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The Apprentice Training Program

The Textile Machine Works manufactures full-fashioned knitting machines, various types of braiding machines, wire products, auxiliary equipment for the knitting trade, and gray iron, aluminum, brass and bronze castings.

The chief product is the "Reading" full-fashioned knitting machine, a 16-ton precision machine consisting of more than 180,000 parts and capable of producing 30 stockings simultaneously in one series of operations. To make these parts and assemble the machine requires a vast organization of skilled craftsmen.

To assure a source of thoroughly trained men—constantly available—an apprentice training program was started by the Textile Machine Works a half century ago.

Twenty-five years ago the founders of the firm further realized the need for more technically-trained men, schooled both in the theoretical and practical aspects of modern industrial practice. Therefore, they expanded the Apprentice-Training Program to include a cooperative technical course at The Wyomissing Polytechnic Institute. Results of its operation have been gratifying both to the management and to the men who have benefited thereby.

An apprentice under this system acquires a combination of practical experience and theory. He alternates periodically between shop and classroom. These
alternate periods of study and practical work provide mental refreshment and a stimulating change-of-pace for him. His contacts in the shop and in the classroom build up a background of experiences which will influence his future.

As an employee of the Textile Machine Works he will become eligible for various extra benefits and advantages which every member of the organization shares.

These include free life insurance, pensions upon retirement, protection in case of illness or accident, vacations with pay, medical service and other equally valuable benefits provided by the Company at a cost of more than two million dollars a year.

**Trade Apprenticeships Available**

The Textile Machine Works provides opportunities for young men to enter apprenticeships in the following trades:

- Cabinetmaker
- Diemaker
- Draftsman
- Electrician
- Foundryman
- Laboratory Technician
- Machinist
- Metal Patternmaker
- Plumber
- Sheet Metalworker
- Toolmaker
- Wood Patternmaker
Entrance Requirements

Young men between the ages of seventeen and twenty-five, preferably high school graduates, who meet the prescribed physical and mental standards are eligible for apprenticeships.

A high school diploma is not required, however young men who are planning to apply for admission should first complete their high school education so that they will be better prepared to more readily adapt themselves to the theoretical training.

An applicant should be sure of his vocational aim in selecting this training program in order to prevent the possibility of future dissatisfaction resulting from an unwise choice of an occupation.

If he has a genuine liking for shop life and a desire to perform interesting, creative work which requires precision and mechanical exactness, it is likely that he will be capable of acquiring the skills essential to a good craftsman.

The Textile Machine Works Apprentice Training Program includes a cooperative technical course at The Wyomissing Polytechnic Institute. The applicant's scholastic background must indicate that he has ability to acquire a technical education.

In fairness to the applicant and to the Company, an applicant can not be accepted unless his school record indicates, in general, the will and ability to
profit from a thorough training program which requires a considerable expenditure of effort on the part of the apprentice.

Applicants having successfully pursued the following subjects will be given preference: Algebra, 1½ years; Plane Geometry, 1 year; Trigonometry, ½ year; Physics and/or Chemistry, 1 year.

Applicants in the upper two-fifths of the graduating class of an accredited high school will be accepted by the Institute without entrance examinations. Others will be required to pass examinations in Mathematics, Physics and Chemistry.

**Procedure for Making Application**

An applicant must apply in person to the Employment Department of the Textile Machine Works. Here he fills out a personnel questionnaire, and is interviewed concerning his qualifications for the trade he desires to learn. He is also interviewed at The Wyomissing Polytechnic Institute regarding his scholastic eligibility and acceptability.

The employment manager of Textile Machine Works and the president of The Wyomissing Polytechnic Institute carefully select those applicants whose scholastic records, physical fitness, character, and previous experience qualify them for the available apprenticeships.
Apprentice training is a four year course covering 8,320 hours of service with the Company. A total of 6,395 hours are devoted to trade training in the shop, and 1,925 classroom hours are given to the cooperative technical curriculum at The Wyomissing Polytechnic Institute.

A schedule of work assignments is planned for the apprentice of each trade. He follows this schedule through the various departments in a progressive sequence so that he will receive the benefit of the proper experiences necessary to qualify him for his chosen trade. His aptitude for the trade of his choice is closely observed by apprentice instructors.

Every apprentice serves a six month probationary period before he is definitely accepted for the Apprentice Training Program. During this time he is employed for wages in the various departments of the Textile Machine Works. While thus employed the apprentice may be required to take a related course in the Technical Evening School of The Wyomissing Polytechnic Institute.

