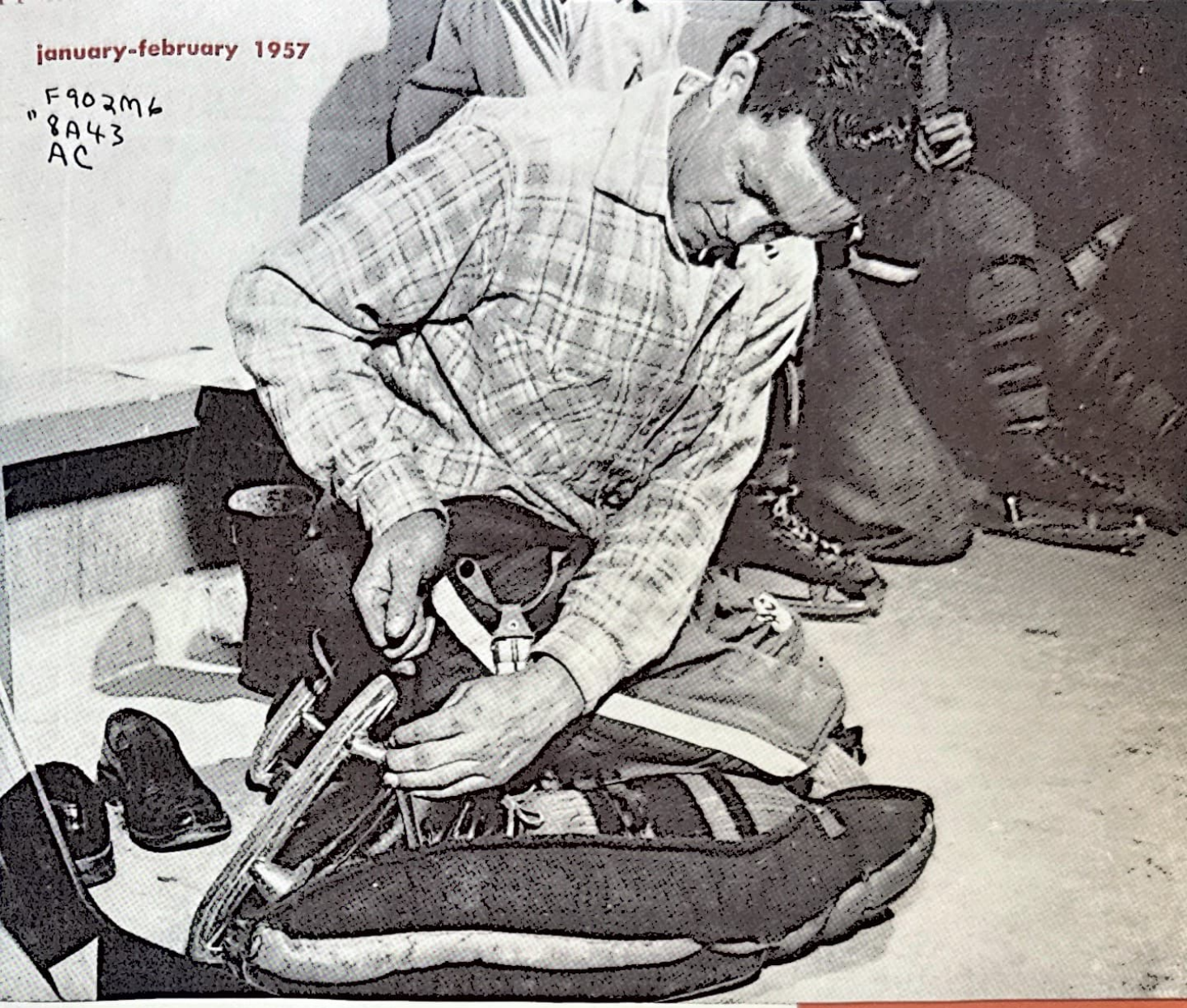
january-february 1957



a-c scope

magazine of allis-chalmers people

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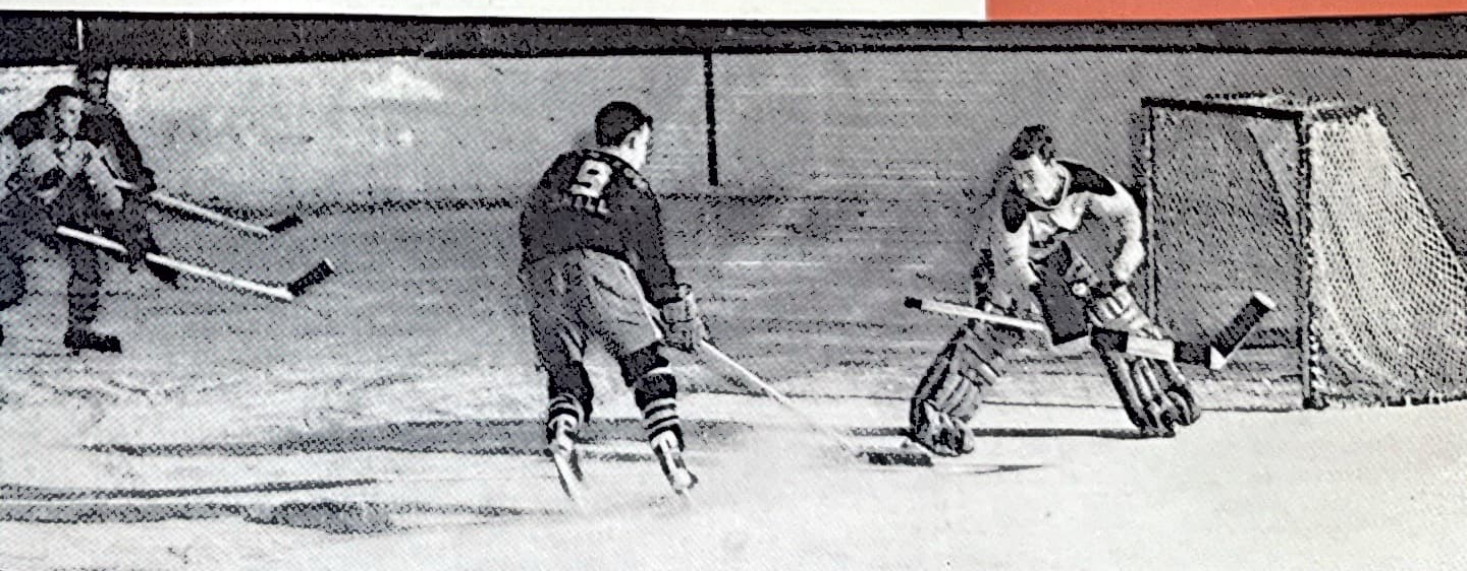


In 1956, Allis-Chalmers sales and other income reached an all-time high of $551,592,589.

Here's how this income was distributed:

materials and operating costs
A-C purchased $294,678,649 worth of materials and services to manufacture and sell its products in 1956.

MATERIALS AND OPERATING COSTS **53.4c**

all wages and salaries
Payrolls for Allis-Chalmers employes reached a record figure of $194,140,323 last year.

PAYROLLS **35.2c**

taxes
Local, state and federal taxes came to $33,822,287 for the past year.

ALL TAXES **6.1c**

depreciation and amortization
$8,596,285 was set aside and spent to keep the company's plant and equipment up-to-date.

DEPRECIATION **1.6c.**

96.3c

share owners
The company's share owners are just that — the owners of the business. They have provided the means to build A-C products. They received $16,680,515 in dividends on their investment in 1956.

reinvested earnings
$3,674,530 was reinvested in the business for current operations and future growth.

DIVIDENDS PAID TO SHARE OWNERS **3.0c**

EARNINGS REINVESTED **.7c**

3.7c

$1.00

Here's a Report on Your Company for 1956..

A company's annual report might be called a "box score." It's a record of the year's accomplishments written in financial terms like "dollars, percentages, profits and earnings."

The "box score" shows what the company did in terms of sales in 1956. Then it shows the amount of sales dollars paid out for wages and salaries, materials, taxes and other costs of carrying on the business.

Also added up for the year is profit, the amount which remains after all expenses are paid. Every A-C employe has a natural, even selfish interest in his company's profit. For good jobs can not be maintained very long unless a fair profit is earned on the money invested in the company.

This section of A-C Scope shows the "box score" for the company — a record of financial and other accomplishments for 1956. It was a year of record sales and a year in which record-sized machines were installed. It was a year of record effort by the many people who contributed to the year's significant results.

Here is how President R. S. Stevenson reviewed last year's operations in his message to A-C share owners in the company's 1956 annual report:

SALES continued to climb in 1956, reaching a total of $547 million. The Construction Machinery, Buda, and Farm Equipment Divisions of the Tractor Group accounted for 55%; the Industrial Equipment, General Products, and Power Equipment Divisions of the Industries Group registered 45% of the total.

Export sales, exclusive of those of the non-consolidated British and Canadian subsidiaries, amounted to $62 million, an increase of $13 million over 1955. Defense business was lower, approximating $20.5 million.

Earnings for the year were $20.4 million, down $4.5 million from a year ago. Early last year we recognized certain factors which might adversely affect earnings, the most significant being the steady increase in labor and material costs. Even though we raised prices selectively throughout the year to compensate for the progressive advance of these costs — most pronounced in the fall — we could not wholly offset their effect on the year's results. This was particularly true in certain types of long-production-cycle heavy equipment, some of which had been booked two years before. In addition, it was not a good farm equipment sales year.

Earnings per share of common stock on the 8,141,435 shares outstanding at the end of the year, 252,711 more than a year ago, were $2.42. Dividends paid on preferred stock were $635,857, and on common stock, $16,044,658, a total of $16,680,515.

Elsewhere in the report, a comprehensive analysis of Company ownership reflects, among other important statistics, the fact that the number of owners of Allis-Chalmers common stock has grown from 40,222 a year ago to 47,449 at the end of this year, and has doubled since 1950.

The backlog of unfilled orders at the close of the year was $226 million, an increase of more than $100 million in two years. This total does not include commercial orders of the Tractor Group.

To meet our expanded requirements, capital expenditures were more than $15 million, and small tool, and maintenance and repair charges were approximately $29.4 million — collectively, an increase of $3.8 million over the previous year.

An aggressive research and development program is necessary to keep abreast of technical advances and to maintain engineering leadership.

During the past five years, our expenditures for research and development have nearly tripled.

We have a long-range program to expand engineering design capabilities, to add the latest in laboratory equipment, and to provide larger testing facilities — another step of which was completed last year.

Electronic computers, which can quickly solve complex mathematical problems, are increasing our engineers' effectiveness in research, design, and analytical work.

Our Central Research Laboratories initiate the majority of their research projects, but in addition, they operate in a consulting capacity to our engineering and manufacturing departments. Working together, they make possible improved products for today's markets — new and better products for tomorrow's markets.

Allis-Chalmers continues its ever-increasing role in the rapidly developing field of nuclear power. The first commercial-size nuclear power generating plant — first of the Atomic Energy Commission's five-point program to be completed — was run at full capacity for the first time in 1956. This unit, at Argonne National Laboratory in Lemont, Illinois, has specially designed generating and auxiliary equipment built by Allis-Chalmers.

Your Company is a member of the Atomic Power Development Associates and Power Reactor Development Company. These groups are designing and building the Enrico Fermi Atomic Power Plant at Monroe, near Detroit, Michigan. The generating plant itself will be owned and operated by Detroit Edison Company, and will be equipped with a specially designed 150,000 kilowatt Allis-Chalmers steam turbine-generator unit.

Our engineers are giving detailed study to advancements in the field of power reactor design, and are confident we will make significant contributions toward the goal of bringing the cost of power generation with nuclear fuel into a competitive position with conventional power plants using fossil fuels.

The Allis-Chalmers employe benefits program was equal to more than 20 per cent of the 1956 Payrolls total of $149,140,323. These benefits added an average of *53 cents per hour* to each employe's paycheck—which comes to about $91.69 per month or $1100 per year. These benefits include insurance programs, retirement and pension plans, vacations and holidays and many others.

While defense sales volume was lower in 1956, several large projects deserve special comment. They are now under way, and some deliveries will be made in 1957.

In November, La Porte Works delivered the first "Ontos" vehicle — a hit-and-run, anti-tank weapon — to the United States Marine Corps. This weapon carries more firepower than any other land combat vehicle in history.

The Lockheed Starfighter, one of the Air Force's top combat planes, uses a J-79 turbojet engine. We are tooling at our Terre Haute Works to build the compressor rotors for these engines.

To power four of the Navy's newer combat vessels, we are designing and will build, eight marine turbine propulsion units for the Bureau of Ships. These ships are frigate-type destroyers, which may be equipped with guided missiles instead of conventional armament.

A reduction in work force was necessary to adjust production schedules of certain product lines to maintain proper inventory levels. Consequently, total employment at the end of the year was 38,803, down 3% from last year. Steady employment is one of our specific aims, and we hope that market conditions will help us in this objective.

Allis-Chalmers now offers more than 90 different training opportunities for young engineers in the Company's Graduate Training Course. Referred to as our G.T.C. Program, it is one of the oldest of its kind in the country. Started in 1904, it has provided a continuous source of engineering leadership.

In addition, we have enlarged our educational program for other employes. A new college-level plan reimburses them for 100% of tuition, after satisfactorily completing approved courses in engineering, science, and business administration. Several hundred of our people are taking advantage of this training opportunity.

A summer science fellowship plan for high school science teachers was so enthusiastically received in its first year of operation in one plant city, it has been expanded to include teachers in additional plant cities in 1957. This program has been designed to acquaint the teachers with the latest scientific applications in engineering and manufacturing, and thereby help to stimulate student interest in scientific and engineering vocations.

Employe cooperation in the interest of accident prevention accounted for the best safety record in our history. Pittsburgh and Gadsden Works qualified for the Award of Merit of the National Safety Council after completing one million man-hours without a disabling injury.

Labor contracts, covering all except one of the production and maintenance bargaining units, continue firm throughout 1957. The contract of the single unit may be opened for wages only, next October.

In 1956, several labor contracts were negotiated. We had one strike affecting 350 people who lost 39 workdays.

