The

FACILITIES

of AMI *Incorporated*

FACTORY AND GENERAL OFFICES • 1500 UNION AVENUE, S. E., GRAND RAPIDS 2, MICHIGAN

AMI *Incorporated*

A BRIEF HISTORY

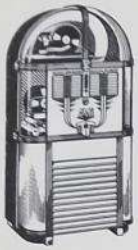
AMI Incorporated is the outgrowth of a small company founded in 1909 to manufacture automatic electric pianos equipped with a selector device that enabled patrons to hear the tune of their choice. This innovation met with instant public acceptance and typifies the imagination and forward thinking that have characterized AMI and its predecessor companies for the past 40 years.

In 1926, when the automatic selective phonograph was in the process of development, the company's engineers devoted their efforts toward perfecting the product and standardizing parts and production methods in order to make possible mass production of the record players at lower cost. The present stature of the juke box industry is due in no small part to the never-ending research for product improvement and production economies on the part of AMI's engineering and production staffs.

During World War II, the company not only engaged in war production, but also built automatic selective phonographs for the Armed Services. High priorities were granted to the company for this assignment when it was found that the presence of juke boxes in camps, bases, post exchanges, and similar locations was a valuable adjunct to the vital job of maintaining morale and providing relaxation among Service personnel.

At the conclusion of World War II, the company began the development of its postwar product. Wartime research contributed heavily to the new models. Cabinets are now molded of plywood, a process adapted from the molding of plywood boat hulls and gliders during the war. Molded plexiglass, similar to that developed for airplane turrets and bomber noses, is now used extensively in the AMI juke box.

Despite its 40-year existence, AMI is youthful in its thinking, progressive in its management, aggressive in its planning. A closely-knit organization of engineers and production men, AMI continues to pioneer, to experiment, to develop, with the single-purposed aim of producing a better product at the lowest cost consistent with top quality.



the Juke Box . . .

A COMPLEX ELECTRONIC MECHANISM

Basically, the juke box is a phonograph. However, its mechanism resembles that of the familiar home-type record player even more remotely than its flamboyant appearance resembles the period styling of its residential counterpart. Nothing more is asked of the home record player than that it reproduce recorded music in sequence from a series of records stacked on the spindle.

The juke box, on the other hand, makes available to the patron a wide choice of selections, any one or several of which may be played by depositing a coin of the proper denomination and pressing the proper selector button or buttons. Thus, if a patron desires to choose as many as twenty four selections at one time, he merely deposits the proper coins and presses the twenty-four buttons corresponding to the tunes he wishes to hear. Two electro mechanical devices are immediately set into operation, the Credit Unit and the Record Changer Mechanism.

It is the function of the Credit Unit to "remember" the value of the coins deposited and to permit the selection of the appropriate number of recordings. For example, if the box permits six plays for 25 cents, the depositing of a 25-cent coin will cause the Credit Unit to energize the correct electrical circuit each time a selector button is pushed, up to six selections. Any buttons pushed in excess of six will be ignored by the Credit Unit unless additional coins are deposited.

The function of the Record Changer Mechanism is to "remember" the selections which have been made and to play them in sequence. To accomplish this, the mechanism must choose the proper record from the record rack, place it upon the turntable, and, at the completion of the "play," return the record to its proper place on the rack. The next record in the sequence is then chosen, and the cycle is repeated.

In addition, of course, there is a complete sound system, consisting of crystal pickup, amplifier, and loud-speaker. The AMI amplifier has sufficient capacity to operate up to six remote speakers.

Besides its function as a purveyor of music, the juke box must protect the interests of its operator by maintaining an accurate accounting of all

money deposited and by guarding against the use of slugs and spurious coins.

And, finally, the juke box must be able to withstand punishment. Its natural habitat is locations where the public gathers—and the public is notoriously careless with the property of others. Breakdowns, whether caused by mechanical failure or abuse, mean loss of revenue to the operator, who therefore demands rugged construction and minimum servicing requirements.

In short, the juke box is a complex union of vacuum tubes, condensers, solenoids, switches, coils, resistors, rectifiers, and magnets, with cams, gears, and other parts machined to close tolerances. That it can be mass-produced for heavy-duty service is ample evidence of the know-how of its maker, the soundness of its engineering, and the quality of its manufacture.

YOUTHFUL IN THINKING

ENGINEERING

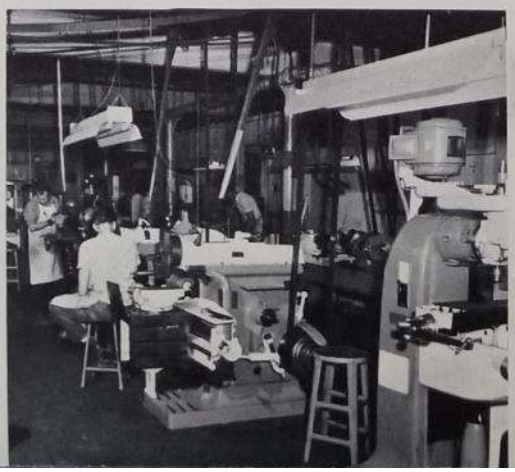
MATURE IN JUDGMENT

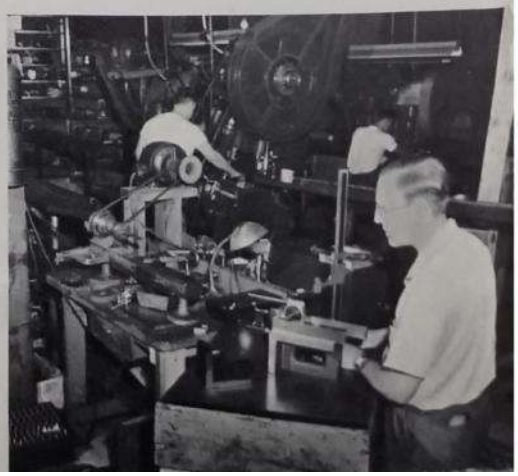
AMI's engineering staff comprises a blending of young men, eager and encouraged to try new methods, with a group of mature engineers. Through the company's engineer-recruitment program, high-ranking graduates are chosen from the nation's foremost engineering schools to work under the tutelage of the executive engineering group headed by Mr. H. H. Vanderzee.

The responsibilities of the engineering staff are not limited to the drafting room and the experimental shop. Development, process, and industrial engineers work hand-in-hand with every department of the factory and, through the purchasing division, with AMI suppliers. Whether produced within the AMI factory or on the outside, a rigid adherence to specifications is demanded for all parts and components engineered and designed by AMI engineers.

A group of carefully trained inspectors function under the direction of a Chief Inspector who is a graduate engineer. The inspection group is responsible for the acceptance or rejection of all materials and parts, from the raw state, through assembly, to the final finished product.