Probationary period service time counts toward the total time required to complete the Apprentice Training Program.
Apprentice Counseling and Supervision

While employed in shop training the apprentice is under the guidance of the foreman of the department in which he is currently working. He is rotated from job to job so that he may learn each step of the trade in that department.

Apprentice instructors follow the apprentice’s work progress, direct his job rotation, his shop instruction, and assists him in his general problems.

They also review each apprentice’s progress periodically with the Apprentice Training Committee. His conduct, production ability, personal characteristics and initiative are carefully considered. Records of all phases of the apprentice’s shop and school training are kept by the Textile Machine Works and by The Wyoming Polytechnic Institute.

An apprentice who fails to meet the required standards of the shop or school will receive additional attention and help. Every effort is made to assist the young man to overcome his difficulties. However, if he fails to respond, the Company will terminate his apprenticeship and employment.

Apprentice Agreements

When the applicant has satisfactorily completed his probationary period of employment he is accepted for an apprenticeship by the Textile Machine Works and enters into a contract with the Company.
The apprentice signs the contract, unless he is a minor, in which case the parent or guardian must witness the signing of the contract. The main conditions of the contract are:

The apprentice agrees to work for the Company the prescribed amount of time and to perform diligently and faithfully all the work processes of the trade that are taught him. He must obey the rules of the Company and follow the instructions of the foreman. He must attend The Wyomissing Polytechnic Institute as shall be prescribed by the Company, and to provide himself with all the textbooks and other equipment necessary for the course.

The Company agrees to employ and teach the apprentice the trade designated in the agreement in conformity with a schedule of the work processes prescribed for that trade. It agrees to pay wages at certain specified hourly rates.

Leaves of absence will be granted in the event of his illness or other conditions beyond his control.

The Company has the right to reduce the number of hours of employment, or suspend employment in the event of a business depression, or to dismiss the apprentice from its employ and terminate the contract if the apprentice fails to comply with the Company's rules and regulations, shows a lack of industry or capacity, is indifferent to his duty, or conducts himself improperly either within or outside the plant.
Cooperative Technical Education

The Cooperative Technical Course has been included in the apprentice training program to provide the student with fundamental knowledge of the technical and economic phases of production as well as with the manipulative skill or trade ability characteristics of a craftsman. All apprentices pursue the same curriculum while attending The Wyomissing Polytechnic Institute.

A total of 1,925 classroom hours is required for graduation from this course, which the apprentice pursues during the first two and one-half years of service. Hourly credit granted for school attendance counts as part of the total time required for completion of the apprenticeship.

An apprentice who has failed a subject has the opportunity to repeat that subject in the Technical Evening School of The Wyomissing Polytechnic Institute, and in that way make up the necessary credit for graduation.

During the first two and-a-half years of training the apprentices are divided into two groups of equal size; one group attends school at the opening of the Institute term while the other group remains in the shops. Every four weeks the two groups exchange places. This alternating program continues throughout the school year of forty-four weeks. A total of twenty-two weeks per year is spent in school and thirty weeks per year in the shops.
TEXTILE MACHINE WORKS' apprentice is normally employed eight hours a day for five days a week, or a total of forty hours per week during his shop-training periods.

During his school periods at The Wyomissing Polytechnic Institute the apprentice attends classes seven hours daily for five days a week making a total of thirty-five hours per week. Attendance may be required at special classes on Saturday morning.

The apprentice receives pay only during the four-week periods of shop-training. He does not receive pay for the four-week periods of school. The Company pays his tuition, but the apprentice purchases his own books and other supplies. These may be obtained at cost price from the Institute's book store. The total school cost for an average year is approximately $50.00.

Following are the hourly rates paid the apprentices at the present date: (April, 1952)

- First year ..... (2,080 hours) $ .89 per hour
- Second year ..... (2,080 hours) $ .96 per hour
- Third year ..... (2,080 hours) $1.02 per hour
- Fourth year ..... (2,080 hours) $1.10 per hour

When he completes 8,320 hours of service the Company awards him a bonus of $200.00. Since rates of pay are subject to change, current information may be obtained from the Textile Machine Works employment office. The Company reserves the right to alter the rates of pay or the amount of bonus at its discretion.
THE

TEXTILE MACHINE WORKS

... a unit of the Wyomissing Industries, covering more than fifty-seven acres with well over a million square feet of manufacturing space, lies to the left of the Park Road Bridge. The Textile Machine Works Foundry is to the right of the bridge at the top left center.
Scholarships

THE TEXTILE MACHINE WORKS awards scholarships to outstanding apprentices through which they may continue their technical education at an accredited engineering college or university.