Again this year, we continued our policy of holding one or more Directors' meetings in plant cities and other important market areas. The February meeting was held in Kansas City, Missouri. This gave our Directors an opportunity to visit our plant, branch, dealers and sales offices in the Independence and Kansas City area. In April, we met in Atlanta, Georgia, where we reviewed branch and sales office facilities.

At each of these meetings, we took occasion to meet with community leaders to become better acquainted with them and their community, and to tell them more about Allis-Chalmers, its people, its program, and its products. On our return from Atlanta, we stopped to see Allis-Chalmers hydro-electric installations in Chattanooga, Tennessee, and witnessed, first-hand, the part our equipment plays in the research activities of the Air Force at the Arnold Engineering Development Center in Tullahoma, Tennessee.

The Allis-Chalmers Credit Corporation was formed in 1956, as a wholly owned subsidiary, to assist in financing sales of some Company products. While our dealers, generally, have been able to secure adequate credit from their banks and other local sources, the new corporation provides a supplemental source of credit for financing their retail sales.

Expanded working capital requirements, particularly for inventories and accounts receivable, were provided for during the year by short-term loans through established bank credit lines. At the end of the year, such borrowings totaled $50 million, and the need for financing of this type, at varying levels, will continue during 1957.

The results of 1956 reflect the full cooperation of our people in the field, plants, and offices, along with those in our dealer and distributor organizations. All of us appreciate the confidence in our products as expressed by our customers.

Looking forward, we believe that the fundamental growth of the Free World's economy affords great opportunities for Allis-Chalmers to contribute to that growth and to prosper accordingly. We have confidence that 1957 will be another step in that direction.

The outlook for highway construction and utility expansion continues bright, and we build broad lines of equipment for both fields. Even though industry's expansion and retooling plans for 1957 are somewhat realistically tempered, they should still provide a steady market for the types of apparatus and material handling equipment which we manufacture. We believe that farm equipment sales should improve over last year, and to the extent that the current serious drought is broken, we could raise our sights further.

1957 appears to have the makings of a good sales and earnings year for Allis-Chalmers.

Highlights from the 1956 Annual Report

	1956	1955
Sales and Other Income	$551,592,589	$538,045,485
All Taxes	33,822,287	34,774,217
Earnings	20,355,045	24,805,326
Earnings:		
Percentages of Sales and Other Income	3.7%	4.6%
Per Share of Common Stock*	$2.42	$3.03
Number of Employes	38,803	40,182
Payrolls	$194,140,323	$176,715,591
Dividends Paid Per Share of Common Stock*	$2.00	$2.00
Shares Outstanding of Preferred and Common Stock*	8,264,334	8,075,195
Dividends Paid — Preferred and Common Stock	$16,680,515	$16,468,189
Share Owners' Investment in the Business	296,272,026	292,130,873
Number of Share Owners:		
Preferred Stock	699	2,147
Common Stock	47,449	40,182

*Adjusted for two-for-one split in June, 1956.

A COMPLETE COPY of the Allis-Chalmers annual report for 1956 may be obtained by writing to A-C Scope magazine, Allis-Chalmers Mfg. Co., Milwaukee 1, Wisconsin.

Our Product Divisions in '56

Power Equipment Division

(Products from Boston, Gadsden, Pittsburgh, Terre Haute and West Allis Works.)

An increase in engineering and construction activities by electric utilities was felt in the division's 1956 operations. The result was an expanded backlog of orders in all departments.

Significant advances were made in respect to the size and design of transformers and steam condensers. The first of eight hydraulic turbines was shipped for the St. Lawrence Waterway Power Project and the world's largest reversible pump-turbine was installed.

Arrangements were made for A-C to participate in the design and construction of a large nuclear power plant with a group of utilities in Florida, and other milestones were also noted in this field.

Construction Machinery Division

(Products from Cedar Rapids, Harvey, Springfield and West Allis Works.)

Developments in construction machinery were keyed to growing sales opportunities—highlighted by enactment of the new multi-billion dollar federal highway bill. A-C continued to advance in the design and manufacture of construction and earth-moving machinery.

The new high-speed, big-capacity TS-260 motor scraper was introduced in 1956, while a complete selection of Allis-Chalmers job-matched bulldozers is available for A-C crawler tractors.

Aggressive sales activity meant an increase in dollar volume and number of units sold compared with 1955.

Shop and engineering space were increased at Cedar Rapids Works and an additional 127.5 acres of land were purchased for future expansion.

Industrial Equipment Division

(Products from Lachine, St. Thomas and West Allis Works.)

Stepped-up sales activity increased the division's volume in 1956. Especially important was a sharp rise in sales of processing machinery. Requirements of roadbuilding programs will continue to push the demand for machinery used by producers of cement, sand, gravel and other materials. The nation's first double-pass ACL system for burning cement clinker started operation at a Milwaukee plant.

Allis-Chalmers, through experience and research, maintained leadership in the axial compressor field, while sales of rotary units showed an increase.

The demand for rectifier and induction heating products more than doubled in 1956 and new developments are expected to boost sales still further.

Canadian operations are encouraging. Sales were above the 1955 level and plans call for the expansion of St. Thomas Works to meet a demand for electrical equipment. Canada's economy is undergoing great expansion.

Farm Equipment Division

(Products from Gadsden, Independence, La Crosse, LaPorte, Oxnard and West Allis Works.)

A decline in demand for farm equipment in 1956 resulted from the combined effect of extended drought conditions and agricultural price adjustments. However, the trend of growth in the size of family farms continued.

The company has continued to shape its lines of tractors, implements and harvesting machinery for farmers who, with larger acreages, want more versatility and work capacity from equipment.

New products in 1956 included a 110-bushel front-end delivery manure spreader, the *Twin-Wheel* drive mower, and the Super 100 *All-Crop* harvester. Special attention was paid to equipment for handling materials that are lifted, loaded or moved on farms. A-C provides many attachments for these jobs.

The company's strong participation in the farm equipment field will be strengthened by new products in 1957.

General Products Division

(Products from Norwood and West Allis Works.)

The division increased its deliveries to all industrial markets in 1956. All-time sales records were attained in motors, pumps and controls, while sales of *Texrope* drives gained over 1955.

Cutaway HD-21 crawler tractor is a unique sales tool which helps A-C customers gain a quick appraisal of the features of this 22-ton machine.

Motor sales scored the most impressive gains and sales of control equipment also took a sizeable rise in dollar volume. While shipments were at a record level, backlog was increased by orders for larger equipment.

The *Synduction* motor, an outstanding achievement in motor design, highlights a list of product developments for 1956.

Buda Division

(Products from Harvey Works.)

Productive capacity at Harvey Works was expanded in 1956 and both engine and material handling sales and service organizations were strengthened. The enlarged material handling dealer setup is now operating under a greater number of A-C branches, as is the engine group.

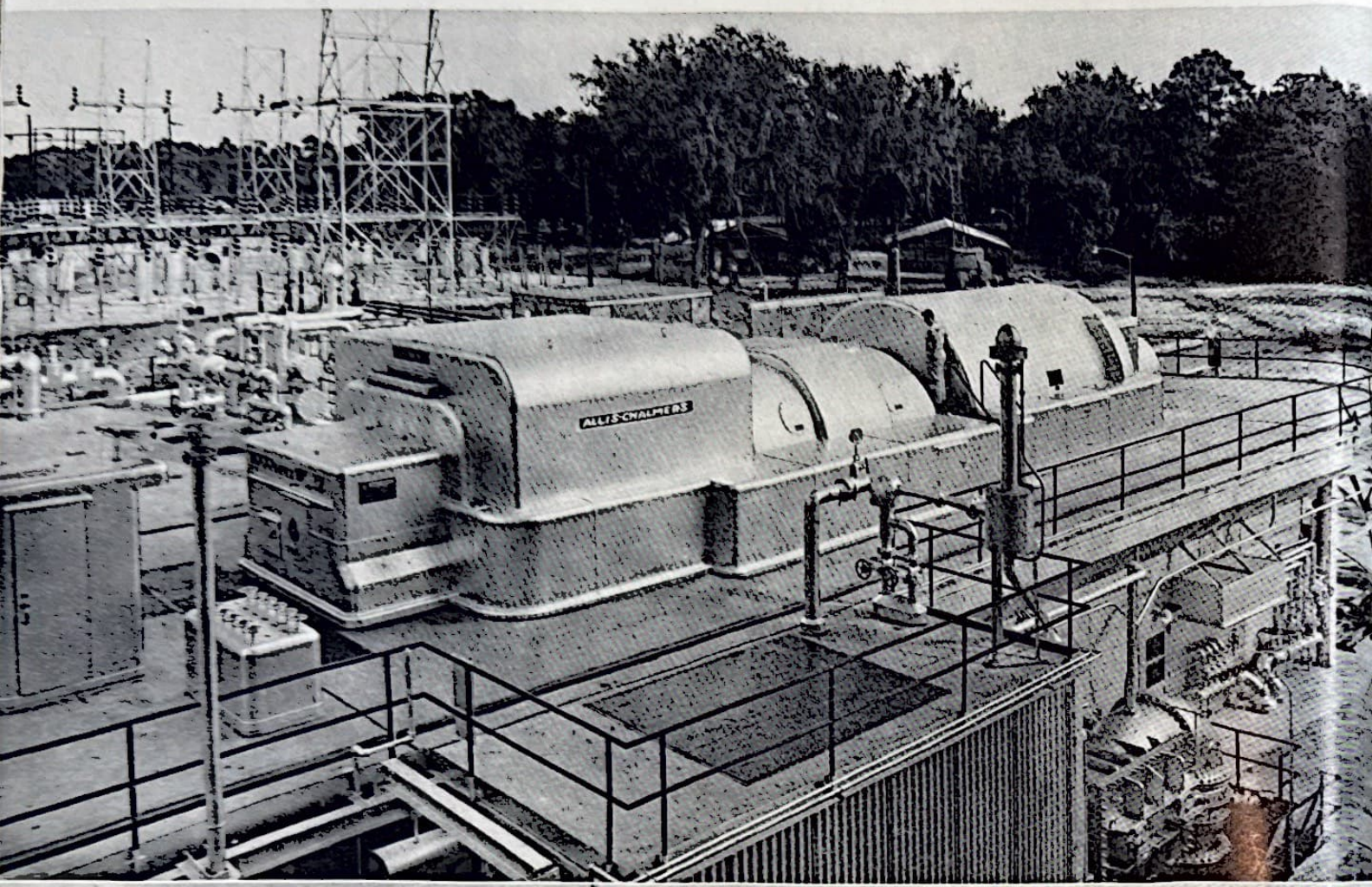
During the year, new diesel engines were developed for power unit and industrial use, the fork lift truck line was expanded and attachments have added to the versatility of A-C fork lift trucks.

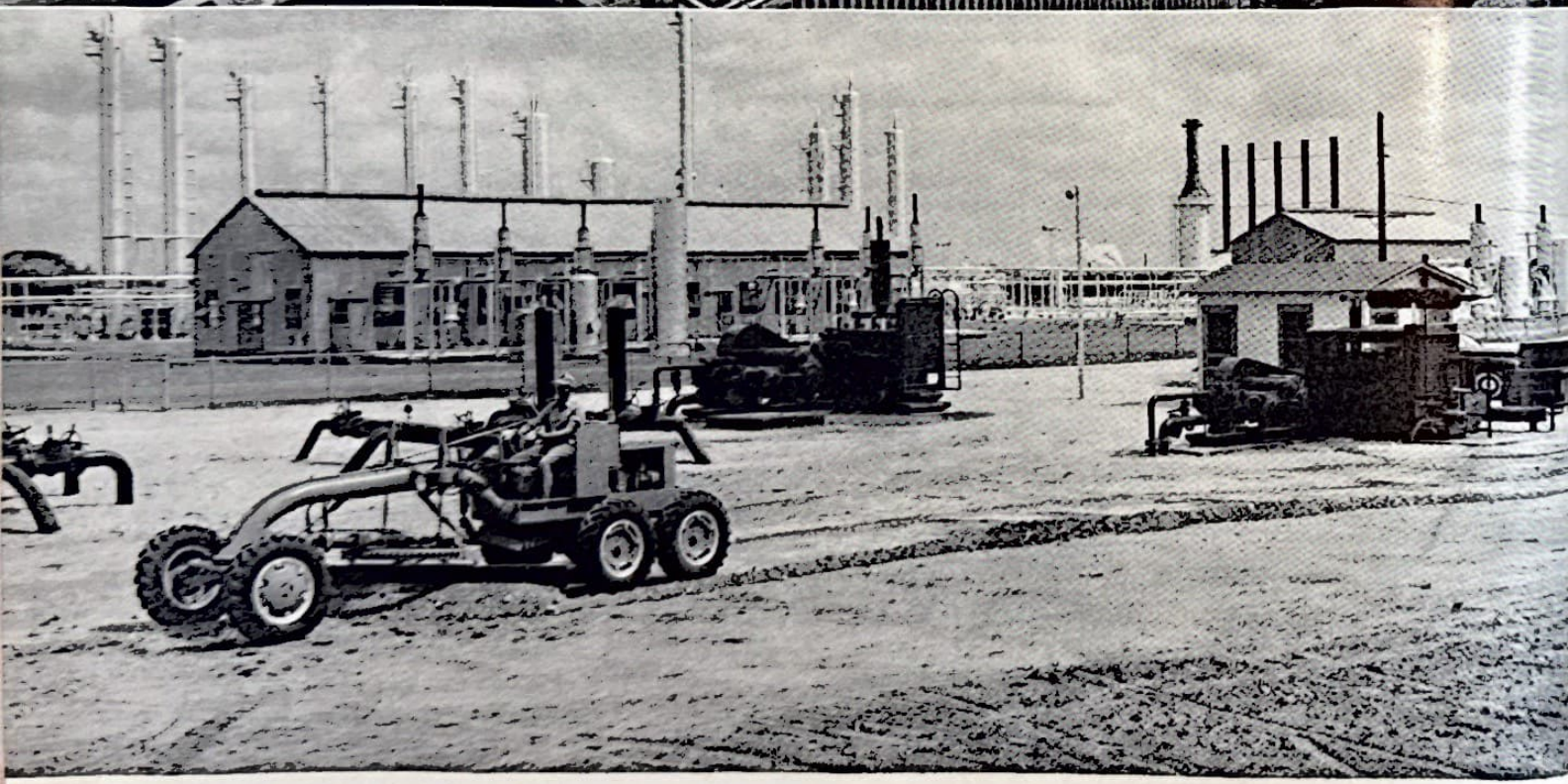
Markets Served by A-C People . . .