Typical of AMI's team-working staff of approximately 30 graduate engineers are the following men, whose imagination, ingenuity, and experience contribute to the technical perfection and trouble-free dependability of the AMI juke box:





GEORGE S. BROWN
Assistant Chief Engineer

Prior to coming with AMI in 1948, Mr. Brown was Instrumentation Engineer with Consolidated Vultee Aircraft Co., Daingerfield, Texas. Previously, he was assistant to the Director, Microwave Laboratory, University of California. During World War II he was a Major in the U. S. Army Field Artillery. Mr. Brown is a graduate of the University of Oklahoma and the University of Chicago. He is a member of Tau Beta Pi, honorary Engineering Society.

WM. F. POPE
Chief Industrial Engineer

Mr. Pope is in direct charge of production and material control, plant layout, wage incentives and time and motion study at AMI. His experience includes positions with Warren Telechron Co., Ashland, Massachusetts, and American Steel and Wire Co., Worcester, Massachusetts. He came to AMI from the latter organization, where he was Senior Industrial Engineer. He joined AMI in 1948, and is a graduate of Lincoln Technical Institute, Boston, Massachusetts.

KEITH F. NORWALK
Chief Inspector

Mr. Norwalk, a graduate of the University of Michigan College of Engineering, joined AMI in 1946, after four years at The Buick Motor Company, Flint, Michigan. At Buick during World War II, Mr. Norwalk was a Process Engineer concerned with the processing of parts for the Pratt and Whitney engine. Prior to that he did engineering on gears and transmissions and has had a wide experience in the compilation and analysis of technical data relative to materials. He is a member of the Grand Rapids Industrial Management Association.

PERCY FIDLER
Chief Draftsman

During World War II, Mr. Fidler was Production Superintendent for the Florence Stove Co., Kankakee, Illinois, manufacturing 155 mm. shells. Prior to that he set up the electric motor division for Helene Curtis Industries, Chicago, which manufactured radar, radar antennae, motors and generators for the Armed Services. Earlier, Mr. Fidler was with Marathon Electric Corporation, Wausau, Wisc., and Goss Printing Press Co., Chicago, in charge of mechanical design. Mr. Fidler is a graduate mechanical engineer of Solford Technical Institute, Manchester, England.

TOOL DESIGN

Unique in manufacturing plants its size, are the complete tool room facilities of AMI. Here experienced tool and die makers combine their skills with the use of modern precision machinery to build the special tools, dies, jigs and fixtures designed by AMI engineers. The ready availability of the tool room is an important factor in the efficiency of AMI's manufacture.

MODEL SHOP

AMI model makers create new production prototypes and component metal parts, including zinc die-castings, to production specifications prior to the design of production tools, dies and fixtures. A significant contribution of the model shop to AMI production is the versatility of the facilities and personnel which enables the shop quickly to make modifications in parts to meet production changes.

EFFICIENT PLANT LAYOUT • COMPETENT PERSONNEL • MODERN MACHINERY

The location of every department in the AMI plant, and of every machine within each department, is the result of careful study aimed to eliminate waste motion and to abolish backtracking of internal trucking operations. Careful selection of personnel and a continuing training program provide a competent staff of workers whose interest in their jobs extends far beyond the weekly paychecks. Because of the operational economies which are effected by the use of up-to-date equipment, machine facilities are modern in every respect. Skilled hands, thoughtful heads and modern machinery spell quality production at AMI.

PRODUCTION

PRODUCTION • PRODUCTION • PRODUCTION • PRO

From inspection of incoming materials at the receiving docks, it is but a short in-line movement of stock to AMI's well-equipped machine shop, with its complete array of presses, turret lathes, milling machines, grinders, and screw machines.

Castings, stampings, and extrusions are formed or machined and sent to the polishing and buffing departments, or moved on for degreasing and black oxide finishing. Other parts go to the paint shop or to the plastic molding department where large presses convert flat plastic sheets into crystal-clear compound-curve sections.

Throughout the plant, a corps of inspectors measure and test continually to assure the maintenance of quality and the minimizing of scrap wastage.

The AMI factory is as self-sufficient as possible, consistent with profitable operation. Of such wide variety is the manufacturing activity carried on within the plant that far more raw materials pass through the receiving docks than do finished parts or components.

For example, among the components fabricated and assembled within the plant are these:

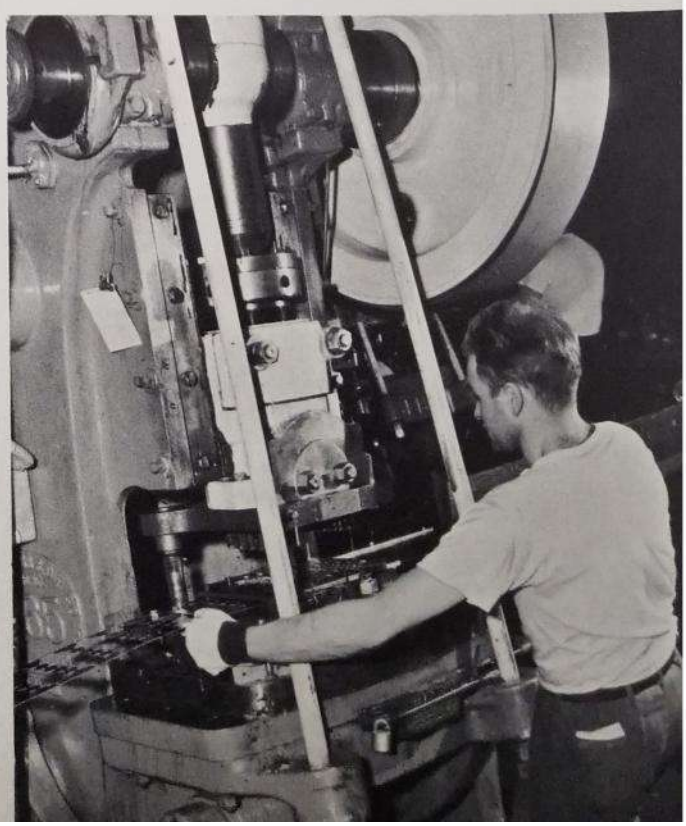
Fractional horsepower motors • Coils
Solenoids • Electrical switching apparatus
Screw machine parts • Permanent mold castings

Other operations performed by AMI include forming flat plastic sheets into compound curves by the air-blown process, bending and forming aluminum extrusions, and designing and assembling the AMI sound system.

A partial list of manufacturing processes carried on within the plant includes copper heat training; sand blasting and abrasive tumbling; metal shearing; forming and bending of aluminum extrusions; automatic wire stripping; molding of parts requiring ferrous and non-ferrous inserts; punch press work to tolerances within 1°— on angles, .004 on location; multi-color silk screen process; silver soldering of non-ferrous to ferrous metals; black oxide finishing, including alkaline and trychlorine detrex

Donald C. Beeby **Plant Superintendent**

AMI is particularly fortunate in having as its Plant Superintendent a man whose well-rounded background covers every phase of factory operation from turret lathe operator through machinist, chief inspector, and general foreman to his present position. As chief inspector for International Register Co., Chicago, during World War II, he was not only in charge of a large corps of inspectors, but also demonstrated his ability in the field of group leader training. Previous experience includes berths at International Harvester Co., Chicago, and Western Electric Co., Chicago. Mr. Beeby, who has been with AMI since 1946, is a member of the Grand Rapids Industrial Management Association.

