

WILLIAM J. YOUNG (1825 - 1866)
WILLIAM J. YOUNG & CO. (1867 - 1870)
WILLIAM J. YOUNG & SONS (1871 - 1880)
YOUNG & SONS (1881 - 1918)

Philadelphia, Pennsylvania

William James Young, who was born in Scotland in 1800, was indentured to Thomas Whitney of the township of Northern Liberties, County of Philadelphia, Pennsylvania, by and with the consent of his father, William Young, on January 30, 1813. This indenture is illustrated on page 176

Philadelphia Directories

William J. Young is first listed in the Philadelphia directories in 1825 as a mathematical instrument maker at 224 South Second Street. From 1837 to 1855 he was at 9 Dock. From 1855 to 1918, William J. Young and the various Young companies were at 43 North Seventh Street. In 1918 the company was taken over by Keuffel & Esser and the patterns and equipment were moved to Hoboken, New Jersey. 1825-1866 the listing is, Young, William J. mathematical instrument maker. 1867-1870, Young, William J. & Co. (William J. Young, Thomas N. Watson and Charles S. Heller.) 1871-80, Young, William J. & Sons (Alfred and T. Benton) 1881-1882, Young & Sons (Alfred). 1882-1918, Young & Sons (Alfred C.)

William J. Young had two sons, Alfred who was born in Philadelphia in 1832. His death occurred March 31, 1882. T. Benton, the other son, the record of his birth and death are yet (1962) to be found, was associated with the firm from 1871 to 1880, though he is listed as a mathematical instrument maker in the 1881 and 1882 directories living at 916 N. 13th Street.

The grandson, Alfred Cantrell was also born in Philadelphia on January 15, 1861. He died May 5, 1918.

William J. Young died in Philadelphia on July 4, 1870.

From the Fifth edition of the catalog of Young & Sons dated April 1878, a copy of which is part of the Library of Mr. W. H. Bolter, Keuffel & Esser Co., Hoboken, New Jersey, is taken the following paragraphs.

"The earlier manufacture of the Transit instrument was, for want of conveniences, attended with many difficulties. The art of Graduation had as yet made little progress, and the introduction of the Transit called for nearer approach to perfection. The first Graduating machines were extremely primitive, consisting simply of a circular plate of about 18 inches in diameter, upon which degrees and half degrees were marked off, either by mechanical sub-divisions, or from

a similar plate. The one in the establishment of W. J. Young bears the name of ADAMS, MAKER, LONDON, and consists of such a plate as we have described.

Such were the means of graduation in 1820. Mr. Young started, as soon as he commenced business in 1820, the construction of an engine of twenty-four inches in diameter, worked by an endless screw and treadle; and shortly after introduction of the Transit commenced another of twenty-six inches diameter, for finer work, in which a new and important principal of construction for these engines were introduced. A few years afterwards, this same machine was rendered Automatic, and is yet doing active duty, second to none outside of the establishment for accuracy.

The completion of the large forty-eight inch Graduating Engine, W. J. Young, which he intended to be the perfect engine of the world, completed a line of Graduating engines, which, for completeness of range, is certainly not equalled here, perhaps not in any establishment in Europe."

It is interesting to note that the will of William J. Young Philadelphia County Will Book 68 page 343 begins

First -- Pay all debts and funeral expenses

Second --I give and bequeath to my son, Alfred my large graduating machine which was made for him.

The following paragraphs are taken from the Fifteenth Edition of Young & Sons catalog dated January 1, 1896. A copy of this catalog is in the Gurley Museum Library.

"William J. Young invented the transit instrument in 1831, a long stride in the improvement of engineering appliances; and that it retains today its almost identical first form, proves the value of its introduction and the good judgment of the inventor. The English Theodolite, capable of performing the same work, was not in favor with the earlier American engineers, its workings being slow and inconvenient, and its use attended with many discomforts."

"Messrs. Young lately built a Graduating Engine costing \$7,000, and four years were occupied by three of their best workmen in testing and correcting it, that it might be, as intended, a manual of precise scientific mechanism, and enable them to guarantee their astronomical instruments as the finest work of the class produced in this country, and equal to the best European work; instruments with circles as large as forty-four inches can be graduated on their engines. In their line of manufactures, Young & Sons admittedly lead the trade in the United States, and with confidence in their superiority, can request the attention of colleges, institutions of learning, civil and mining engineers, and private parties to their facilities and ability to produce perfect work in their specialties.

-Balch Mining Interests of the United States."

"With this edition, we present to the Civil Engineers of this and, foreign countries, a more complete view of our line of Circular Graduating Engines. From this they may be able to judge of our capacity, both positive and comparative, to insure accuracy in the most important part of their instruments; also to judge of the labor and expense we have incurred that the work may be faithfully performed, and be such as they can implicitly rely upon.