Any company's sales picture is dependent upon the condition of its markets. A-C's markets are found nearly anywhere that raw materials are drawn from the earth and later fashioned into useful items for home or industry. Markets exist where food is grown or processed—where energy is harnessed or distributed—wherever man raises new buildings or adds to transportation.

Some of A-C's markets give a long-range stability to the company's sales picture. Others point toward a strong sales development in the years ahead. Following is a glimpse of the broad base for Allis-Chalmers growth. . . .

Installed in 1956, this outdoor reheat steam turbine with hydrogen-cooled generator is located in Florida.



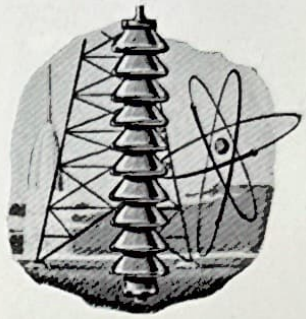


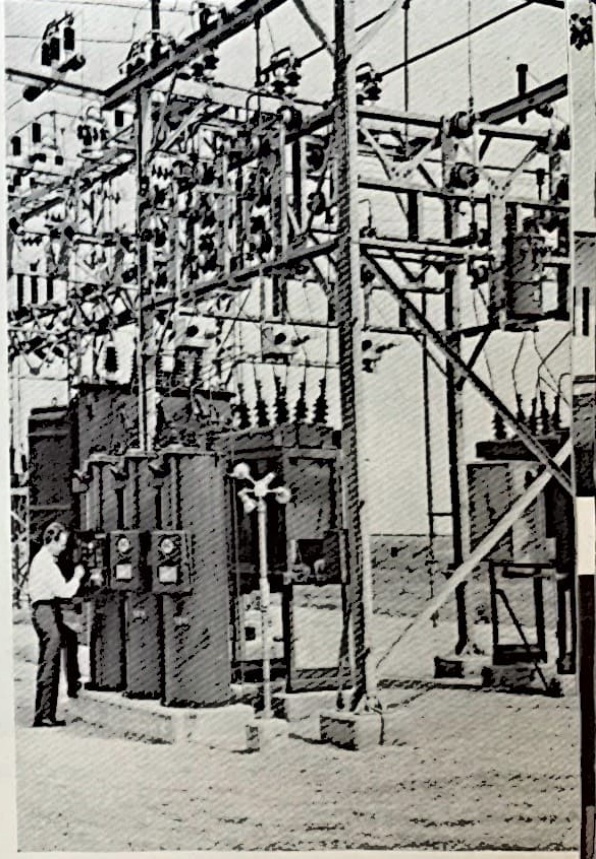
Motor grader maintaining road at an oil refinery near San Antonio, Texas.

THE MARKETS WE SERVE . . .

electric power

Continued rapid growth seems certain in the field of electric power. The nation is now using more than twice as much electricity as a decade ago, and this figure is expected to double again in the next 10 years. In 1956, a rise in buying by utilities brought an increase in orders for Allis-Chalmers turbine-generator units, substations, transformers, switchgear and circuit breakers. Utilities are expected to continue their expansion in 1957, with an increase in the purchase of electrical equipment by industry in general also indicated. Looking further into the future, prospects for the use of atomic fuel in the generation of electricity open new opportunities for these industries and for Allis-Chalmers, a pioneer in this field.



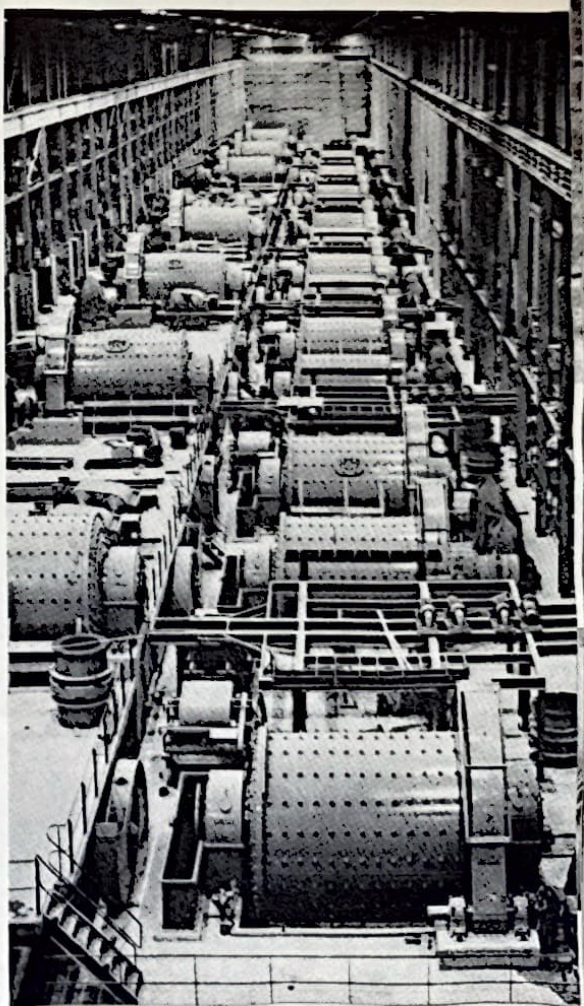


A complete A-C substation—with regulators, power transformer, circuit breakers and distribution transformer.

mining and metals

Industries engaged in mining and metals processing will continue to grow as a market for Allis-Chalmers crushers, vibrating screens and pumps, as well as tractors and electrical equipment. The rate of construction of new plants to treat taconite and other low-grade ores should continue to rise. The consumption of most metals and alloys is expected to increase 15 to 30 percent in the next decade, with much greater expansion for certain lightweight metals.

Allis-Chalmers grinding mills are used in the processing of taconite rock for iron and steel making.



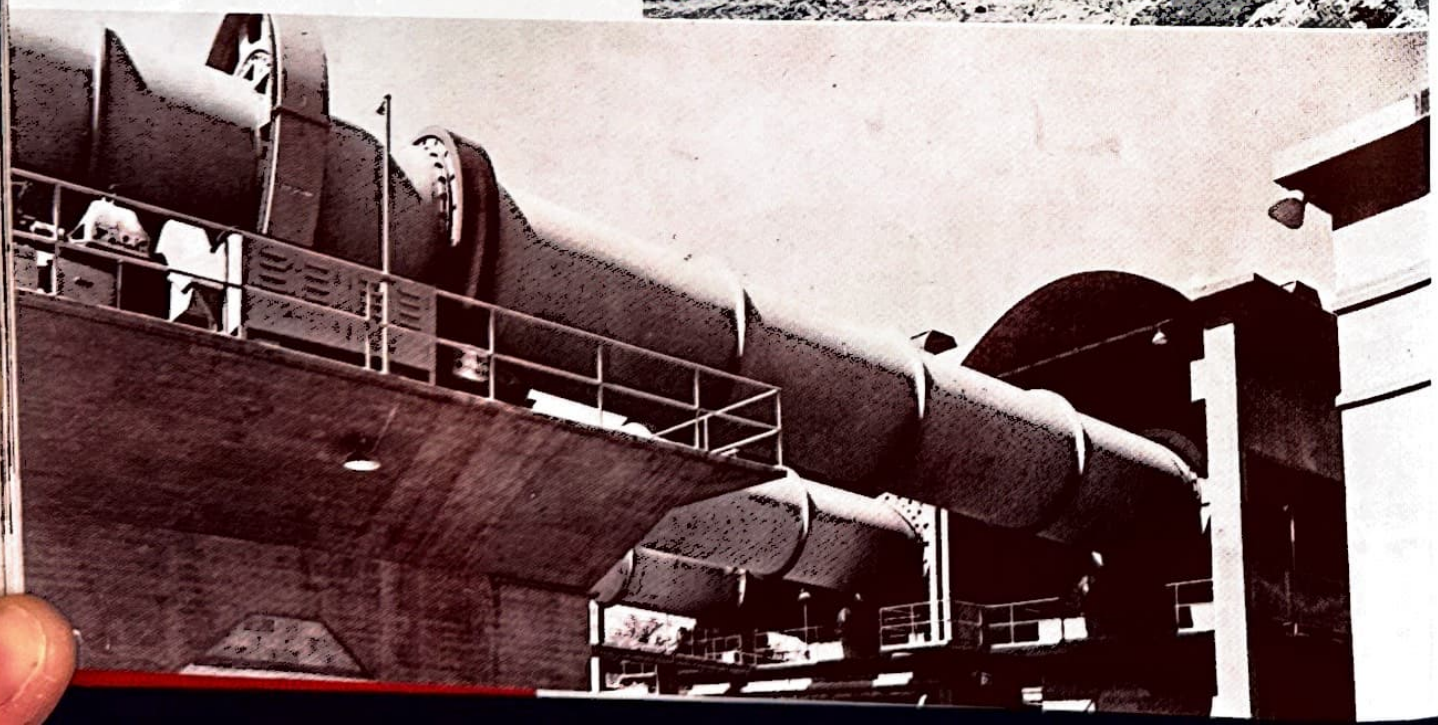
chemicals

Allis-Chalmers serves most phases of chemical manufacture and processing, including petroleum refining, industrial chemicals, pharmaceuticals, plastics, synthetic fibers and chemicals for agriculture. Included are some of today's great growth industries. Continued strength is indicated by the fact that total production of chemicals is expected to increase 150 percent by 1970, indicating a strong future as a market for A-C products.

A new TS-260 motor scraper building a grade in the San Fernando Valley, California.

Tractor shovel excavating site for a new shopping center in Toronto, Ontario.

These giant Allis-Chalmers rotary kilns help meet the growing demand for cement.

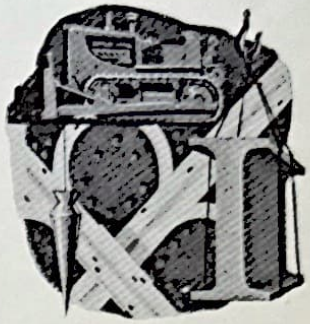


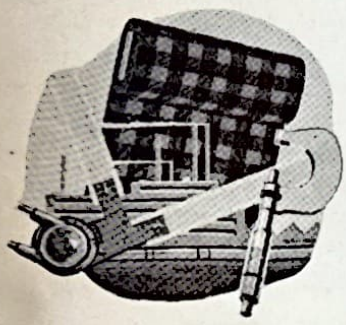
THE MARKETS WE SERVE . . .

construction

The construction industry is making record-growth—yet it must grow still more rapidly if it is to overtake the expanding need for new building. Contractors signed up a record amount of business in 1956, and this was accompanied by a rise in sales of Allis-Chalmers machinery to builders and those in related industries.

The long-range outlook was strengthened in 1956 by the enactment of the new federal highway program—to be the greatest non-military construction effort in history. Federal aid, together with matching money from the states, will spark a $50 billion program over the next 13 years.



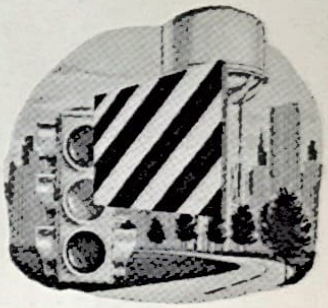


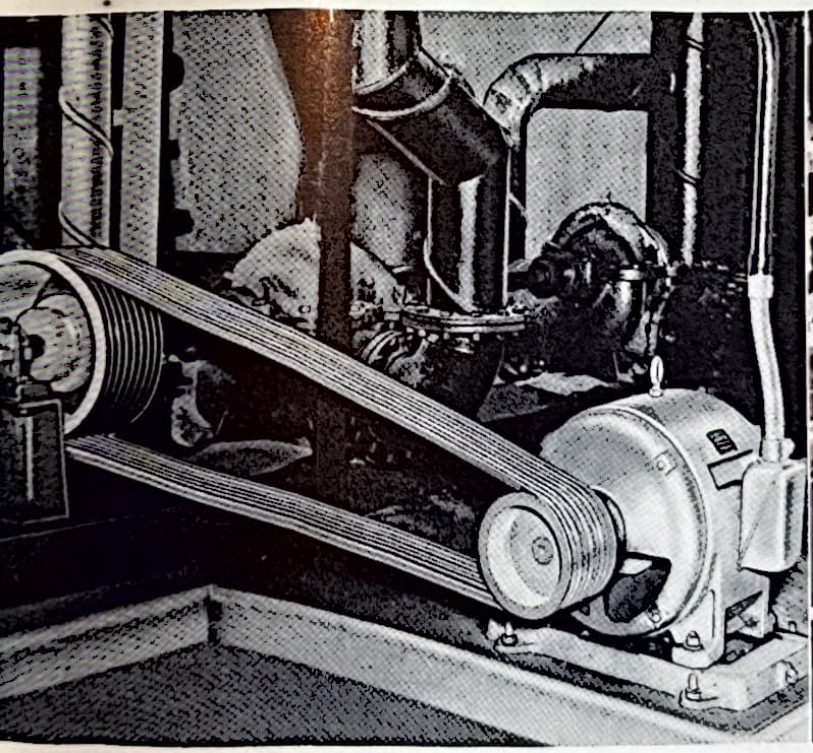
manufacturing

The rapid growth of civilian demand is bringing expansion in almost every line of manufacturing. Productive capacity is expected to expand by more than half in the next 15 years, and there will be continuing modernization of existing plants and equipment. These trends offer new opportunities for sales of Allis-Chalmers V-belt drives, motors, pumps and switchgear, as well as special machines used in processing textiles, paper and other products. Prospects are especially good for increased use of material handling machines.