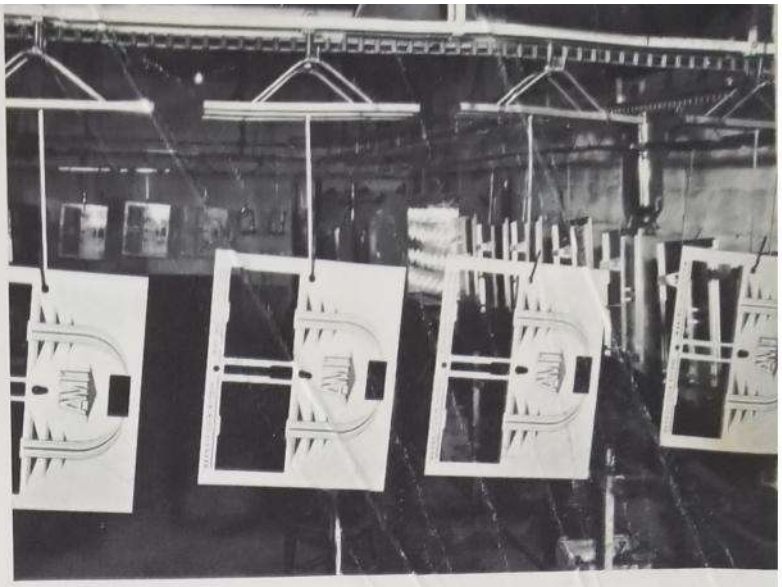


DUCTION • PRODUCTION

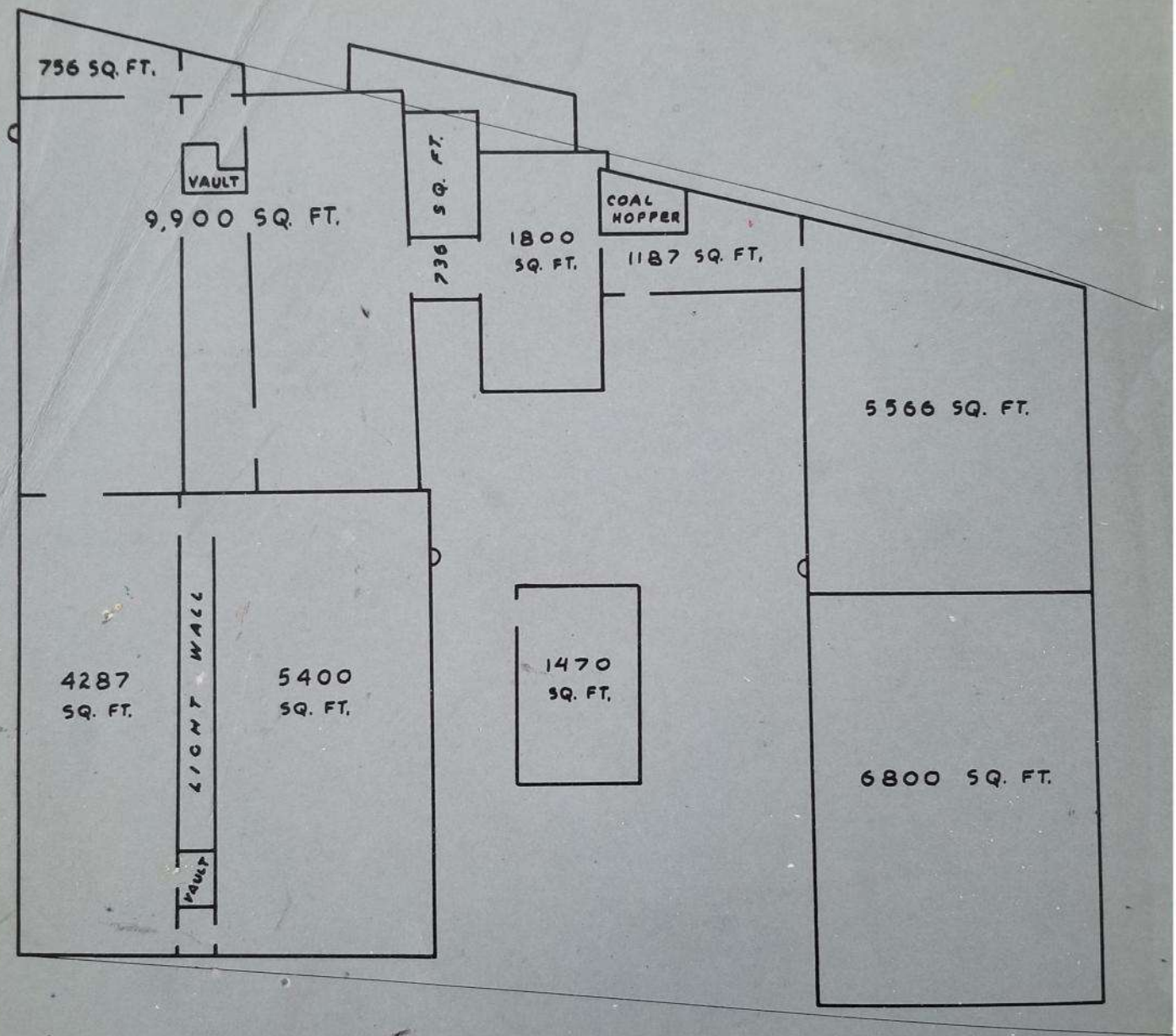
degreasing; spray painting with lacquers and synthetic enamels; infra-red baking; and the usual run-of-mill operations requiring drill presses, turret lathes, milling machines, and similar equipment.

PROCUREMENT

A problem common to manufacturers following World War II has been the procurement of scarce materials in adequate volume and in ample time to maintain steady production schedules. Alertness to materials sources and close liaison with suppliers has helped AMI to avoid even a single interruption of production because of the shortage of critical materials. Purchasing men on occasion under the direction of **M. J. "Mike" Giblin,** Purchasing Agent, have scoured the countryside to uncover needed parts; have chartered planes and trucks to speed deliveries. Not infrequently AMI has assisted with raw materials sources to insure suppliers a continuance of their production. This procurement experience goes hand in hand with AMI's ability to maintain steady production.



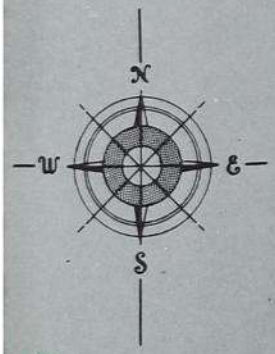
AMI *Incorporated*



THE PHYSICAL PLANT

Brick building—3 floors · Freight elevator service to all floors · Railro
ing area within property lines · Complete overhead sprinkler system · F

PLANT LAYOUT AND STATISTICS



FLOOR SPACE

2nd FLOOR MAIN BLDG.		
MFG.	11,822	SQ. FT.
SERVICE	3,596	SQ. FT.
OFFICE	4,053	SQ. FT.
TOTAL	19,471	SQ. FT.
3rd FLOOR MAIN BLDG.		
MFG.	15,724	SQ. FT.
SERVICE	911	SQ. FT.
OFFICE	1,452	SQ. FT.
TOTAL	18,087	SQ. FT.
2nd FLOOR NEW BLDG.		
MFG.	5,566	SQ. FT.
1st FLOOR ALL BUILDINGS		
	40,782	SQ. FT.
LAB. & MODEL SHOP		
	1,800	SQ. FT.
GRAND TOTAL	85,706	SQ. FT.