Scholarships are awarded on the basis of a competitive examination conducted at The Wyomissing Polytechnic Institute. Candidates must have completed their apprenticeships and must have outstanding records in both shop and school.

Each scholarship, with an annual value of $1,200, is granted for one year and is renewable for two additional years, provided the recipient has been successful in his studies. Ordinarily three years is adequate time in which to obtain a degree, for the winner of a scholarship enters college with at least one year’s credit for the work he completed at the Institute.

The successful candidates will be considered on leave of absence from the Textile Machine Works until they graduate from college, thereby retaining their status with the Company as employees.

The selection of the college or university is left to the scholarship winners, however the scholarships offered are restricted to courses in mechanical, electrical, and industrial engineering, and metallurgy.
Certification

A JOURNEYMAN’s Certificate in the trade for which he has been trained is awarded to the apprentice upon his satisfactory completion of the apprentice-training program, provided that he has already earned the Certificate of Graduation awarded by The Wyomissing Polytechnic Institute.

The apprentice who has successfully completed his training with Textile Machine Works and who desires to continue his education in a college or university receives from one to one-and-a-half years of college credit.

An apprentice who has not completed his training with Textile Machine Works, but has completed his course at The Wyomissing Polytechnic Institute and who leaves the employ of the Company to continue his education, may have his records transferred with the approval of the Textile Machine Works.

Special Credit

A N apprentice desiring Toolmaking or Diemaking must first complete his trade as a Machinist with 8,320 hours of apprenticeship. Then after an additional two years of successful practical experience in Tool or Die work at Textile Machine Works, recognition in these trades will be certified.
Trade Training Programs

Every apprentice begins his shop training program in a Small-Parts Department where he becomes acquainted with factory working conditions. Here he actually performs hand-work to improve his manual skill. He is then placed in the Jobbing Department and will be rotated through the Drill Press, Milling, Engine Lathe, Screw Machine, Shaping, and Grinding Departments where he will operate all types of machine tools.

During their first and second years in the program, apprentices in the Machinist, Toolmaker, Diemaker, Sheetmetal Worker, Metal Patternmaker and Mechanical Draftsman trades, all receive the same training in the above listed departments. However, during the third and fourth years each apprentice specializes in his chosen trade.

The Laboratory Technician as well as the Plumber, Cabinetmaker, Wood Patternmaker and Electrician apprentice, spends his first year in a general routing similar to that for apprentices in the metal trades. During the second, third and fourth years he is assigned to departments where he specializes in training for his respective trade.
The Trades

Following are descriptions of the various trades for which the Textile Machine Works offers apprenticeships:

Machinist

A Machinist carries through to completion the construction and repair of all kinds of metal parts, tools, and machines; understands blueprints and written specifications; uses skillfully all machinist hand tools including scrapers, chisels, files and measuring instruments; operates all machine tools including lathes, milling machines, planers, shapers and specialized machines that have been developed from them. He possesses knowledge of shop mathematics, the use of charts and tables, the efficient planning of shop work, the dimensions and uses of standard bolts, screws, threads, and tapers; he must be familiar with the working properties of such metals as aluminum, brass, cast and wrought iron, and various steels, and should be capable of shaping metal parts to precise dimensions within the close tolerances prescribed.
Wood Patternmaker

He builds wooden patterns, core boxes and gate patterns according to dimensions shown on blueprints by gluing, nailing, screwing, sawing, planing, sanding and painting, using hand tools such as saws, planes, chisels, gouges and mallets and shop machines such as the band saw, circular saw, borer, router, lathe, planer, drill press, sander and shaper. He checks results with calipers, rules, shrinkage rules, protractors, squares, straight-edges and other measuring instruments.

Sheet Metalworker

He forms, assembles, alters, repairs and installs sheet metal articles and equipment; cuts metal with hand shears, rotary shears, square shears and shapes metal by hand or forming machine, punches or drills holes for rivets, and then assembles sheet metal parts, brackets, and hangers; bolts, rivets, or fits them into units for erection. He makes attachments, seams, and joints by welding, riveting, bolting and soldering. He grinds or files seams, joints, or rough surfaces with grinding wheels or files. He marks layouts on sheet metal according to blueprints and specifications.
**Foundryman**

The Foundryman receives a working knowledge of the manufacturing processes used in the Foundry, such as the making of molds by hand and machine, coremaking by hand and machine, sand control, elementary metallurgy and cupola operation, pouring of metals and analysis of castings in relation to methods used, cleaning, inspection and checking trueness of castings to pattern and drawing specifications, comparison of chemical and physical properties with standards and specifications.