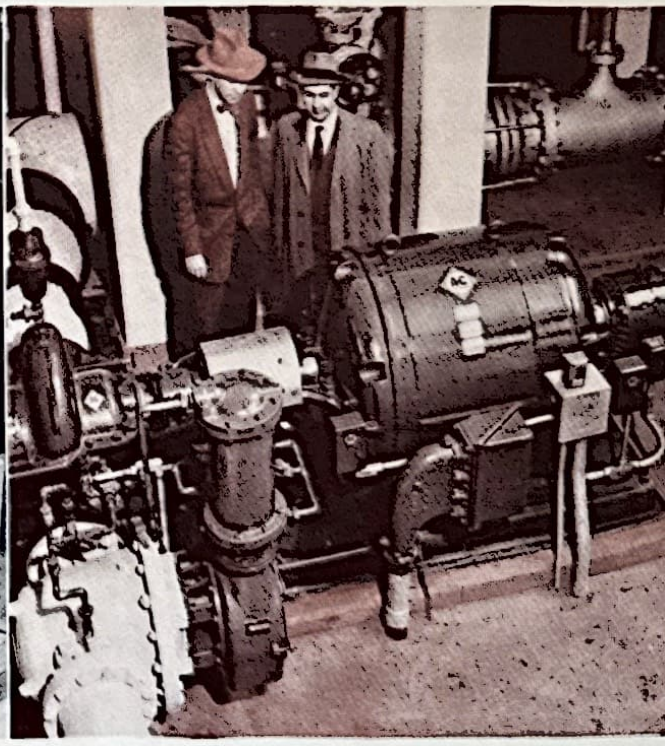
public works

Spending for public works is increasing every year with our rising urban population. Our communities are requiring more and more public services such as schools, hospitals, water supply and sewage disposal. The next 15 years should require a doubling of our elementary school capacity and at least a doubling of hospital capacity. There is a growing need for street and highway construction, urban rebuilding, and parking and recreation facilities. These trends make public works a growing market for such products as electrical equipment, construction machinery, pumps and engines.



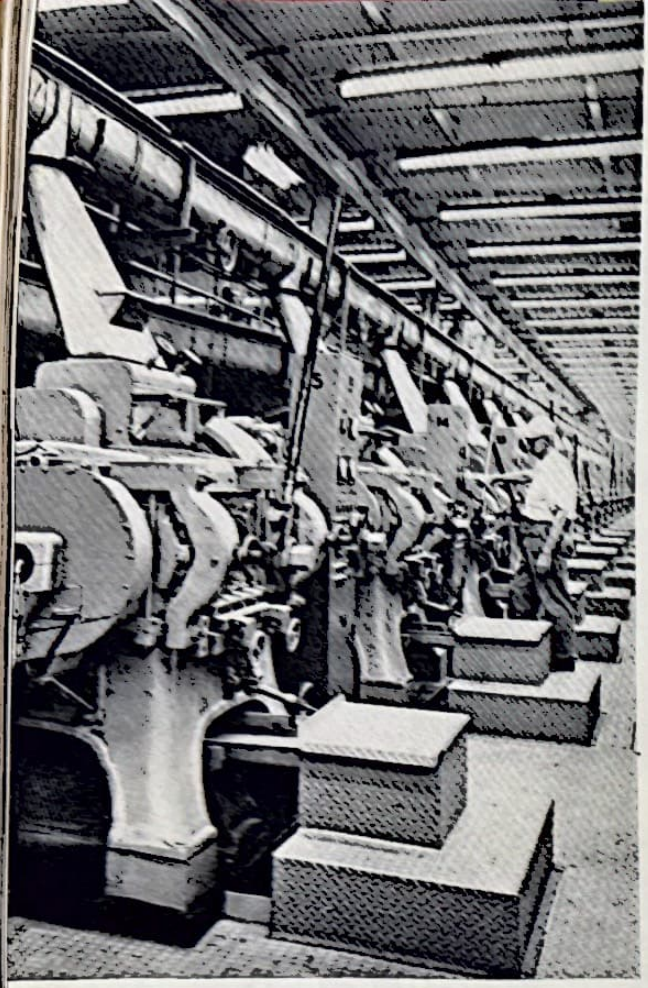


Efficient TEXROPE V-belt drives and Allis-Chalmers electric motors help manufacturers cut production costs.



Four of these A-C pump and motor units were recently installed in a municipal water works in Ohio.

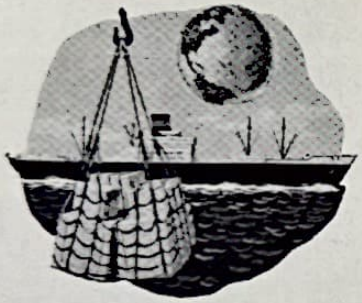
THE MARKETS WE SERVE . . .



Fifteen of these latest design flaking mills were installed in a breakfast cereal plant at Battle Creek, Mich.

food and agriculture

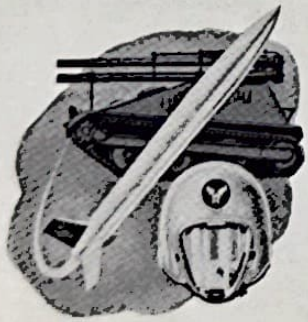
With the nation's population growing by almost 3,000,000 per year, the need for farm products is becoming steadily greater. Recent changes in farming have established modern machines more firmly than ever as a necessary part of profitable farming. Larger farms . . . the need for efficiency . . . the trend toward greater use of tractors in livestock farming—all have increased the need for power farming equipment. The future holds many opportunities for further mechanization . . . and especially for sales of advanced-design machines built for high-efficiency farming.



export

The export picture is bright. In 1956, A-C's foreign business was up 20 percent for the Tractor Group and 25 percent for the Industries Group, with continued improvement expected. There is a higher degree of general business expansion throughout the free world than ever before—in industry, construction and agriculture. In addition, exports have been helped by the increased availability of dollars, aided by high level United States imports, large American investments abroad and the increase in American tourist travel.

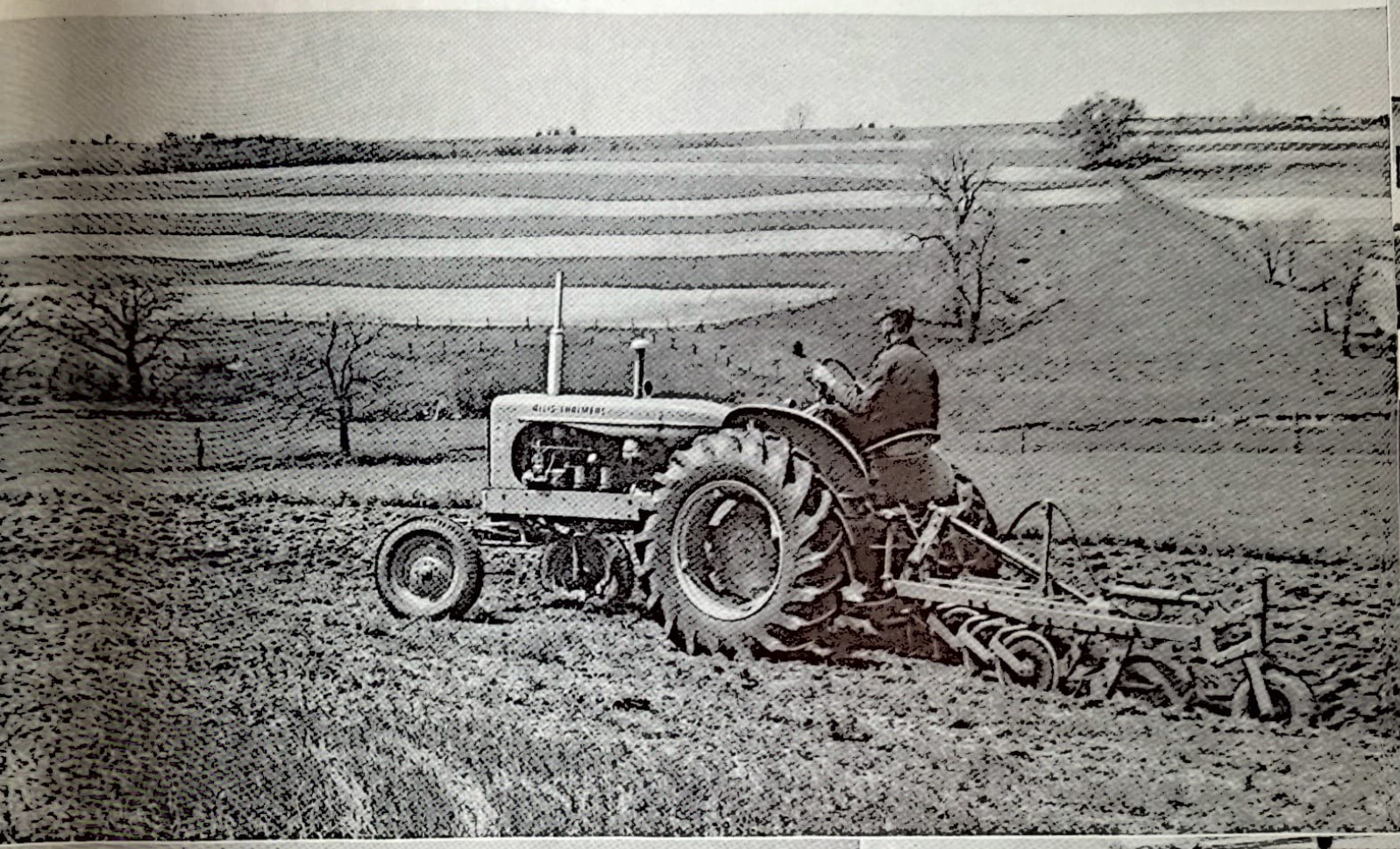
The "mechanical hands" of an Allis-Chalmers fork lift truck handle food at a cold storage warehouse in Chicago.

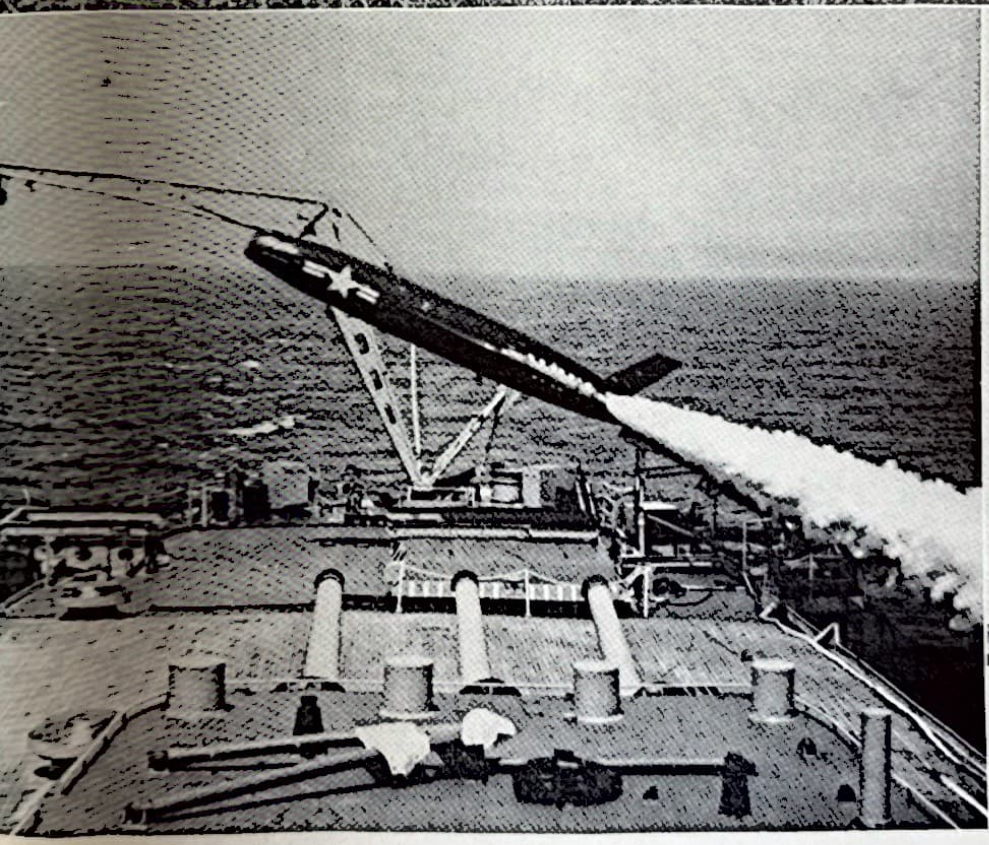


defense

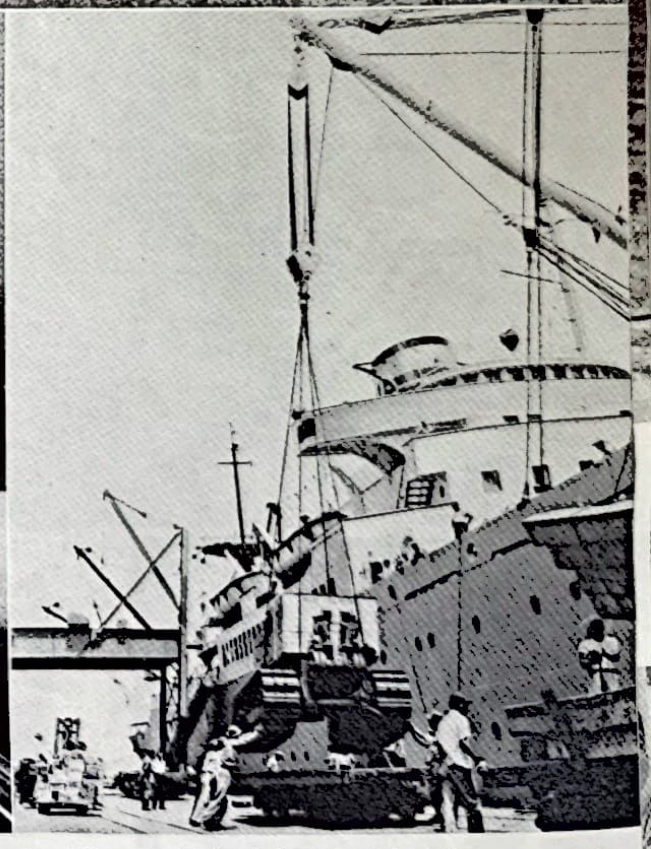
Allis-Chalmers continues to take an important part in the nation's security —by supplying many different types of equipment to our armed forces. Currently being manufactured is such varied equipment as jet aircraft parts and compressor units for the Air Force, the ONTOS armored vehicle for the Marine Corps, and propulsion units, pumps and other equipment for naval vessels. These and other Allis-Chalmers products combine to make an important contribution to our national defense.

