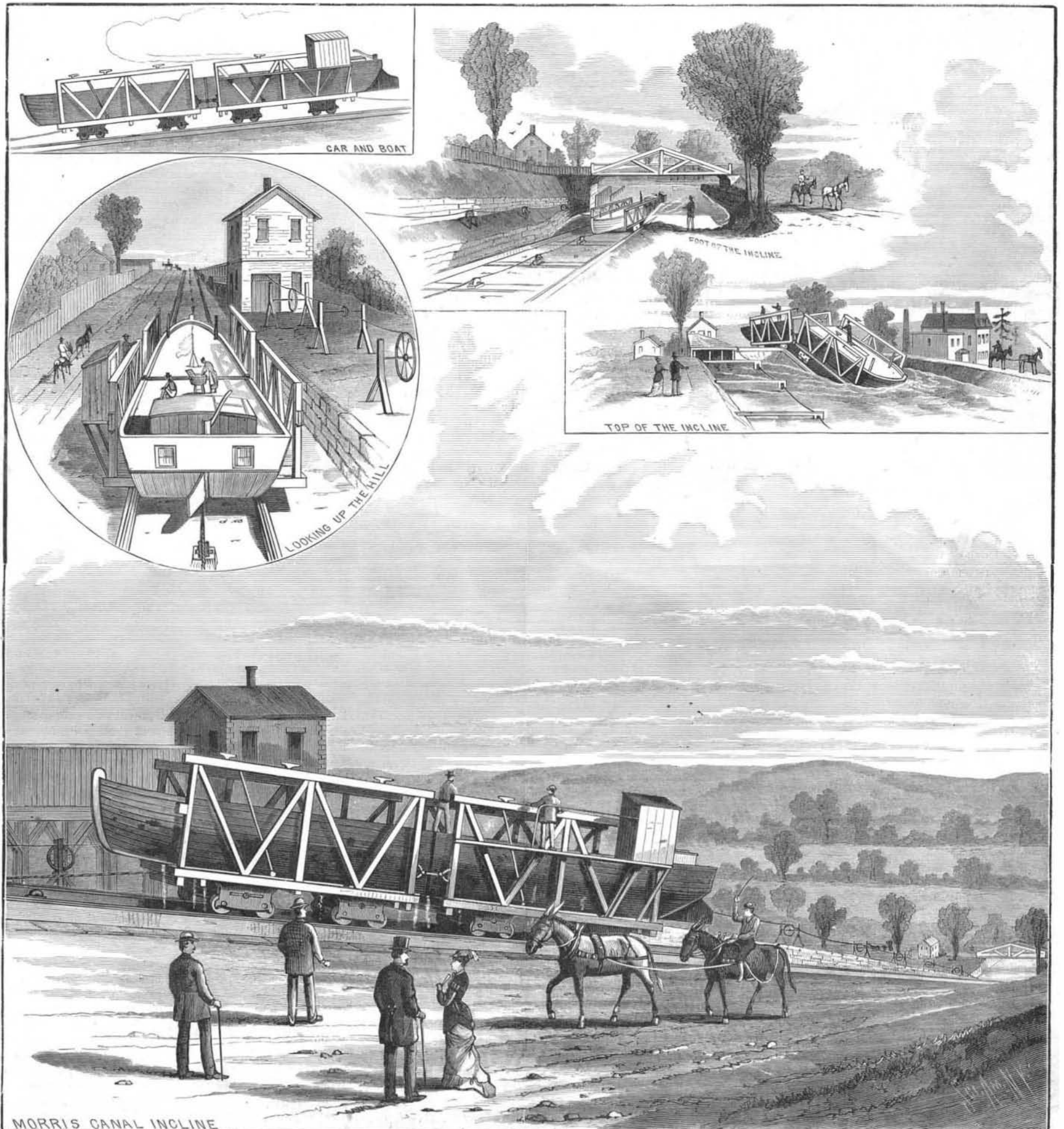
There are two methods of raising and lowering boats in use on this important coal route, one being the usual lift lock, in which the boat is floated into a narrow masonry passage having movable gates, which are far enough apart to receive the boat, so that, by admitting water from above the inclosed level, the boat is raised and floated into the upper canal level. The other plan, which forms the subject

of our illustration, is to haul the boat and its cargo up an incline upon a car.

The termini of the canal levels at Bloomfield, N. J., are separated by an incline about 1,600 feet long and 60 feet high. The canal boat is taken from the lower level and deposited in the upper level by a double car, or rather two cars coupled together, each of sufficient width and length to support one of the halves of the bisected canal boat. A track, consisting of two heavy rails 12 feet apart, guides and supports these cars with their load. A wire rope of 3 inches diameter winding upon a drum 13 feet in diameter draws the car up the incline.

This huge drum is revolved by a turbine water wheel $4\frac{1}{2}$

feet in diameter, placed in the wheel house half way down the incline. The turbine is supplied with water from the upper level and discharges into the lower level. The operation of transferring a boat from one level to another is very rapid; we are informed that four minutes is the usual time for making the transfer. The car not only enters the water below to receive the boat, but enters the water of the upper level to allow the boat to float off. One of our views shows a boat entering the water of the upper level. There are twenty-three of these inclines upon this canal and twenty-four ordinary lift locks. Three of the inclines are double. This lock at Bloomfield gives an idea of the facility with which ponderous bodies may be handled by exceedingly simple means.



HYDRAULIC LIFT ON THE MORRIS CANAL, AT BLOOMFIELD, N. J.