2880 SQ. FT.

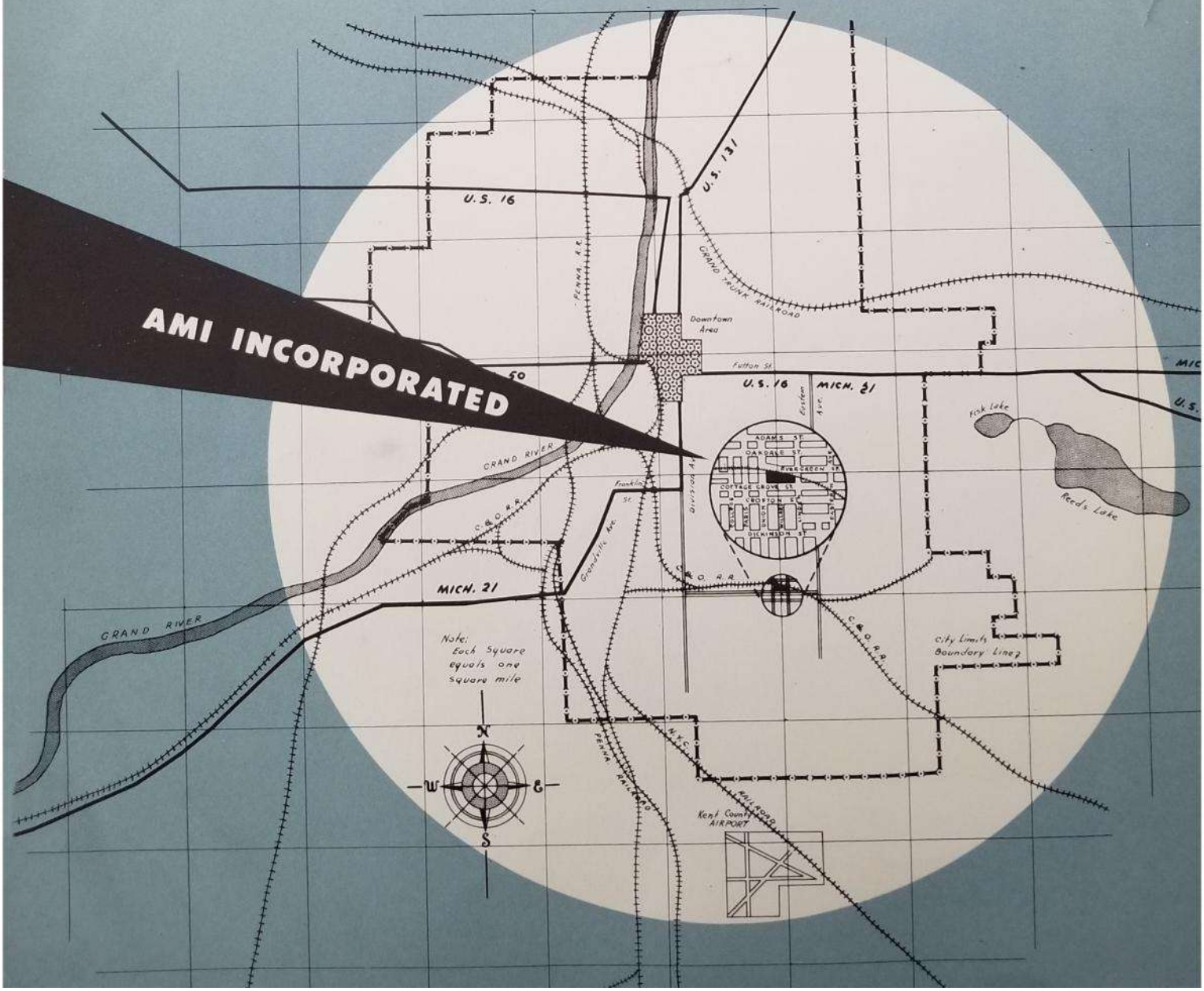
siding accommodating two cars—on main line of C & O railroad · Loading and truck-

nd-the-clock watchman service · Ample employee parking area—adequately protected

CENTRALLY LOCATED
EASILY ACCESSIBLE

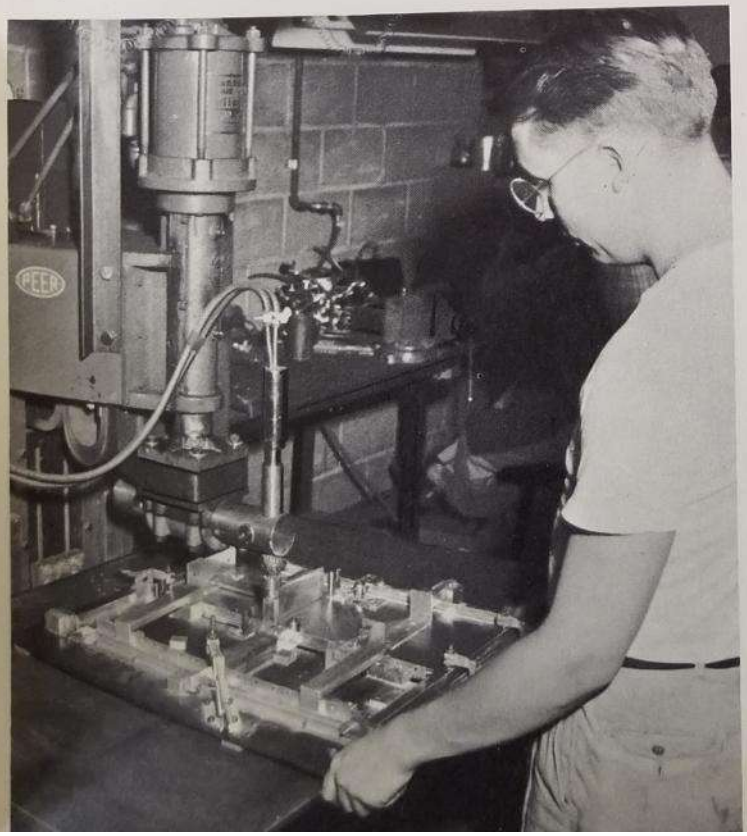
GRAND RAPIDS, MICH.