A-C's four-plow tractor continues to be a leader in its size class, offering the power and features modern farming requires.





Electrical control equipment made by Allis-Chalmers is an important part of the firing gear of the Navy's Regulus guided missile.



An A-C crawler tractor being unloaded at the Port of La Guaira, Venezuela.

Enterprising Brothers Mix Dealer Activities, Civic Affairs

Take an idea, 12 eager young men, a worthy cause, an A-C farm tractor, a wornout hearse, a mannequin and wheel chair, plus mountains of co-operation and enthusiasm — and you have an unusual method of raising money for the March of Dimes.

Last month members of the Junior Chamber of Commerce at Kankakee, Ill., put all of this together. The project was their second annual 120-mile "March for Dimes" to Chicago and back to raise funds.

Leading the police-escorted caravan was Vern Ruder with his Allis-Chalmers WD-45 farm tractor pulling the hearse of mid '30 vintage mounted on a trailer.

Vern, with his brother Isidore, own the Allis-Chalmers dealership, Ruder Brothers Farm Store at Manteno, eight miles from Kankakee. They and their parts manager, Claude Sparger, shared the driving duties.

Partners in the business since 1950, the enterprising brothers have mixed their dealer activities with participation in civic affairs. Vern is a member of the Jaycees while Isidore is mayor of Manteno, a village of 1800.

A kickoff parade on a Friday afternoon hailed the caravan as it moved north out of Kankakee to Chicago. Following the group were six Jaycees clad in maroon sweat suits. They were pushing a wheel chair carrying "Glendora Jaycee," symbolizing a polio victim.

With sights set on measuring their march "a penny a foot," early contributions insured the group of getting to Chicago and on the road again. But their return home would necessitate more funds. The group stopped in various communities to collect money en route.

Some cars on the highway came to a halt when they heard the sirens and saw the flashing lights of the state police escort. When they found it was nothing serious, they shook their heads, smiled and contributed to "Glendora" amid cheers.

A breakfast of sausage and pancakes was furnished by the volunteer fire department at Hometown, Ill., just outside of Chicago for the hungry entourage. With marchers and other Jaycees the party had grown to 25.

After a brief ceremony at noon at Madison and State Streets, in the second largest city in the country, six fresh Jaycee marchers took over for the journey home.

Fighting wintry winds and sub-zero cold all were happy when the journey brought them back home to warm fires. Incomplete totals showed $5,200 in cash with additional pledges to be fulfilled.

As an observer put it, "If intent, spirit and desire were dollars they'd have raised a million bucks."

Ferris Crocker (right) of Manteno, Ill., stopped on the highway in near zero temperature to make his contribution to "Glendora Jaycee."

llow-through on last-minute details always falls to chosen few as (left to right) B. J. Emling, Art berlin, Kankakee Jaycee president, and Pat Glade, ycee wife, check roster for extra help. WD-45 in ckground led caravan on route outlined on window.

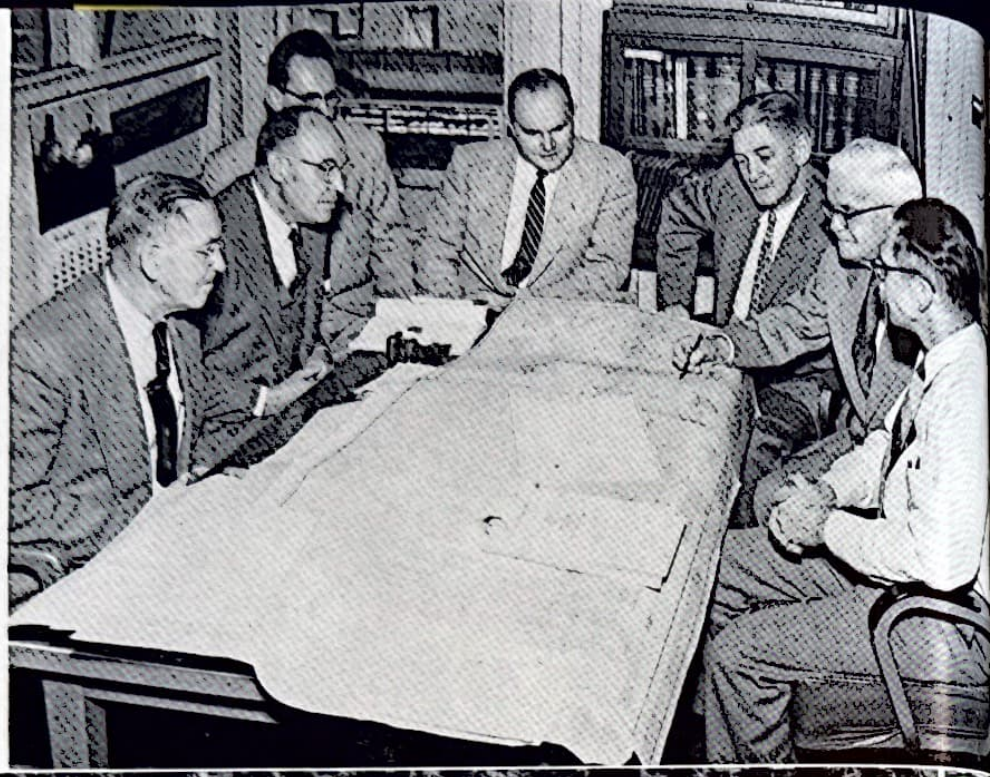
First stop for chow was Ruder Brothers Farm Store in Manteno, eight miles along the way. Local American Legion post furnished fishburgers and coffee. Isidore Ruder (in coveralls) hands out sandwiches while Claude Sparger (wearing hat), parts manager, takes care of the coffee.

Wade Meredith (left), A-C blockman from Rockford branch, gets lowdown on schedule from Vern Ruder, Allis-Chalmers dealer in Manteno, Ill.

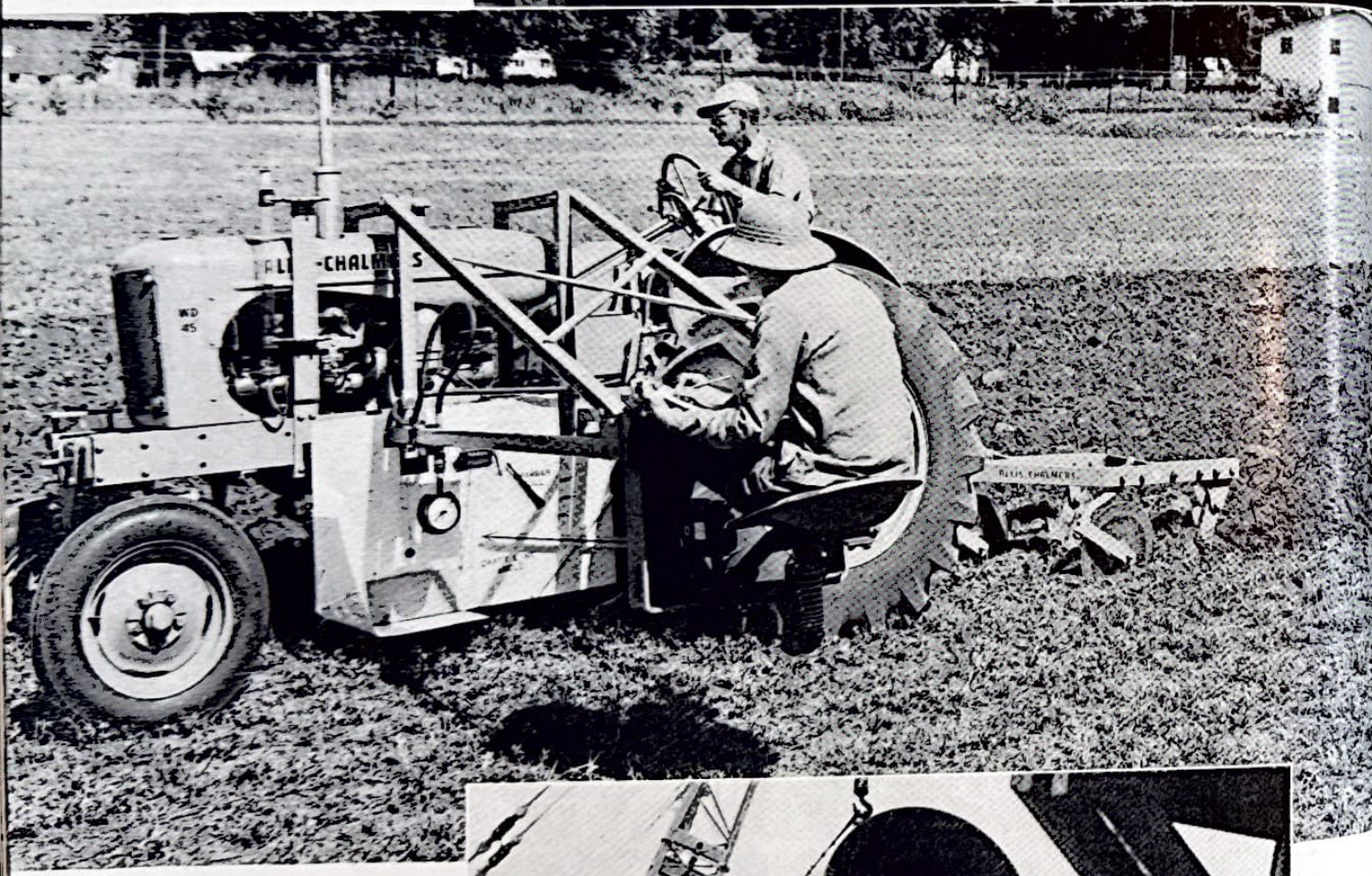
Marching down Chicago's State street at noon on a cold, overcast day came the six hardy maroon sweat-suit clad members of the Kankakee, Ill., Junior Chamber of Commerce, midway on their 120-mile trek to raise polio funds.

Caravan moves along highway south of Chicago. Jaycees took turns pushing "Glendora" and her wheelchair the entire distance.

Engineers from several product departments may work together with a customer. This West Allis Works team is planning a new hydroelectric plant for Alaska. Left to right are C. R. Olson and John Baude, Switchgear; T. F. Armbruster, Motor & Generator; D. H. Holmes, Seattle district office; B. R. Bates of R. W. Beck & Associates, Seattle; Emil Gross and B. R. Nichols, Hydraulics department.



Tractor engineering goes "down to earth" to get precision measurements of tractor and implement characteristics in various soil conditions. On a test plot near La Crosse Works, Bill Warner is taking draft line and drawbar pull readings as Ray Larson drives the tractor. Motion picture camera mounted under outrigger seat gives permanent record of instrument readings, other information.



A-C field superintendents, many of whom are graduate engineers, have the responsibility of supervising installation of Allis-Chalmers machinery wherever it is sold. Here is C. E. Phillips (in hard hat) in charge of putting up a cement plant for Companhia Peruana de Cemento Portland in Lima, Peru.

Engineering in Action

What does it mean at Allis-Chalmers?

FOR several months, "Engineering in Action" has been featured in Allis-Chalmers advertising in the Saturday Evening Post and other magazines. The ads show the A-C engineer as part of a team that provides products of true quality at a reasonable price. And since National Engineers Week falls in February, let's consider the engineer in action at Allis-Chalmers.

What does engineering in action mean to the company and its employes? The word "engineering" covers the features built into an A-C product, whether it is a tractor or a transformer. The company can't package engineering and sell it by the pound — engineering must be utilized to provide advantages for the users of Allis-Chalmers products.

A. W. Van Hercke, vice president, director of engineering, Tractor Group, puts it this way: "To us, engineering embodies not only design, development and manufacture of products but also research, product concept and market analysis. Instead of separate sections labeled 'Research,' where factfinding and problem solving is a primary aim, and 'Development,' where the findings become physical machines, we join both title and function in 'engineering research and development.'

"The same team that does the initial factfinding continues right on until a new discovery becomes a fully tested component part or complete machine.

"The engineering advances represented in machines resulting from this concept have set new patterns which have become industry-wide."

So far as the customer is concerned, "engineering" means a machine that will do a job better, safer, faster or with less maintenance; it means a machine that costs less at the start or produces more per dollar of investment. It may be a combination of several features which attracts the buyer. And customer approval makes sales and jobs for A-C people.

The history of Allis-Chalmers is a history of engineering in action. Through a long list of engineering developments, the company has grown to its present stature among American manufacturers.

In its infancy, the company made high-grade millstones for grinding flour. When it seemed that roller mills would do a better job, attention was turned to engineering the best roller mills. On the heels of the flour mills came the rest of the products that bear the Allis-Chalmers name. These new products were not hit-or-miss ventures. E. P. Allis and his successors went after new business by finding the best engineering talent for the job and supporting this talent with the best in manufacturing personnel.

By 1900, Allis-Chalmers was becoming important as an engineering company, thanks to a comparative handfull of talented men. So provision was made to assure a continuous flow of trained engineers through the establishment of the Graduate Training course in 1904. Engineering students were trained to take a place in the A-C organization and many of the company's present engineers are graduates of the program.

Usually, engineers come directly from college to the course. Sometimes, however, men with previous employment experience take a short course to become familiar with the company's products.

The program offers the young, inexperienced engineer the chance to learn and grow professionally with an established firm having a recognized engineering background and wide product range. A trainee (commonly called a GTC) may choose from a wide variety of shop, office or field locations and is given many lecture courses during his training period, which may last up to two years.