These Engines have all been made in our establishment. They represent a cost greater, we believe, than the combined cost of all the Graduating Engines in our country; and of themselves a cost greater than the combined cost of all the instrument establishments of this city.

They are: A Foot Engine, of 22 inches diameter, used for Protractors, Needle Rings, and such work requiring heavy graduations, but not especial accuracy.

An automaton Engine, of 24 inches diameter, upon which is placed finer work, and which is capable, by late test, of finer graduations than any similar engine of this country.

The large Automaton Engine, 48 inches diameter, which is intended for the finest astronomical and other work, and which is unequalled and unapproached by any such engine here. Upon this engine we now graduate our Engineers' Transits, etc."

"In the year 1831, the first Transit was made by William J. Young. It was graduated to read by vernier to 3 minutes, it being in early days a favorite idea of inventor that graduations of 3 minutes could be easily read to one minute, and was less perplexing to use. The instrument had an outkeeper for tallying the outs of the chain, and a universal or round level. The needle was about 5 inches; the telescope 9 inches, of low power. The standards were of almost identical pattern now used by some makers."

In the preface of William A. Burt's "A Key to the Solar Compass and Surveyor's Companion" it states, "A model of this instrument was made in the year 1835, by the inventor, in order to test its principles, and the latter part of the same year, the first Solar Compass was made, under his direction and supervision, by William J. Young of Philadelphia, Pennsylvania.

There are in the Gurley Museum and in the Smithsonian Institution, replicas of the Burt Solar Compass which were made in the Gurley factory in 1961. The dimensions of these models were obtained from a photograph of the original patent drawing.

The Delaware County Historical Society, 410-12 Market street, Chester, Pennsylvania and the Tama County Historical Society, Court House, Toledo, Iowa, each has a W. J. Young surveyor's compass. The Oklahoma Historical Society, Historical Building, Oklahoma has a Wm. J. Young & Sons surveyor's compass. The Blair County

Historical Society, 2616 - 5 Avenue, Altoona, Pennsylvania and the Historical Society of Western Pennsylvania, 4338 Bigelow Blvd., Pittsburgh 13, Pennsylvania each has a W. J. Young transit.

The fire of May 1862 destroyed many of the Gurley records, but it is interesting to note that from January 1863 the records are quite complete. Since that time, many W. J. Young and Young & Sons transits, levels and compasses have been serviced in the Gurley factory.

In the Gurley Museum are two transits, one with a Smith Solar Attachment. They are engraved as follows:

Young & Sons
Trade Mark
Made by
Y & S Dept.
Keuffel & Esser Co.
New York
Serial 88090
9" telescope, 5" limb
3-1/2" needle

Young & Sons
Philadelphia
Smith Solar Attachment
Serial 8589
9" telescope, 4-3/4" limb
3-1/4" needle



The first American Transit made by William J. Young in Philadelphia
Photo Courtesy Keuffel & Esser Co. Hoboken, New Jersey

www.compleatsurveyor.com

His Indenture

Witnesseth That William Jones Young by and with the consent of his father William Jones (deceased)

HATH put himself, and by these Presents, he said William Jones Young DOTH voluntarily, and of his own free Will and Accord, put himself Apprentice to Thomas Whiting of the County of Chester, State of New York, to learn his Art, Trade, and Mystery, and after the manner of an Apprentice to serve from the Day of the Date hereof, for and during, and to the full end and Term of seven years

next ensuing. During all which Term, the said Apprentice his said Master faithfully shall serve, his Secrets keep, his lawful Commands every where readily obey. He shall do no damage to his said Master, nor see it to be done by others, without letting or giving notice thereof to his said Master. He shall not waste his said Master's Goods nor lend them unlawfully to any. He shall not commit Fornications, nor contract Matrimony within the said term. He shall not play at Cards, Dice, or any other unlawful Game, whereby his said Master may have damage. With his own Goods, nor the Goods of others, without licence from his said Master, he shall neither buy nor sell. He shall not absent himself Day nor Night from his said Master's Service, without his licence. He shall not haunt the House, Tavern, Play, or any other place, but in all things behave himself as a faithful Apprentice ought to do during the said Term, and the said Master shall use the utmost of his Endeavours to teach or cause to be taught or instructed the said Apprentice in the Trade or Mystery of a Mathematical Instrument Maker, and procure and provide for him sufficient Meat, Drink, Weaving Apparel, Lodging and Washing, fitting for an Apprentice, during the said Term of seven years, and at the expiration of the said Term to have Christy Sellers Lawfull Heir of the United States of America as freedom

AND for the true Performance of all and singular the Covenants and Agreements aforesaid, the said Parties bind themselves each unto the other, firmly by these Presents. IN WITNESS whereof, the said Parties have interchangeably set their Hands and Seals hereunto. Dated the 1st day of January Annoque Domini, one thousand, eight hundred and 42

Sealed and delivered in the Presence of
James J. [unclear]
John [unclear]
W. J. Young
M. [unclear]

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