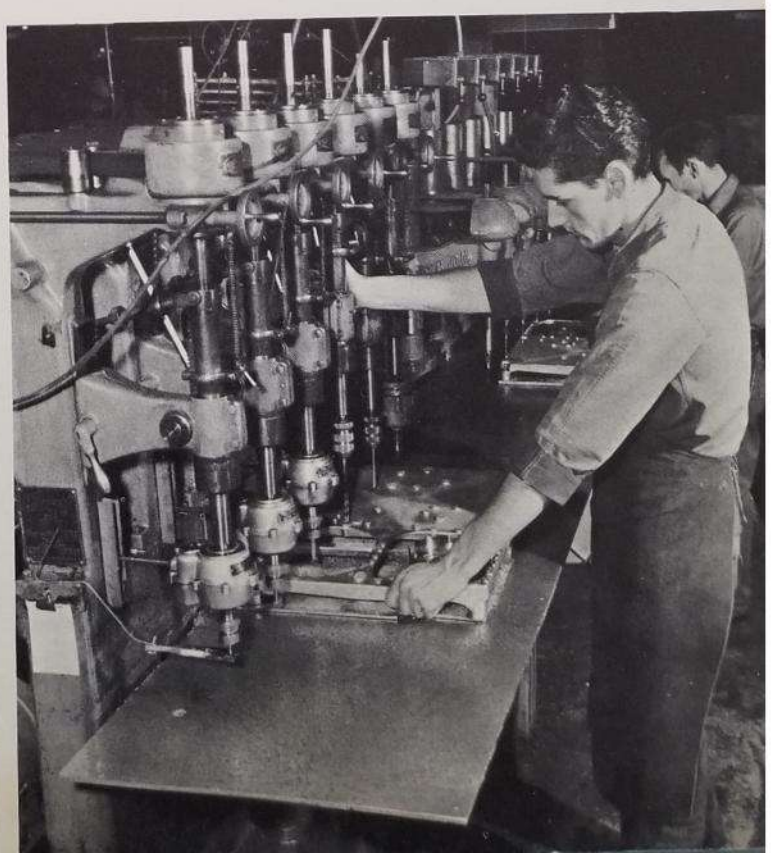
The industrial areas of the nation encompassed within a 250-mile radius of Grand Rapids plainly show the important advantages of this central location.



AMI INCORPORATED

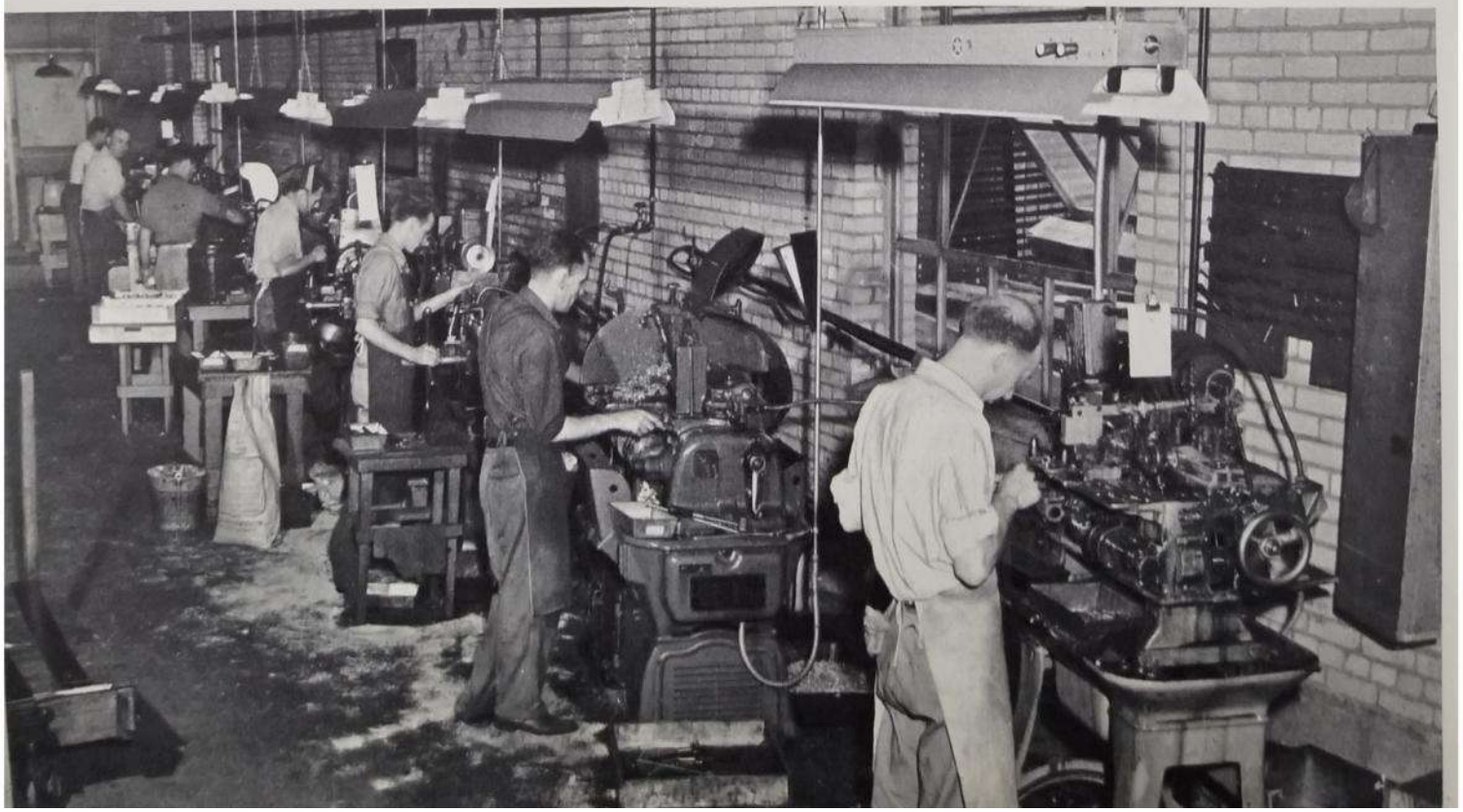
Bench Lathes	4	South Bend, Hardinge
Tool Lathes	4	South Bend, Monarch, Rockford
Drill Presses	29	1-, 2-, 3-, and 6-spindle Avey, Buffalo, Edlund, Atlas Burke, U. S. Machine, Delta
Milling Machines (Horizontal, Vertical, Automatic, Hand)	22	Up to 79" by 15" table Cincinnati, Index, Milwaukee, Van Norman, U. S., Garvin, National
Grinders Tool and Cutter Flexible Shaft Bench	18	Single and double wheel Leblond, Delta, Victor, Apex, Diamond and G & L
Surface Grinders	3	Table capacity up to 8" by 24½" Gallmeyer and Livingston
Sanders	6	Porter-Cable, Walker-Turner, SkilSaw
Bench Filers	4	Bruell, Oliver, Rearwin
Shapers	4	Gould & Eberhardt, Ohio, Ammco
Polishing Jacks	5	Hammond, Standard, Ritespeed
Gas and Electric Furnaces	4	Up to 32" by 32" capacity Johnson Gas Appliance, Huppert





MACHINE FACILITIES

EQUIPMENT	QUANTITY	PHYSICAL CHARACTERISTICS
Spot Welders	2	Peer, Gibb
Steel Shears	3	Up to 10 gauge, 10'-0" cutting edge Niagara, Pexto, Wysong and Miles
Hoists and Cranes	5	Up to two tons Budget, Barrett, Economy
Scales	10	Portable and table, up to 1000 lbs.; some with counting ratio and automatic compensator Fairbanks Morse, Howe, Dayton, Toledo, Computing Scale Company
Spinners	2	MacDowell Stocker
Riveters	8	Tubular and press type High Speed, Hammer, Keller, Chicago Riveting, Meade



