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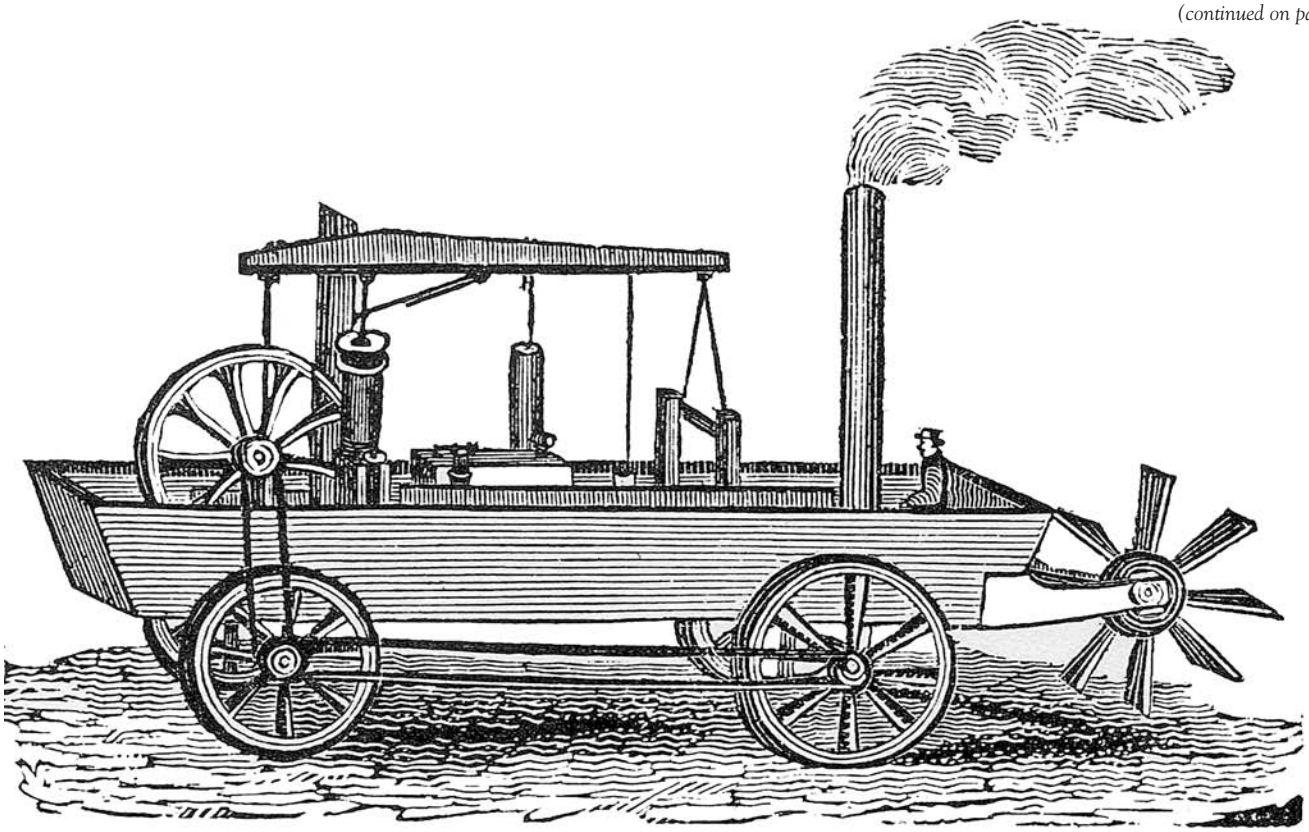
ORUKTER AMPHIBOLOS

Oliver Evans SIA Chapter Plans Celebration of 200th Anniversary of the First Motorized Carriage

In July 1805, a strange vehicle made its way down Philadelphia's Market Street to the Schuylkill River. This was the *Orukter Amphibolos*, a steam-powered amphibious dredge invented by Oliver Evans. The vehicle, widely regarded as the first motorized, wheeled vehicle to travel a public street in the United States, was a major mechanical engineering achievement. The Oliver Evans SIA Chapter will celebrate the 200th anniversary on July 16 with a parade and reenactment. The event will be co-sponsored by the city's water and health departments.

The Philadelphia Board of Health commissioned the *Orukter Amphibolos* in 1805 for its fight against water pollution that contributed to disease. The board desired a dredge to bring up debris and waste from around the city's docks. Oliver Evans was an inventor and manufacturer with a workshop at 9th and Market Streets. He is most often remembered for his automation of flour milling, for his book *The Young Millwright and Miller's Guide* that served as the textbook for millers from its publication in 1795 to the 1880s, and for his invention of the high-pressure steam engine that became the basic power employed in mills and factories as the industrial revolution took hold in the early 19th century.