Students prepare for assignment in an Industries Group product department, in one of Tractor's 10 engineering departments in manufacturing, plant engineering, field service, research or sales. On this matter, J. F. Roberts, vice president, director of engineering, Industries Group, says:

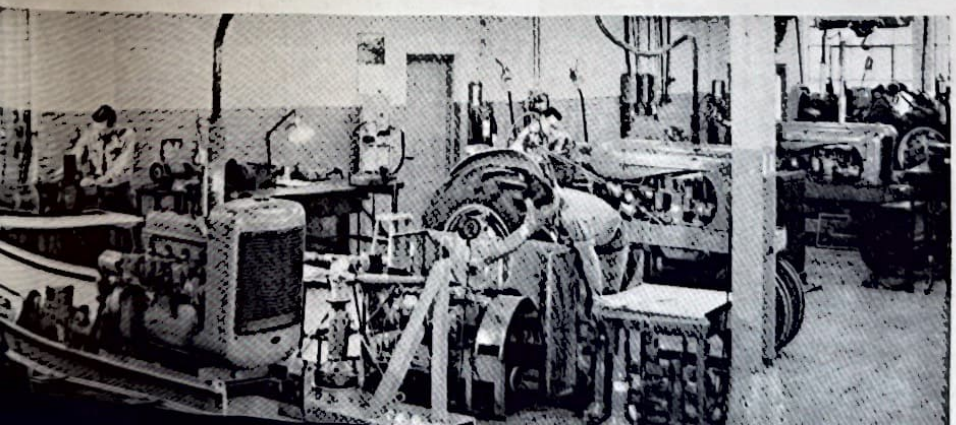
"Assignment off a training course is a case of putting a graduate into an area where he is well suited to work and an area where he prefers to be. Happily, these two areas are very often the same."

Industries Group engineers get into sales work by requesting assignment to a district office, or to application work in a product department. Others less interested in sales may request assignment in research laboratory or design and development work. Still another group may prefer manufacturing or service and erection.

Tractor Group uses some engineers in its sales force, particularly civil engineers in construction machinery sales and mechanical engineers in engine sales. Most Tractor Group trainees go into design and development work. Frequently Tractor engineers help build, test and operate the machines they have designed, as part of the normal development process.

While there is no "average" engineer at A-C or anywhere else, the engineer usually has a passionate attention for detail, which may account for the fact that he can design a machine at his desk and be sure it will work perfectly.

How and why does a man decide to become an engineer? Sometimes the idea is planted by proud parents who feel their little Freddie is a mechanical whiz. Sometimes a student gets into engineer-



Tractor Group engineering includes testing and appraising the performance of new features as they are developed.

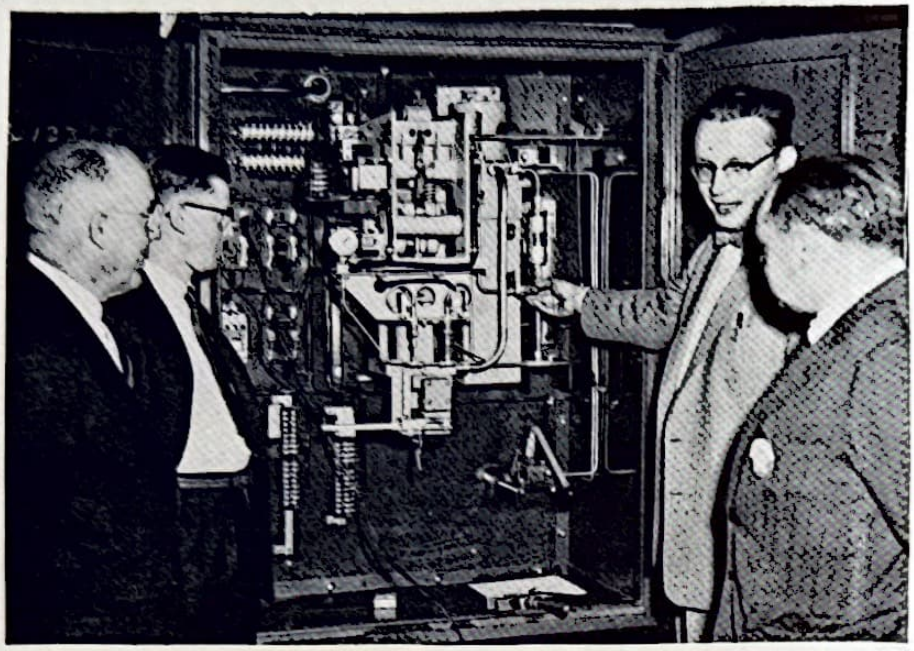
Engineering . . .

ing courses through an interest in mathematics, physics or chemistry. Sometimes he has confidence in the world of science and a desire for an economically secure career.

The engineer differs from the scientist in the respect that he is not concerned with uncovering new phenomena. But the engineer is an inventor when he applies established principles to perform new and useful services for economic benefit. To illustrate this point, take the basic laws of hydraulics. Here's how three A-C engineering departments applied hydraulics to improve their products:

The Processing Machinery department has used hydraulic mechanisms in gyratory crushers for more than 20 years. A raising and lowering system is incorporated in the crusher to provide "one-man, one-minute adjustment" to change the size of the discharged material or compensate for wear. With this hydraulic system, adjustment is made as easily as you set a coffee grinder in your supermarket.

Two farm equipment engineering teams, headed by W. F. Strehlow, chief engineer, West Allis Works, and W. H. Tanke, chief engineer, La Crosse Works, developed the Traction Booster system. Hydraulic pressure helps a WD-45 tractor do at least 25 per cent more work than tractors equipped with other hydraulic systems. The system utilizes the weight of the attached implement by transferring this weight to the rear wheels of the tractor at exactly the right moment and in the right amount. Traction is improved and the tractor's engine power is used more efficiently.



When customers visit an Allis-Chalmers works, engineers are frequently called upon to act as guides, explain the workings of products as W. F. MacElhiney (second from right) is doing here at Boston Works.

A third use of hydraulics came from two Boston Works engineers fresh off the Graduate Training course. E. R. Perry and N. W. Morelli developed the *Pneu-Draulic* operator for large oil-filled circuit breakers. It gives the customer fast, safe operation of the breaker under any conditions. (Morelli is now plant engineer at Terre Haute Works and Perry is Southwest Region representative, transmission and distribution equipment, in Dallas, Tex.)

These are three examples of engineering in action at Allis-Chalmers — using science to improve a product. Each of these is a patented advantage which means recognition for the inventor and prestige for the company. This advantage also means increased sales of A-C products and more employment for Allis-Chalmers people.

At an electrical lecture course session, Application Engineer D. A. Kortman uses a working model of a JFR regulator mechanism. Classes like this are part of Graduate Training program.

This drafting room is the source of literally acres of drawings and blueprints necessary for Tractor Group engineering and development work.

A pull scraper, motor wagon and two motor scrapers are prepared for shipment from Cedar Rapids Works to Chicago early in January.

Use of a scale model helps get the most out of A-C's exhibit space. Shown here considering a change are (left to right) A. E. Thode, D. E. Cavanaugh, C. W. Simandl, C. N. Karr and V. M. Holloway, part of the Tractor Group team that worked on the plan.

ARBA Road Show

"The best yet," was Charlie Karr's comment on the Allis-Chalmers exhibit when the American Road Builders' Association Road Show ended its stand at the International Amphitheatre in Chicago earlier this month. Karr, sales promotion manager for the Tractor Group, is a veteran at these affairs and at selling Allis-Chalmers and its products.

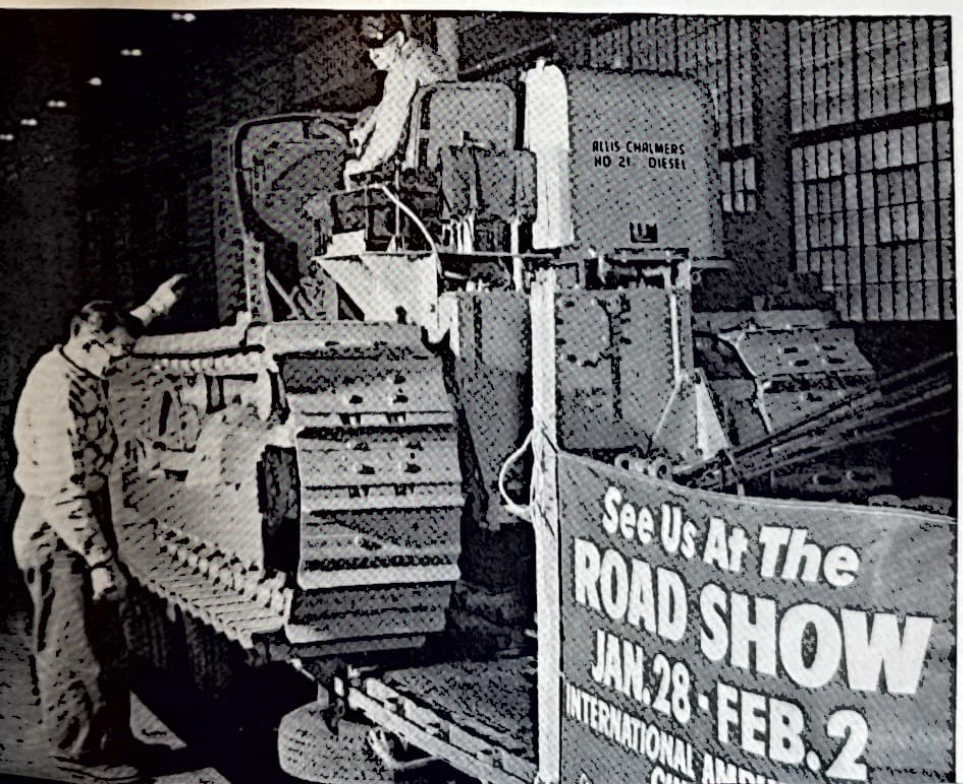
One of almost 300 producers of construction machinery and materials that participated in the ARBA Road Show, Allis-Chalmers had the most complete and diversified exhibit of equipment necessary to highway construction. Value of A-C products displayed was $415,000.

Thousands of highway building and road contractors, bankers and public officials from the U. S. and abroad were on hand. While the last show was held outdoors in 1948, this year's indoor exhibition space covered the equivalent of 12 football fields.

One of the four largest exhibitors, A-C "Parade of Products with Advanced Design" covered nearly 20,000 square feet of floor area. A huge 200 foot background of promotional material with the general theme of "Engineering in Action" showed the company's engineering, research, manufacturing, nationwide distribution, and parts and service.

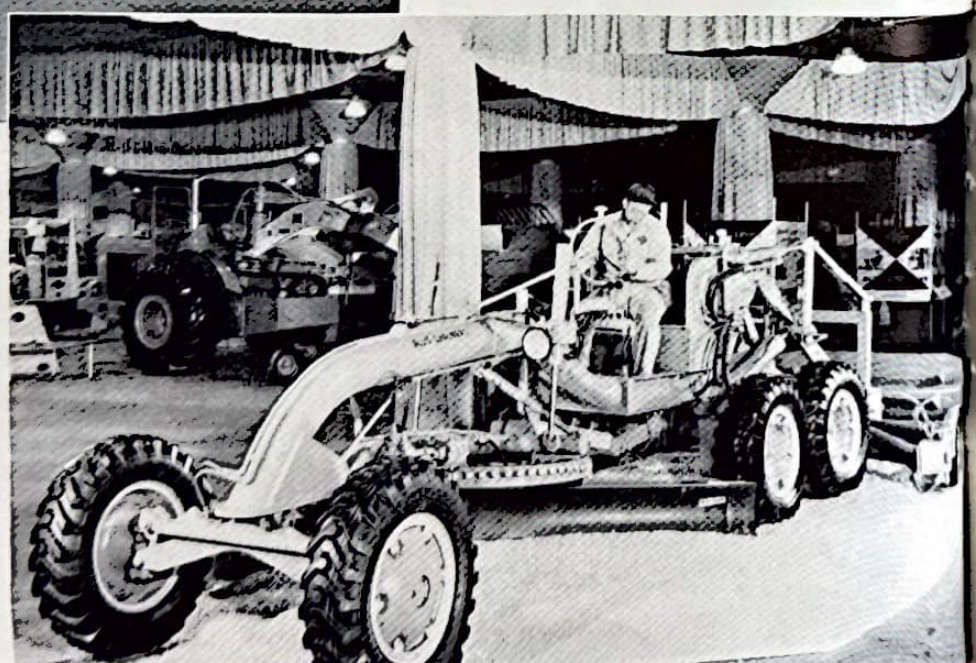
The 1957 ARBA Road Show was of great significance to the construction machinery industry, and the country as a whole, because of the 33 billion dollar federal highway construction bill enacted last year.

Henry Applegate, Springfield Works shipping department, maneuvers cutaway HD-21 crawler tractor onto trailer bed.



John G. Hastings, sales engineer for Buda division, jockeys FPT-60 fork lift truck into position in the A-C exhibit space.

Local carpenters put finishing touches on A-C exhibit as another workman cleans the hood of the TS-360 motor scraper.



Simulated building and maintaining of road shoulders is demonstrated in this exhibit of the Model D motor grader. Driver is Dick Gaulke, Construction Machinery Sales.

ARBA Road Show

A major portion of some 25 units displayed by Allis-Chalmers came from the Springfield and Cedar Rapids Works with additional equipment from West Allis, Harvey and Norwood Works.

Plans for the A-C program were laid early last summer, according to C. W. "Chuck" Simandl, a member of the Tractor Group sales promotion department and chairman for A-C's exhibit.

As plans were taking shape on the exhibit proper, sales and advertising personnel were working with manufacturing people.

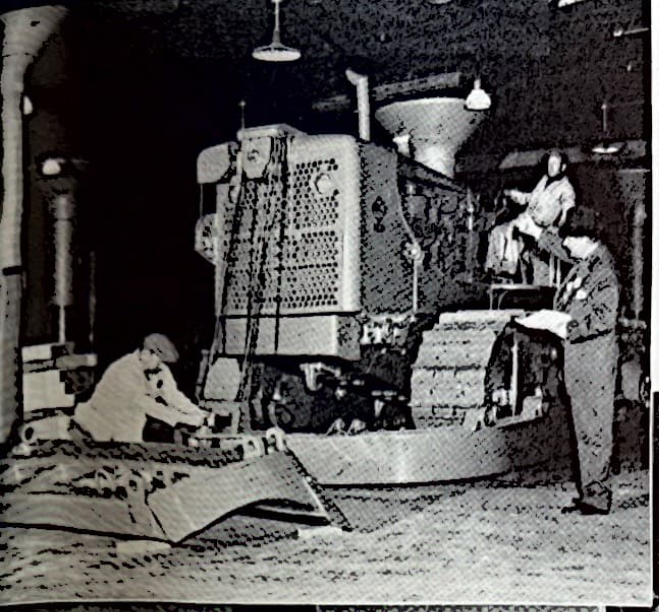
Caravans of crawlers, motor graders, motor scrapers and wagons and pull scrapers began leaving Springfield and Cedar Rapids by truck two weeks before the show opened Jan. 28.