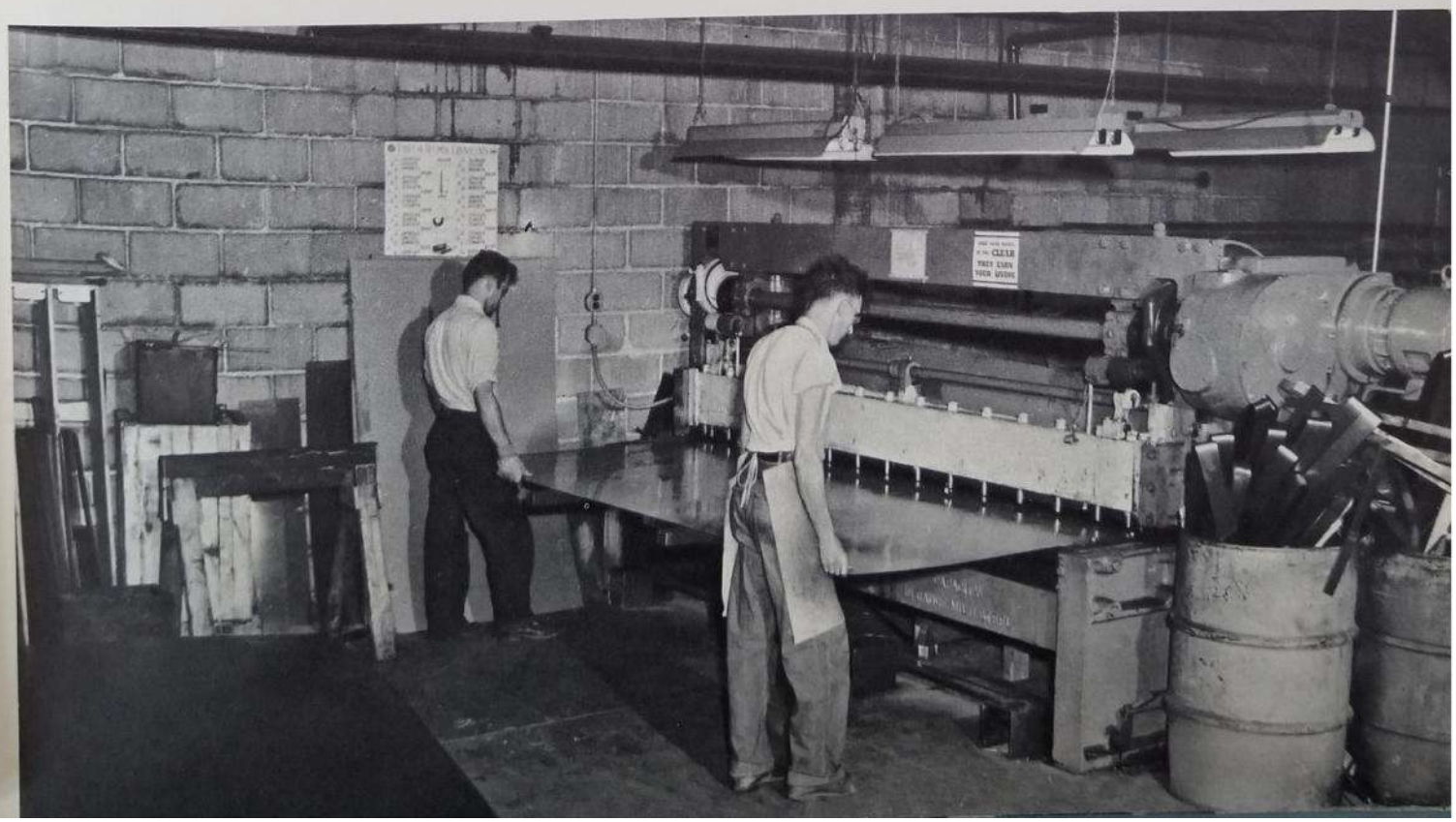
Wire Strippers	8	Includes automatic strippers and cutters Artos, Rush, Ideal, Colonial
Saws	10	Includes band and cut-off, metal and wood saws Walker-Turner, Tannewitz, Grob, Miles, Construction Machine
Arc Welder	1	Midstates (with Heliarc equipment for welding aluminum)
Air Compressors	2	Up to 150 lbs. pressure Joy, Chicago Pneumatic Company
Tumbling Barrels	2	Murco Twin
Coil Winders	5	Stephens
Brazing Machine	1	Cutler Hammer
Sand Blasters, Dust Collectors		American Wheelabrator