(continued on page 2)



Orukter Amphibolos. *A conjectural view from* The Mechanic *(Boston, 1834) as reprinted in Eugene S. Ferguson,* Oliver Evans *(1980), p. 40. Evans left no original plans or drawings of the vehicle, although he did leave some notes and a plan for a steam wagon of about the same date, providing some idea of how the* Orukter Amphibolos *may have been propelled.*

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Orukter Amphibolos *(continued from page 1)*

Oliver Evans. From* Appleton's Dictionary of Machines, Mechanics, Engine-Work, and Engineering *(1867).

The *Orukter Amphibolos* was a scow in which Evans placed a high-pressure steam engine and dredging equipment. Utilizing a principle he had previously developed to move grain and flour in mills, the *Orukter Amphibolos* employed a chain of buckets to bring up muck from the harbor to be hauled away by another boat. (Orukter is derived from the Greek word for digger.) Evans had to deliver the 17-ton *Orukter Amphibolos* from his workshop to the river. He placed wheels under it and used steam power to propel it, no mean accomplishment.

In mid July 1805, Philadelphia newspapers reported that the *Orukter Amphibolos* traveled Market Street to Centre Square, the location of the first Philadelphia Water Works and of City Hall today. The vehicle then circled the square for several days so that onlookers could view this unusual sight, contributing 25 cents each to help defray the excessive cost. Finally, the *Orukter Amphibolos* steamed to the banks of the Schuylkill River where it floated on a rising tide and was lifted off its wheels. After Evans had added a paddlewheel at the stern, the *Orukter Amphibolos* steamed down the Schuylkill and around Girard Point before steaming up the Delaware River to the Market Street docks. There the Board of Health took possession. "It is not known how effective the dredge was, but city records indicate the continuous need for further work and repairs until it was sold for scrap in 1809."

On July 16, the Oliver Evans SIA Chapter plans to take part in a reenactment of the *Orukter Amphibolos*'s journey by traveling in a parade of "ducks"—amphibious army vehicles used for tourism. The ducks will circle City Hall and then proceed to the Delaware River to meet the water department's new skimmer, a boat designed to remove debris from the top of the water, continuing the work begun two centuries ago." SIA members will be on hand to explain the history of the *Orukter Amphibolos* and Oliver Evans to the media and public. Info: Jane Mork Gibson, 610-279-6075.

Jane Mork Gibson & Patrick Harshbarger

The *SIA Newsletter* is published quarterly by the Society for Industrial Archeology. It is sent to SIA members, who also receive the Society's journal, *IA*, published biannually. The SIA through its publications, conferences, tours, and projects encourages the study, interpretation, and preservation of historically significant industrial sites, structures, artifacts, and technology. By providing a forum for the discussion and exchange of information, the Society advances an awareness and appreciation of the value of preserving our industrial heritage. Annual membership: individual $35; couple $40; full-time student $20; institutional $50; contributing $75; sustaining $125; corporate $500. For members outside of North America, add $10 surface-mailing fee. Send check or money order payable in U.S. funds to the Society for Industrial Archeology to SIA-HQ, Dept. of Social Sciences, Michigan Technological University, 1400 Townsend Drive, Houghton, MI 49931-1295; (906) 487-1889; *e-mail: SIA@mtu.edu;* Web site: *www.sia-web.org.*

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The *SIA Newsletter* welcomes material and correspondence from members, especially in the form of copy already digested and written! The usefulness and timeliness of the newsletter depends on you, the reader, as an important source of information and opinion.

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In Evans's Own Words

I constructed for the Board of Health of Philadelphia a machine for cleaning docks, called the *Orukter Amphibolos* or Amphibious Digger. It consisted of a heavy flat bottomed boat, 30 feet long and 12 feet broad, with a chain of buckets to bring up the mud, and hooks to clear away sticks, stones, and other obstacles. These buckets are wrought by a small steam engine set in the boat, the cylinder of which is 5 inches diameter and the length of stroke 19 inches. This machine was constructed at my shop, 1½ miles from the river Schuylkill where she was launched. She sunk 19 inches, displacing 551 cubic feet of water, which at 62.5 pounds, the weight of a cubic foot, gives the weight of the boat 34,437 pounds, which divided by 213, the weight of a barrel of flour, gives the weight of 161 barrels of flour that the boat and engine is equal to. Add to this the heavy pieces of timber and wheels used in transporting her, and the number of persons generally in her, will make the whole burden equal to at least 200 barrels of flour. Yet this small engine moved so great a burden, with a gentle motion up Market-street and around the Centre Square; and we concluded from the experiment, that the engine was able to rise any ascent allowed by law on turnpike roads, which is not more than 4 degrees.

When she was launched we fixed a simple wheel at her stern to propel her through the water by the engine. Although she is square at each end and illy constructed for sailing, (excepting that she is turned up short at bottom) and drew 19 inches of water, yet we concluded that if the power had been applied to give the paddle wheel the proper motion we could have stemmed the tide of the Delaware.

—Oliver Evans, quoted in Greville and Dorothy Bathe, *Oliver Evans: A Chronicle of Early American Engineering* (Philadelphia, 1935), p. 111.