"While it takes a lot of teamwork to plan the exhibit, construct displays, and get all of it to the show area, the big pressure job is to get set up on schedule. Again this is where careful planning paid off," said Simandl.

While this was a Tractor Group show, two interesting exhibits of the Industries Group were also utilized. They were models of an ACL cement plant and gyratory crusher, both important to any large scale construction work.

Three special trains carried dealers and customers to Springfield Works where they saw crawler tractor and motor grader production.

This is just one of many trade shows, conventions and fairs in which Allis-Chalmers participates—wherever there is a sizeable audience of prospective A-C equipment users. With company personnel on hand to answer questions and explain features of our products, an exhibition of this nature is opportunity to display our wares and increase the effectiveness of company salesmen and dealers in their selling.

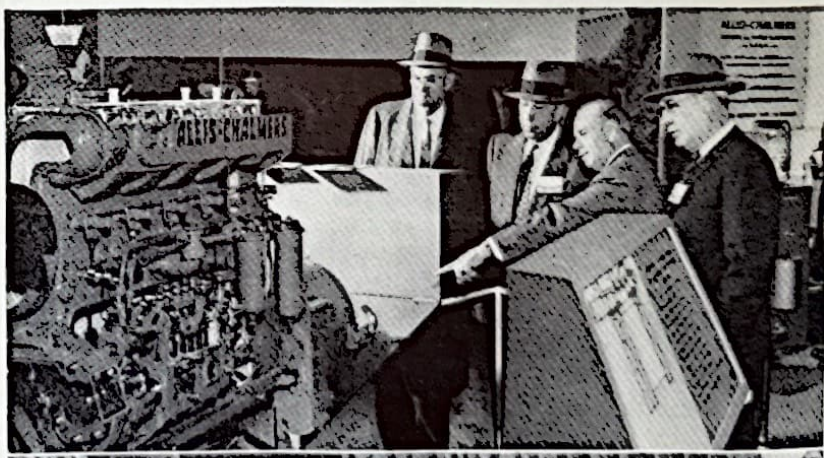


After HD-21 was spotted in display area, Dan Cavanaugh (right), Tractor Advertising, directs driver Ed Johnson and Dick Gaulke (left), Construction Machinery Sales, in positioning C-frame onto which dozer blade will be mounted.

Crowds like this were typical at the Allis-Chalmers exhibit during the six-day show. Retail value of the A-C construction machinery and related equipment was placed at more than $415,000, not including background display materials.

Attracting a lot of attention at the Road Show was this cutaway DS-844 diesel engine with moving parts. A. E. Dorn (pointing), Construction Machinery division sales manager, explains features to (left to right) W. L. Fitzgerald, Williamson county highway superintendent, Franklin, Tenn.; Joe Miles, Miles Construction Co., Nashville, Tenn., and W. D. Kerrick, Wilson, Weesner & Wilkinson Co., A-C dealer at Nashville.

Contractors, bankers and public officials from the United States and overseas met at the Road Show. Shown here are E. J. Mercer, general manager, Construction Machinery division; R. B. Johnson, Milwaukee County bank, and J. A. Johnson, A-C factory representative, Johannesburg, South Africa.



Boyd S. Oberlink, Tractor Group vice-president, was interviewed on a closed-circuit television program by D. V. Buttenheim, publisher of Contractors and Engineers magazine. Telecast was beamed to exhibit areas and downtown hotels.

One of hockey's pre-game rituals is observed by Stan Beluetz, St. Thomas Works assembly department. He's applying fresh friction tape to a favorite hockey stick.

George Thomson (standing), general foreman, is the team's manager and Art Sullivan (seated, right), the coach. Behind Sullivan, in light coat, is Mrs. Lorraine Beluetz, accounting department, wife of player in photo at left.

Hockey's Their Game

St. Thomas Works has 'Only A-C Hockey Team'

What's your favorite spectator sport?

If your choice happens to be ice hockey, you're in agreement with the folks at Allis-Chalmers St. Thomas (Ontario) Works, located about halfway between Detroit and Toronto.

Hockey is Canada's national sport, and the good people of St. Thomas are Canadian to the core when it comes to backing their favorite sport. For example, a team made up of A-C employes is a contender in the city's Industrial Hockey League, which plays every Thursday night in the new St. Thomas Elgin Memorial Centre.

The extent of hockey's appeal in Canada is similar to the pattern of baseball in the United States. There is the "big time" with Toronto and Montreal in the National Hockey League (plus a host of Canadian-born players on the New York, Chicago, Boston and Detroit teams in the same circuit.)

In addition to the NHL, Canadians follow the fortunes of friends and relatives in the amateur leagues, which range from Senior A and B down through the "peewees" and "midgets" who start learning the game at age 8.

And an exciting game it is, at any level of play. Hockey combines the speed of basketball, the bone-crushing aspects of football, the play-making of baseball in one action-filled rink. A good skater reaches speeds up to 30 mph in a short distance . . . the goal tender, despite his 25 pounds of padding, must be able to see and stop a hard rubber disc which may be headed his way at speeds up to 80-100 mph.

The St. Thomas Works Aces are not "pros," but they play good hockey. They hold down their jobs and play or practice on their own time. A few of them may be getting thick in the middle or thin on top, but they'll give you as exciting a show as the professionals.

The St. Thomas Industrial League is made up of "the only Allis-Chalmers hockey team in the world," plus the St. Thomas Merchants and sextets from Port Stanley, Union and other neighboring towns. The arena was erected for the people of St. Thomas (population 20,000) and Elgin county, with public subscriptions accounting for $110,000 of the total $410,000 cost. The arena seats 2,500 for hockey games and the center also includes a separate auditorium, stage and kitchen facilities.

The Works hockey team is coached by Art Sullivan, motor winder, who played for Paisley in the Scottish Hockey Association and is now a member of the St. Thomas Senior team. George Thomson, general foreman, organized the team and serves as manager.

Employment at the works is at an all-time high of 250 and is expected to go higher this spring when a 20,000 sq. ft. addition to the present building is completed, according to Works Manager J. A. McVeigh. Products made at St. Thomas Works include electric controls for Canadian-built diesel locomotives, switchgear and industrial controls and motors from 1 to 200 hp.

Do they take their hockey seriously at St. Thomas Works? As an example, take the case of Keith Kewley, expediter, who coaches the city's Senior team and once played in Scotland. He's the type of fan whose conversation runs largely to hockey, hockey and more hockey.

One night in January as Kewley was reading the paper, he saw the headlines about the resignation of Great Britain's prime minister.

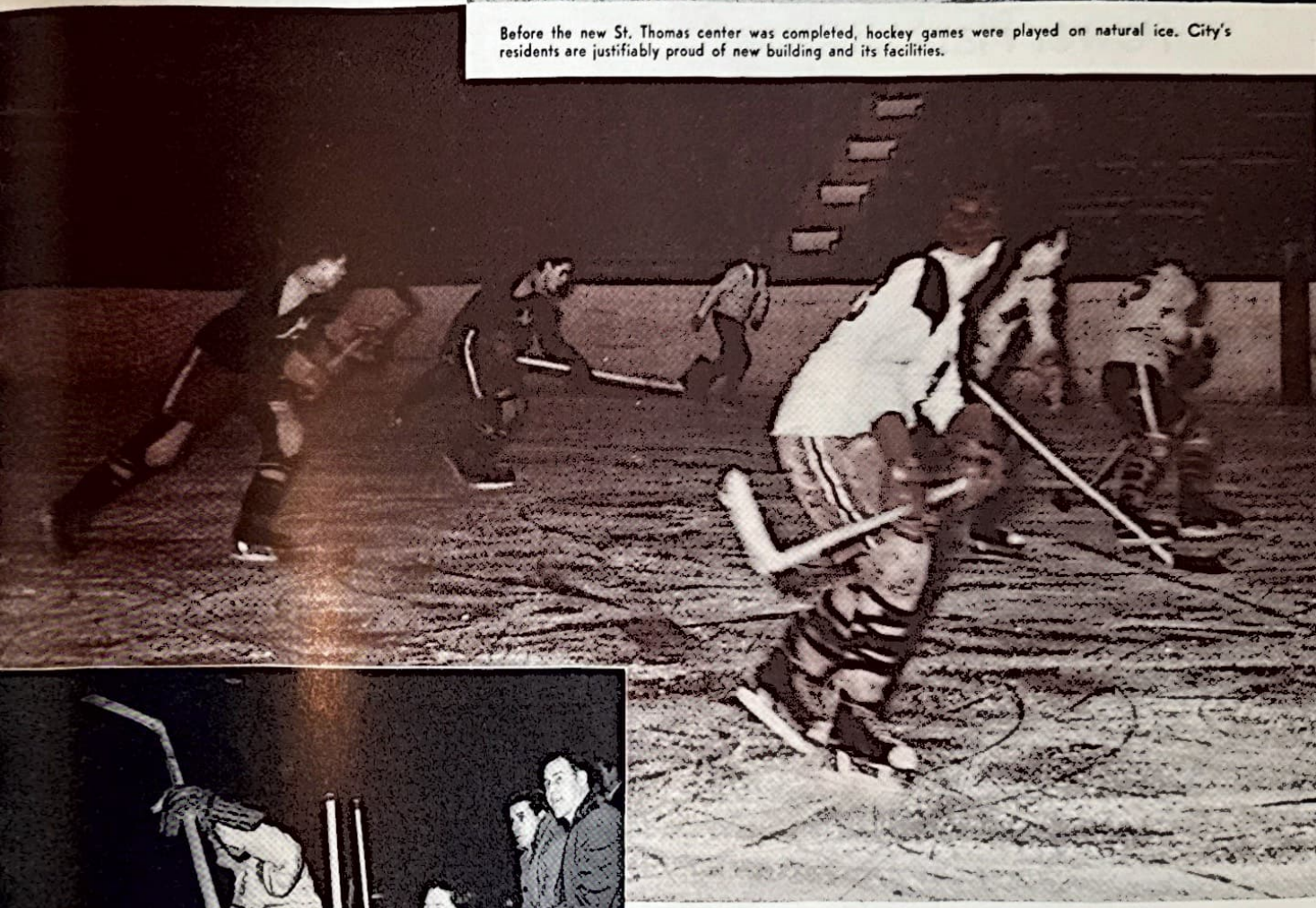
"Well," he remarked to Mrs. Kewley, "Eden's quit."

Knowing that hockey is first and foremost with her husband, Mrs. Kewley dutifully asked, "Really? Whom did he play for?"

It takes time to get ready for hockey. These St. Thomas Works players must try to include protection, warmth and mobility in their garb.

COVER PHOTO — By day, John "Bud" Edwards is a motor shop foreman at St. Thomas Works. Every Thursday night, he dons cumbersome goalie pads to defend a 4 by 6 ft cage against Industrial Hockey League opponents.

Before the new St. Thomas center was completed, hockey games were played on natural ice. City's residents are justifiably proud of new building and its facilities.



Typical of hockey's fast starts and stops, movement from one end of the rink to the other, is this action scene. Players in foreground are changing direction to follow the play.

Hockey coaches substitute almost at will, in any pause in the action. Here's a replacement going over the boards to get into the fray.

. . . they work, too!

Norm Nichols, commercial department.

Al Gromiuk, application engineer.

Art Sullivan (left) motor winder, Bud Edwards, motor shop foreman.

Bob McConnel, draftsman.

Argonne scientists worked through the night the first time the reactor went critical. Here, at 2 a.m., is the scene in the control room about midway through the session. Once the reactor was able to generate heat, the turbine-generator was tested thoroughly before the formal dedication of the plant.

Nuclear Power Plant Generates Electricity

"Norm, you have a new reactor."

This statement was made by Joe Harrer, reactor engineer, at 7:20 a.m., Dec. 1, 1956, at Argonne National Laboratory. Addressed to Dr. Norman Hilberry, deputy director of the laboratory, the words marked an end to a 13-hour session which put the "power plant of the future" on an operating basis.

On Feb. 9, the official announcement said "the first nuclear power system in the United States, designed and built solely for experimentation in the generation of electric power, was formally put into operation at Argonne National Laboratory of the Atomic Energy commission."

It was the first to be completed of the original five projects in the Atomic Energy commission's civilian power reactor development program, according to Dr. Hilberry. Argonne's scientists developed the design of the EBWR (Experimental Boiling Water Reactor), designed and fabricated the nuclear core and provided technical supervision for the project.

Allis-Chalmers people made a major contribution — the company designed and supplied the steam turbine-generator unit, condenser, pumps, motors, transformers and related power distribution and auxiliary equipment. A-C products at the site, some 30 miles southwest of Chicago, include the output of people at West Allis, Terre Haute, Pittsburgh, Norwood, Boston and Harvey Works. Company officials and many of the men who worked on the project were on hand for the formal dedication at Argonne laboratory.

This "power plant of the future" will provide 5000 kw of electricity for the laboratory's needs, an amount equivalent to that used by a city of 10,000 people. The plant uses uranium as a fuel, rather than the coal, gas or oil used by conventional power generating plants.

Despite its unique source of energy, the Argonne power plant conforms to present concepts in the respect that water is heated to make steam. And the steam is passed through a turbine which drives a generator, then is condensed and returned to the reactor.

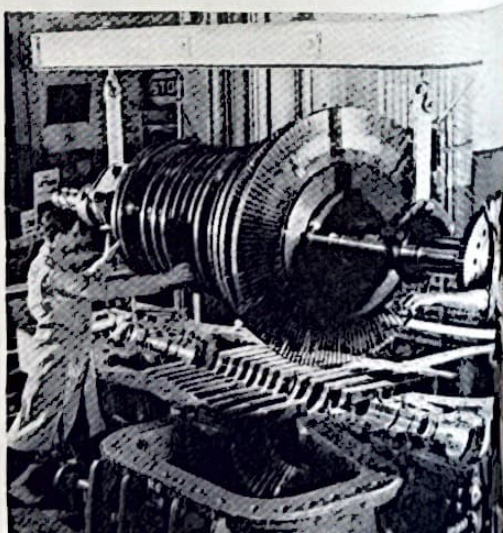
Is the electricity thus generated radioactive? No, there is no possible connection between the plant's radioactive portions and the generator's output.