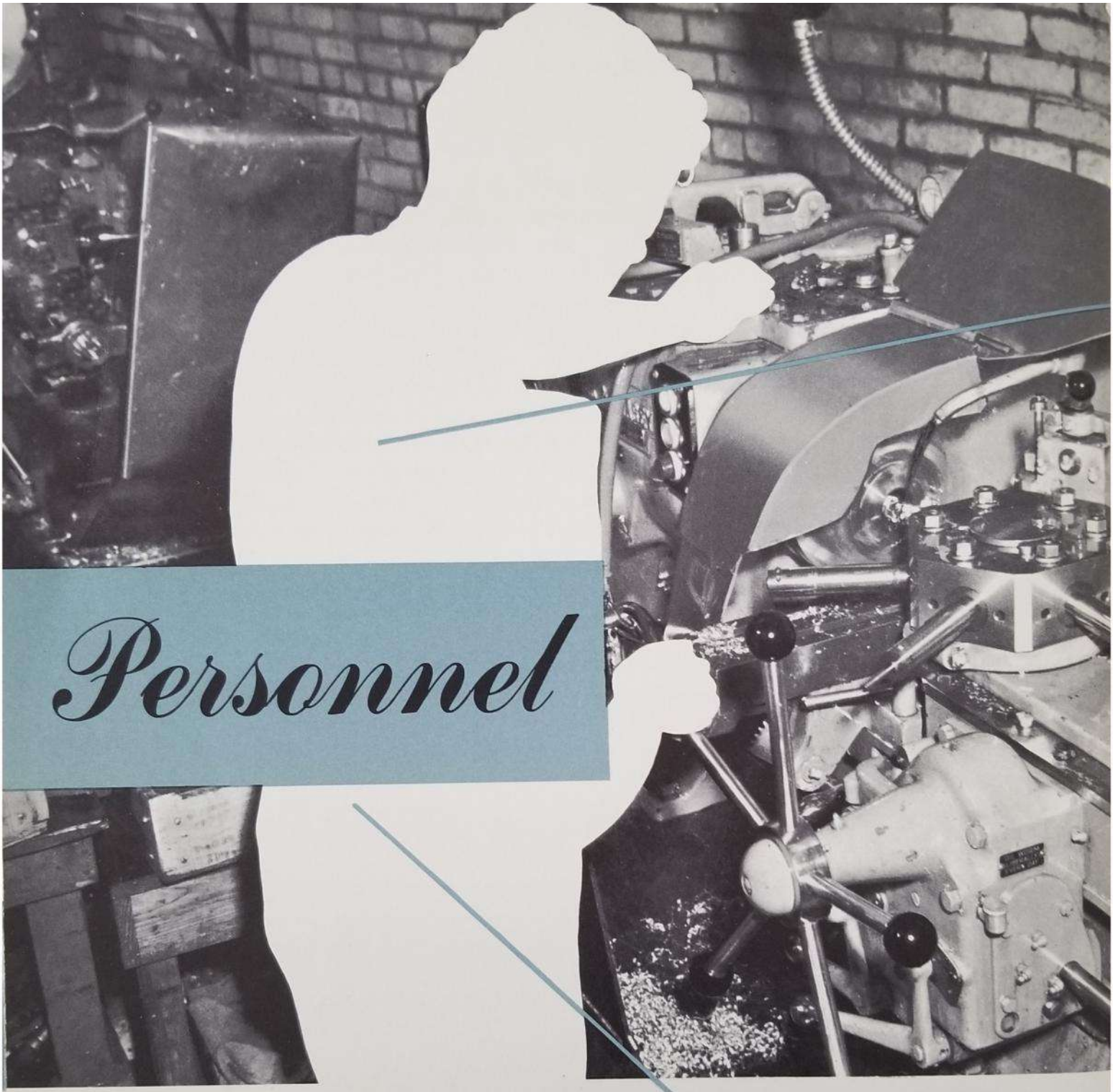
INSPECTION AND LABORATORY EQUIPMENT

Oscilloscopes, Oscillographs, Audio Frequency Generators, Electrical Switches, Vacuum Tube Voltmeters, Hardness Testers, Micro-projectors, Comparators, Bench Centers, Microscopes, Minijectors

HAND POWER TOOLS

Small Electric Drills, Air-power Screw Drivers, Staplers





Personnel

A FACTORY IS MORE THAN BRICKS AND MORTAR AND MACHINERY—AND EXECUTIVES

The success of a business venture is determined to a great degree by the loyalty, the willingness, the morale, and the stability of its personnel. Of the approximately 400 workers who comprise AMI's factory personnel, 86 men and women have been with the company for five years or longer; 18 employees have seen 10 or more years of service, while nine men and two women have been on the payroll continuously from 15 to 28 years.

AMI workers reflect an attitude of energy, thrift and ambition which is common to the labor market of the Grand Rapids area. A large percentage of AMI people own their own homes. AMI's labor record, based on the mutual respect of labor and management, is singularly free from discord and grievance.

Employees get the benefit of U. S. Department of Labor Employment Security Tests through AMI's personnel division. GatB and MacQuarrie tests which cover general intelligence and learnability, as well as finger and manual dexterity, are applied. A physical examination is also given.

WAGES

The wages earned by AMI workers are well above the average for the community and for the average of comparable work in the state. The AMI Direct Incentive Plan also increases compensation in direct ratio to increased output.

EMPLOYEE BENEFITS

Employees receive a $1,000 life insurance policy from the company which has added disability benefits. Blue Cross hospital insurance is also available at the low group rate for the worker and his entire family.

Wholesome food at non-profit prices is available to all AMI personnel at the company cafeteria. The cafeteria is open for morning and afternoon rest periods as well as for lunch. It has an "A" sanitation rating.

AMI workers have adequate parking facilities on factory property just a step from their jobs.

AMI employees participate in an active recreation program. There are men's and women's bowling leagues, golf tournaments, and other sports activities, as well as an annual picnic and Christmas party for parents and children.

AMI "SKILLED HELP"

ACCORDING TO BUREAU OF LABOR STATISTICS CLASSIFICATION

R5A—Class A Inspectors

R5B—Class A Testers

R6B—Class A Drill Press Operators

R6C—Class A Engine Lathe Operators

R6E—Machine Tool Operators (miscellaneous)

R6H—Class A Hand Screw Machine Operators

R7B—Class B Engine Lathe Operators

R7E—Class B Milling Machine Operators

R7F—Class B Automatic Screw Machine Operators

R76—Class B Hand Screw Machine Operators

R8B—Class C Drill Press Operators

R8E—Class C Milling Machine Operators

R9A—Production Machinists

R10—Maintenance Mechanics

R11—Metallurgist

R13—Machine Tool Set-Up

R14—Tool & Die Makers

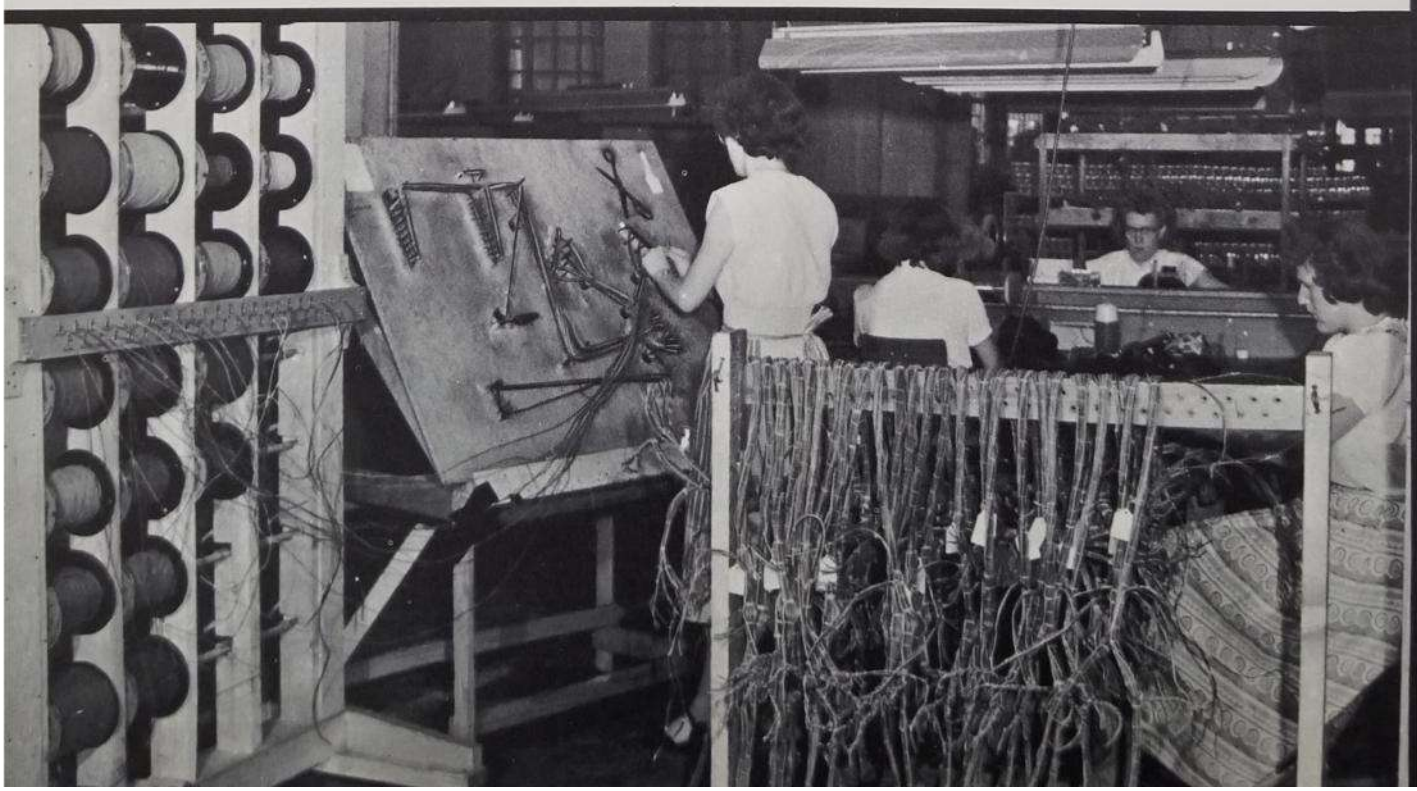
R1—Draftsman (Electrical)