**Electrician**

An Electrician lays out assemblies, installs and tests electrical fixtures, apparatus and control equipment, plans proposed installations from blueprints, sketches or specifications of electric wiring and equipment, and maintains shop electrical equipment.
Metal Patternmaker

He performs all the machine operations on rough metal castings designed for use as metal patterns or core boxes, such as milling, boring, drilling, grinding and lathe turning. He performs all the hand-finishing operations on such castings required to complete a metal pattern.

Toolmaker

A Toolmaker must be qualified as a Machinist and, in addition, he must construct, repair, maintain and calibrate machine shop tools, jigs, fixtures, and instruments, operating various machine tools, and performing other highly skilled work, such as laying out, fitting and assembling parts. At the Textile Machine Works an apprentice qualifies himself as a Toolmaker only after he has spent two additional years of service and training in the Toolmaking Department.
Draftsman

Using knowledge which he has gained through basic machinist training of approximately two years in the machine shops, the Mechanical Draftsman designs and details knitting machine and braiding machine parts and units as well as the tools, jigs, and fixtures necessary for producing them in our production machine-tool departments.

Cabinetmaker

The Cabinetmaker performs the hand carpentry necessary to cut, shape, and assemble parts of high-grade articles of furniture. He lays out the outline or dimensions of parts on paper or stock lumber specified and performs all the machine operations on the bandsaw, jigsaw, circular saw, planer, jointer, router, shaper, drill press, or lathe. He also installs all hardware required.
**Diemaker**

A Diemaker must be fully-qualified as a Machinist, and, in addition, he must do precision bench work required in making punches and dies, including filing, scraping, lapping, fitting, and assembling. Necessity of adhering to the finest tolerances requires thorough knowledge of metals, exceptional mechanical ability, and utmost patience. Work must conform to strict blueprint specifications and is checked constantly through use of micrometers, precision blocks, indicators, etc. At the Textile Machine Works an apprentice qualifies himself as a Diemaker only after he has spent two additional years of service and training in the Die-making Department.

**Laboratory Technician**

The Laboratory Technician makes qualitative and quantitative analyses of metal samples and foundry raw materials. He checks the tensile properties and hardness of the various metals and assists in metallographic studies of their structural characteristics. He performs tests to check the physical properties of core and molding sands and assists in tests and investigations pertaining to quality control.
## Curriculum
The Wyomissing Polytechnic Institute

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Faculty
The Wyomissing Polytechnic Institute

ARTHUR C. HARPER, B.S., M.S., President Emeritus
T. GLENWOOD STOUT, B.S., M.S., President

RODNEY S. DIETRICH
Instructor in Electricity and Mathematics

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Instructor in Kinematics, Engineering Drawing, and Descriptive Geometry

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M.L., University of Pittsburgh
Instructor in English and Economics

CHAUNCEY R. KAY
Instructor in Shop Theory, Engineering Drawing, and Mathematics

RUSSELL LAUCK
Instructor in Knitting Machinery

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B.E., Yale University
Instructor in Mathematics and Strength of Materials

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B.S., Albright College
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NICHOLAS J. SHEETZ
B.S., Albright College
Instructor in Physics

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Executive Director of Co-operative Service

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Chief Engineer, Textile Machine Works

WILLIAM C. BRENNER
Assistant to Vice president-Manufacturing, Berkshire Knitting Mills

LEROY M. BURKHOLDER
Assistant Director Industrial Relations, Textile Machine Works

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Vice president, Narrow Fabric Company

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Employment Manager, Textile Machine Works

HANNE GRAMM
Director Industrial Relations, Textile Machine Works

FRANK B. HOWER
Assistant Secretary, Textile Machine Works

J. LEROY KLINE
Personnel Director and Assistant to Vice president-Manufacturing Textile Machine Works

WILLIAM E. SHEELER
Superintendent of Production Machinery, Berkshire Knitting Mills

HERMAN STAUBS
Equipment and Sub-contract Director, Textile Machine Works

T. GLENWOOD STOUT
President, The Wyomissing Polytechnic Institute
Apprentice Training Committee

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Personnel Director and Assistant to Vice president-Manufacturing
Textile Machine Works

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Assistant Director Industrial Relations, Textile Machine Works

Hermann P. Good
Manager Foundry Division, Textile Machine Works

Hans Gramm
Director Industrial Relations, Textile Machine Works

David M. Fleischmann
Employment Manager, Textile Machine Works

Adam Hehn
Apprentice Instructor, Textile Machine Works

T. Glenwood Stout
President, The Wyomissing Polytechnic Institute

Harry W. Swartz
Supervisor of Apprentices, Textile Machine Works