Historic Mills of South West England

HISTORIC TEXTILE MILLS
ENGINEERING SERVICES: PART ONE
GREAT BRITAIN AND USA

BRIAN ROBERTS
ABBEY MILL, BRADFORD-ON-AVON
WILTSHIRE Late Nineteenth Century
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TEXTILE MILLS ENGINEERING SERVICES

PIONEER COMPANIES

BMR, Budleigh Salterton 2021.
SIBLEY MILLS, AUGUSTA, GEORGIA 1880
ENTERPRISE MILL ON AUGUSTA CANAL

SAVANNAH RIVER COTTON EXCHANGE
EAGLE & PHENIX HYDROPOWER PLANT
CHATTANOOCHEE RIVER, COLUMBUS
EAGLE & PHENIX MILLS
TURBINE FOR POWERING GENERATORS
BIBB MILL No. 1, MACON, GEORGIA
CHILD LABOUR
GLOBE MILL, AUGUSTA
CHILD LABOUR
THE TERM **AIR CONDITIONING** 1906

In 1904, Stuart W. Cramer, a prominent textile mill engineer of Charlotte, North Carolina, U.S.A. was engaged in designing and manufacturing humidification and air handling equipment for textile mills. This work was of a pioneering nature based on independent studies of the properties of air and moisture.

To describe the field in which he was working, Mr. Cramer originated the term “air conditioning.” He formally introduced this term at a convention of the American Cotton Manufacturers Association in May 1906. In an address delivered before this convention, Cramer defined air conditioning to include humidifying with its resulting evaporative cooling, also air cleansing, heating, and ventilation.
COTTON RING SPINNING HUMIDIFIERS

Parks-Cramer.
PORCUPINE DRAWING HUMIDIFIERS

Parks-Cramer.
HUMIDIFIERS OPEN FOR CLEANING

Upper casing lowered.

Lower casing raised.
COTTON DRAWING HUMIDIFIERS
AIR WASHERS AND HUMIDIFIERS

Catalog 13
Carrier Air Washers and Humidifiers
Applied to Public Office and Industrial Buildings
With Notes on Humidity

Patented in the United States
Canada and Foreign Countries

Copyright, 1913
Carrier Air Conditioning Company of America
New York City

Carrier Air Conditioning Company of America
39 Cortlandt Street, New York, N. Y.

1913.
AIR WASHER WITH TWO SPRAY BANKS

Carrier 1913.
TEXTILE MILLS HUMIDIFYING

Carrier Engineering Corporation

Humidifying, Dehumidifying, Cooling,
Drying, Air Washing, Automatic Temperature
and Humidity Regulation

39 Cortlandt Street, New York
BOSTON, MASS
PHILADELPHIA
BUFFALO, N.Y.
CHICAGO, ILL.

176 Federal St.
Land Title Bldg.
Mutual Life Bldg.
Transportation Bldg.

Bulletin No. 103

The
Carrier System of Humidifying
as applied to textile mills

Typical Carrier Humidifier with automatic temperature and humidity control. This installation serves the largest alpaca mill in the United States and one in which worsted dress goods and coat linings of the highest quality are made. Farr Alpaca Company, Holyoke, Mass.

Copyrighted, 1916 by Carrier Engineering Corporation
Carrier Equipment in the Chamber of Commerce Testing House, Manchester, England. This is the foremost conditioning house in the textile industry and has adopted the Carrier System in preference to all other American and European apparatus.
TEXTILE MILL AIR CONDITIONING

AIR CONDITIONING IN THE BRITISH TEXTILE MILLS

The old time supremacy of England as a textile nation was due principally to the fact that her climate is moderate, moist, and naturally well-suited to textile manufacture.

In the early days, when the industry was young, most of the machines were driven by hand or foot power, and even when steam power first came into use the machinery was scattered over comparatively large floor areas, so that its mechanical heat was quickly absorbed by the large volume of surrounding air. Today, when textile machinery, running at tremendous speed, is grouped closely on the floor, the mechanical heat is so great that some artificial means of absorbing it must be provided, even in England, in fact, everywhere, because no suitable natural atmospheric condition exists anywhere in the world. The modern mill presents a more complex problem in air conditioning because it produces over a hundred times more yarn or cloth per square foot of floor area, than the early mills.