R2—Draftsman (Mechanical)

R3—Electrical Engineers

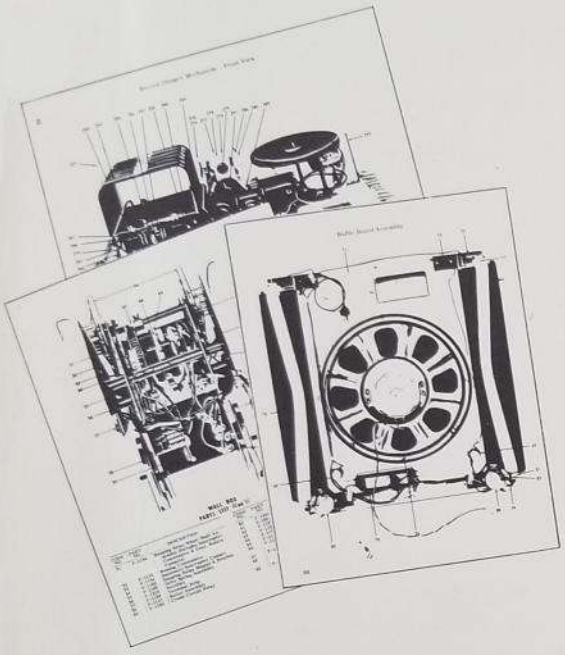
R4—Mechanical Engineers.

AMI also has a large, experienced force of semi-skilled workers, male and female, who are outstanding in assembly and other manufacturing operations.

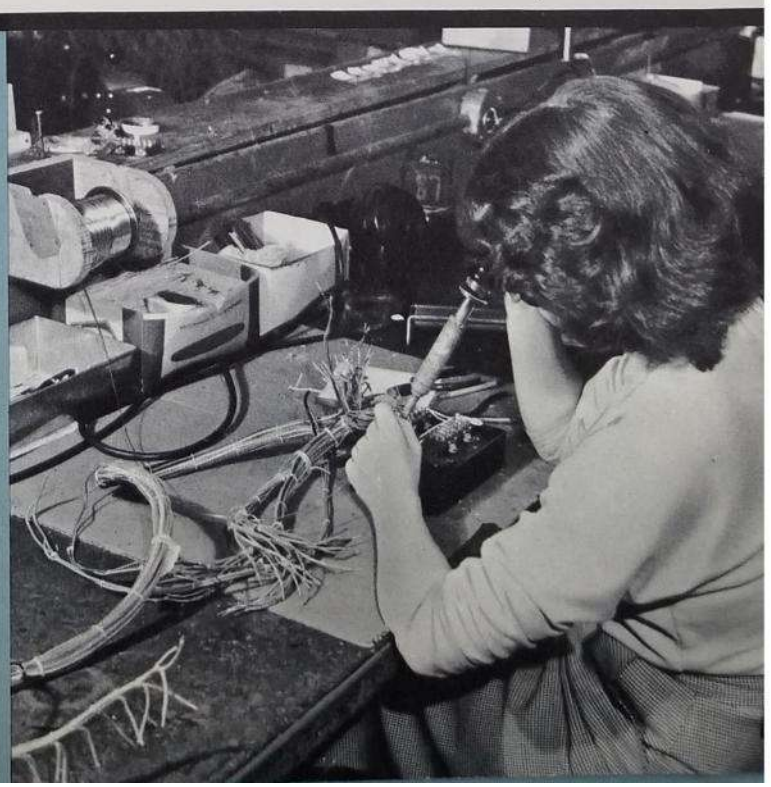


SERVICE BULLETINS and MANUALS

. . . THAT INSTRUCT WITHOUT CONFUSION



The same straight-line thinking that goes into the design of the AMI juke box is apparent in the plain, easily understood language that characterizes AMI's service bulletins and manuals. Nothing is taken for granted; each operation is fully described and keyed to illustrations or diagrams sufficiently comprehensive to satisfy the expert serviceman, simple enough to provide guidance which the novice can follow. All AMI bulletins and manuals are planned and written by company personnel.



AMI Wall Box

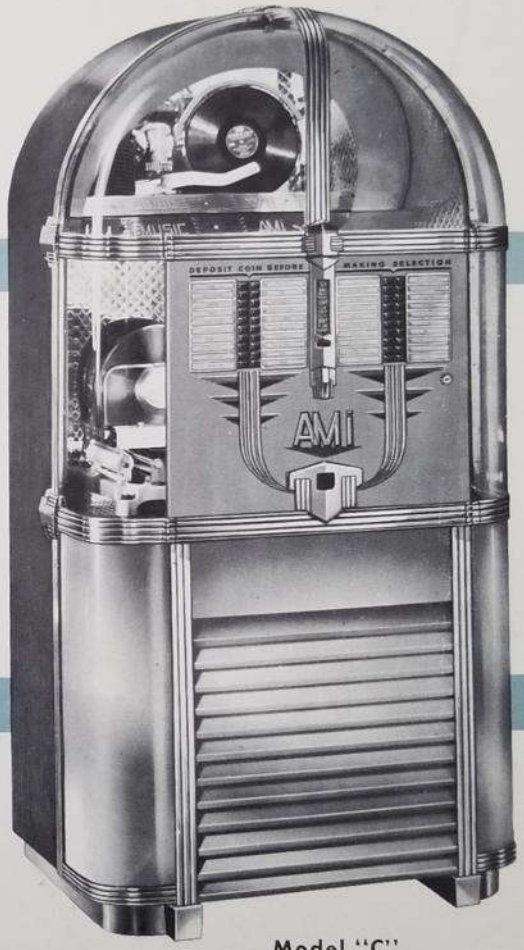
AMIVOX Speaker

AMI *Incorporated*

GENERAL OFFICES AND FACTORY:

1500 UNION AVENUE, S. E.,

GRAND RAPIDS 2, MICHIGAN



Model "C"

AMI Hideaway

AMI Bargrip

PRODUCED BY
WALKER B. SHERIFF COMPANY, CHICAGO, IL