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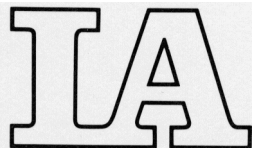
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THE UTM GRID REFERENCE SYSTEM

KEY WORDS: Canadian Surveys and Mapping Branch (Dept. of Energy, Mines, and Resources); coordinate systems; map scale; maps; topography; U.S. Geological Survey; UTM (Universal Transverse Mercator) grid system.

ABSTRACT The Universal Transverse Mercator ("UTM") grid system is a locational device similar to latitude and longitude with great potential for precisely identifying historic sites in the U.S. and Canada. The system is shown on the topographic maps of both countries, and consequently the paper provides an introduction to topography and map scales. The development of plane coordinate systems in general is briefly traced beginning with their development in World War One. The paper provides a practical demonstration of a grid reference computation using the Delaware Aqueduct (SHOHOLA, PA 012921) as an example, and concludes by offering guidelines for the citation of grid references in several printing situations.

REFERENCE: Stott, Peter H., "The UTM Grid Reference System," *IA The Journal of the Society for Industrial Archeology*, Washington, D.C., Vol. 3, No. 1, 1977, pp. 1-14.

THE ALLIGATOR OR STEAM WARPING TUG

KEY WORDS: Technology; History; Steam engine development; Amphibious vehicles; Forest industry; Canada

ABSTRACT: The last half of the nineteenth century saw improvements in the efficiency of steam engines which resulted in a reduction of their size and cost. This led to their widespread adoption as mobile prime-movers on the farm and in many resource-based industries. An interesting Canadian contribution in this period was the invention of the alligator by John Ceburn West of Simcoe, Ontario, which made a notable improvement in the productivity of the forest industry.

The alligator was an amphibian, used on water as a tug, but able to travel on land without its load. The paper describes the design, development, and manufacturing history of this unusual steam-driven device which, despite competition from the internal combustion engine, continued in production until 1934 and in use for a further decade.

REFERENCE: Corby, R. John, "The Alligator or Steam Warping Tug," *IA The Journal of the Society for Industrial Archeology*, Washington, D.C. Vol. 3, No. 1, 1977, pp. 15-42.

**UPPER FACTORY BROOK SAWMILL
MIDDLEFIELD, MASSACHUSETTS**

KEY WORDS : Archeology, Headrace, Mill framing, Millwrighting, Pitman arm, Saw carriage, Sawmill, Tailrace, Technology, Tub wheel, Vertical blade sawmill, Wheelpit, Wooden gearing

ABSTRACT: The rural millwright of early America derived much of his technical information from sources very unlike the engineering texts and journals of today. At best, he followed the “rule of thumb” procedures learned in apprenticeship or found in manuals. At worst, his experience was his only guide. The Upper Factory Brook Sawmill was built by men using “folk” derived knowledge alone, and exhibits several flaws in its construction which reflect the problems created by poor communication of technical information during the early nineteenth century.

REFERENCE: Wilson, John S., “Upper Factory Brook Sawmill, Middlefield, Massachusetts,” IA *The Journal of the Society for Industrial Archeology*, Washington, D.C., Vol. 3, No. 1, pp. 43-52.

UTM Coordinates: Upper Factory Brook Sawmill
N.660700 m. E.4693000 m.