The pioneer textile manufacturer had to select his mill site with careful regard to climatic conditions, oftentimes sacrificing other advantages to this then essential consideration.

The considerations which guide the manufacturer of today in the location of his mill, should be entirely independent of climate. The modern manufacturer manufactures his own weather, to order.

Take, for instance, a spinning room, 300 ft. long by 100 ft. wide, in which 500 H. P. is used to drive the spindles. The law of Conservation of Energy tells us that we cannot destroy energy, but can only convert it from one form into another. Therefore all of the energy represented by this horse power does not disappear but is dissipated into the mill as heat, being equivalent to 1,270,000 British Thermal Units per hour, which is more than enough to maintain the temperature of the spinning room in the coldest weather.

Take the aforementioned spinning mill as an example, with the following outside conditions:

55 deg. F. dry bulb temperature and 52 deg. F. wet bulb temperature, giving a Relative Humidity of 80%.
Introduction to the Carrier System of Air Conditioning for British Textile Mills
TEXTILE MILL AIR CONDITIONING


Stanhill Ring Mill c.1950.
TEXTILE MILL AIR CONDITIONING


Air conditioning system mixing dampers, Bedford Mill Weaving Shed 1949.
TEXTILE AIR CONDITIONING BROCHURE

Air Conditioning for the Textile Industry

Probably 1950s.
FLAX MILL REDUNDANT STEAM BOILER

Place and date unknown.
TEXTILE MILL CHIMNEYS

Pitch back water wheel at Lumb Mill, Warley, Yorkshire c.1860
Textile manufacturing was revolutionised by the application of water power.
Engine House at Albert Mills. Steam boilers, steam engine and water wheel working in combination driving line shafting to power textile machinery.
TEXTILE MACHINERY ROPE DRIVE

Rope Drive Lowertown Mill, Haworth Yorkshire 1895.
ROPE DRIVE SLOPING ENCLOSURE

Barkerend Mills, Bradford 1870.
ENGINE POWERED ROPE DRIVES

Triple-expansion engines and rope drive, Stockport Mill 1897.

Cross-compound engines and rope drive, Hare Mill, Stansfield 1907.
By 1919, individual electric motors replaced shaft and rope drives. It was estimated that some 2 million horsepower was then in use.
TEXTILE MILLS IN SOUTH WEST ENGLAND

John Heathcoat’s Tiverton Factory, converted serge mill c.1820.

The Great Western Cotton Factory, Barton Hill, Bristol 1838.

Fox Bros., Wellington, Somerset (once largest textile firm in the South West).
SILK OUTWORKERS

Darshill near Shepton Mallet, Somerset c.1910.
Built 1791 at a site suitable for large scale water power.
Originally side-by-side water wheels, part of integrated complex with two mills, a dry house, loomshop and wool stove. Dates from c.1819. Steam engine and boiler added with later change of use.
COLDHARBOUR MILL UFFCULME DEVON

A well-preserved Working Mill Museum with machinery and power systems, dates from 1797.
A Spinning Mill built in two phases 1863 and 1873, becoming an industrial complex with centralised steam plant, early fire alarm system and later a DC electricity plant with steam turbine generators.
A five-storey fireproof spinning mill with weaving shed containing 1000 power looms. Having 3 Boulton & Watt engines and 7 Boilers and located alongside the 1809 Feeder Canal, a source of water supply. It is said the first bales of cotton were imported in the maiden voyage of Brunel's SS Great Britain (now a Museum in the Bristol Harbour).
GLOUCESTERSHIRE MILLS

Power-loom weaving (with overhead line shafting) at Longfords Mill c.1912.

A later self-acting very long Spinning Mule at Stanley Mill (photo of 1910).
A VARIETY OF BOBBIN MACHINES
REFERENCES AND FURTHER READING

Ebley Cloth Mills, Stroud c.1850: (below) Longford Mills Dye House, Stroud c.1912.

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1992 Cotton Mills in Greater Manchester, Mike Williams with D. A. Farne.
1995 Yorkshire Textile Mills 1770-1930, Royal Commission for Historic Monuments etc.
2013 Textile Mills of South West England, Mike Williams, English Heritage.

Publications by Parks-Cramer and Carrier are held in the Heritage Group Archive
with examples on the Heritage website.