Is the plant safe? Yes. Argonne's scientists conducted numerous experiments (chiefly at Arco, Idaho) before going ahead with construction of the plant at Lemont, Ill. The entire power-producing part of the station is enclosed in a giant steel and concrete dome.

How does the plant work? Uranium fuel generates heat in a controlled chain reaction. Water circulated around the core of the reactor turns to steam as it is heated and passed from the pressure vessel to the turbine. The turbine, like a many-bladed windmill, revolves as the steam is directed against its blades. The turbine shaft is connected to the generator rotor, which produces electricity as it rotates. Current from the generator goes through transformers and switchgear for distribution.

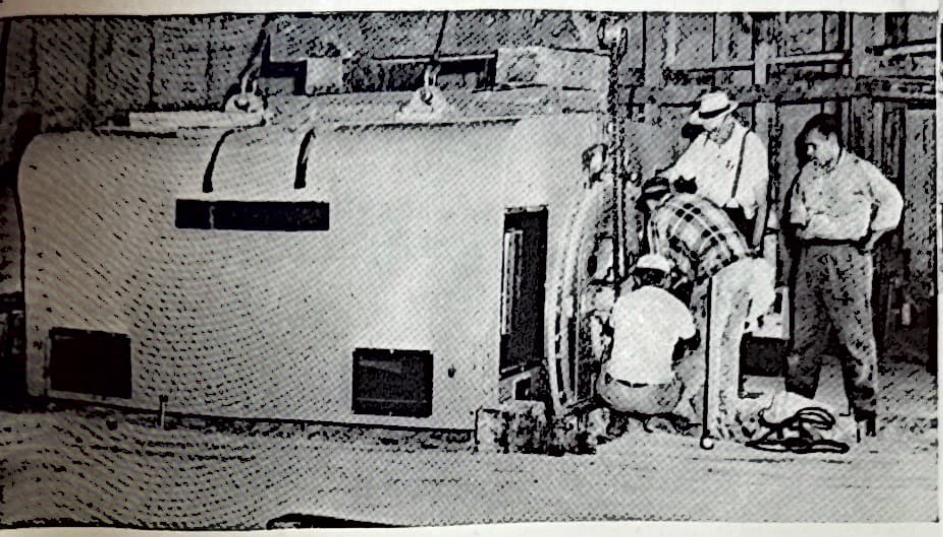
That's a highly simplified explanation, of course. Actually, the transition from conventional to nuclear power posed some unusual aspects for the Ar-

Some of the men responsible for A-C's progress in nuclear power developments, shown at a science forum at which they were the speakers. Left to right are C. R. Braun, manager, Nuclear Power department; J. F. Roberts, vice president, director of engineering, Industries Group; C. B. Graham, chief engineer; K. H. Gruenwald, reactor components engineer; and R. W. Klecker, reactor engineer, all Nuclear Power department.

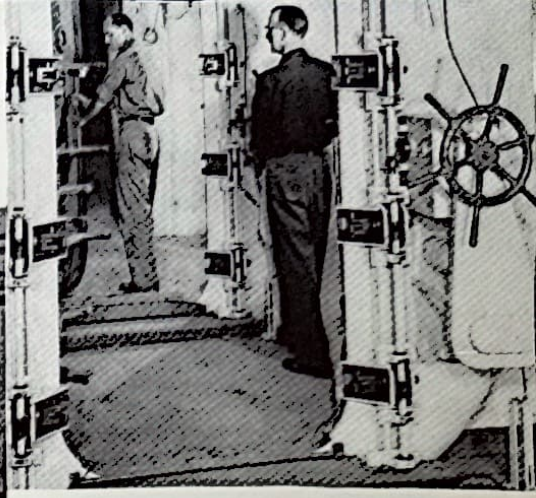


Allen Simon (left), turbine assembler, and Al Jackson, hitcher, guide the Argonne turbine rotor into place at West Allis Works. Unit was assembled and tested before shipment to the laboratory site.

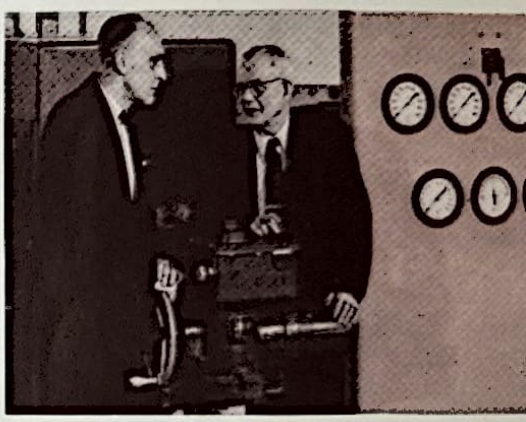
R. L. Belknap (light hat) was supervisor of installation for Allis-Chalmers equipment at the Argonne power plant site. Here he's checking a phase of the turbine installation with Don Taylor (extreme right), who was then on the Graduate Training course.



Entrance to the power generating and reactor portion of the power plant is through these air lock doors, somewhat similar to the water-tight doors used on naval vessels.



Dr. Norman Hilberry (right), deputy director of Argonne National laboratory, discusses the new power plant's future with J. M. Harrer, reactor engineer.



gonne and Allis-Chalmers people who worked together on the design.

A-C's efforts were channeled from the various works and product departments through the Nuclear Power department, headed by C. R. Braun. The liaison or contact man between Argonne and Allis-Chalmers is K. H. Gruenwald, supervisory engineer, reactor components design.

The problems met and solved by the A-C-Argonne combination were many. Since future plans call for use of heavy water, leakage control was of utmost importance. A-C engineers developed special seals and glands to hold steam leakage to a fantastically small amount.

In addition to special seals on all rotating shafts, a reactor water recovery and air drying system was also developed at West Allis Works. And the number of shaft seals was reduced through the design of a combined feedwater and condensate pump instead of two separate pumps. The condenser design was also governed by leakage and the use of special materials.

Successful operation of the Argonne plant signifies that a safe, simple atomic cycle can be used to generate electricity for industrial or utility applications. The chief virtues of the boiling water reactor are simplicity and inherent safety, both of which will be reflected in lower cost of electricity produced.

To Allis-Chalmers, the successful operation at Argonne laboratory means that the company has begun another phase of power generation. It's a step forward for a company that entered the power-producing field with steam engines in the late 1800's and continued to participate through the development of bigger and more efficient hydraulic and steam turbines.

A-C, incidentally, has been close to nuclear power projects for a long time. The company supplied World War II atomic bomb projects with more equipment by weight than any other manufacturer. A-C has been building components for the navy's atomic submarine program and equipment for other reactor projects.

The company is also participating in Atomic Power Development Associates, Inc., a non-profit membership corporation with the objective of developing atomic power into a commercially practicable means of electric power generation. Power Reactor Development Corp., of which A-C is a member, will build the reactor and steam portion of the plant designed by APDA.

A Florida nuclear power program is a third major one with which Allis-Chalmers is linked.

Opinions seem to be favorable about the future of Allis-Chalmers in the nuclear power field. For example, Braun says "Four and one-half pounds of uranium contains the same amount of energy as 12,000,000 pounds of coal. Aggressive research and development programs are required to utilize this new source of energy efficiently."

R. W. Klecker, supervisory engineer, reactor design, says "The public's first impression of nuclear power was through the A-bomb . . . we feel, in time, nuclear power will have public acceptance just as other 'new' sources of power won acceptance in the past."

Where do we go from here? "Allis-Chalmers has a commitment to design and build a complete 60,000-kw CRBR (controlled recirculation boiling reactor) power plant in the middle west. Boiling water reactors seem most practical to us at this time, but we're not closing our eyes to other types of units . . ." from C. B. Graham, chief engineer, Nuclear Power department.

And Gruenwald, as close to the Argonne project as any A-C man, says "Our product departments and works did an excellent job on this project. We'll gain valuable knowledge because we've been able to 'saturate' the plant with A-C equipment."

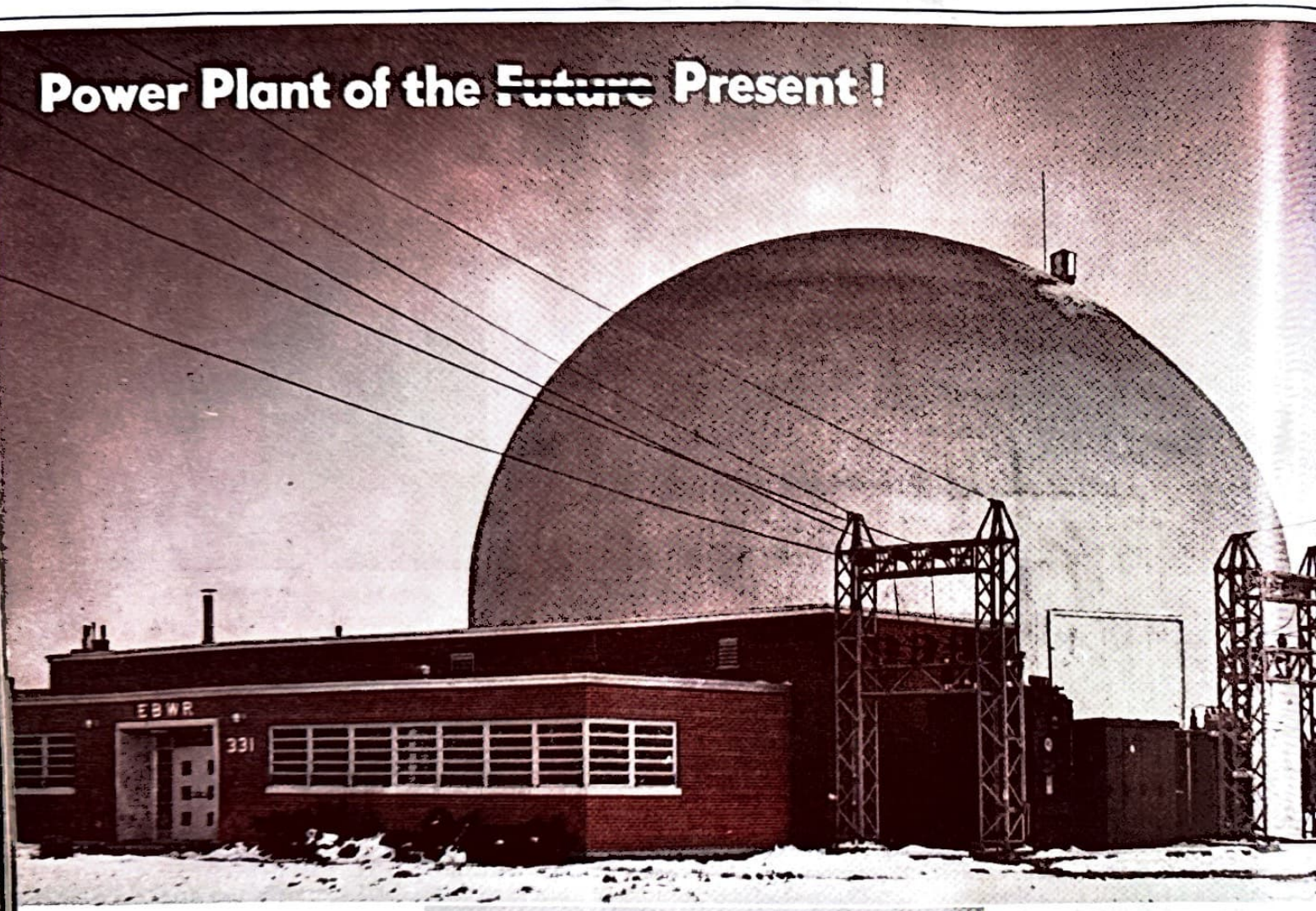
This feeling is further emphasized by J. F. Roberts, vice president, director of engineering, Industries Group, who paid tribute to the fine A-C teamwork on the project.

The Argonne project was running well for several weeks prior to the actual formal dedication. What was it like? Here's the report from R. L. Belknap, field superintendent in charge of erection of Allis-Chalmers equipment at the site . . . "This is a smooth-running plant, requiring almost no attention. You might call it kilowatt-making deluxe."

a-c scope

ALLIS-CHALMERS MFG. CO.
Box 512
Milwaukee, Wis.

Power Plant of the ~~Future~~ Present !



A-C SCOPE

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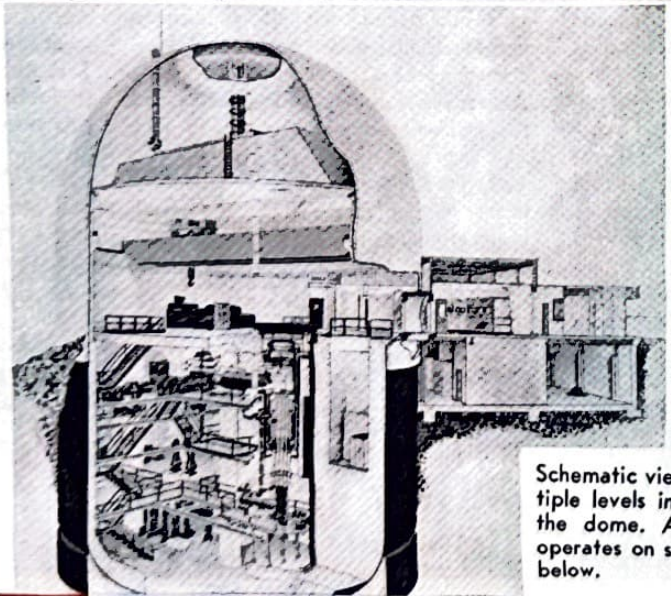

Symbol of a new age in power g
eration, the steel and conc
dome towers over the transfor
and control room at Argonne
tional Laboratory's Experime
Boiling Water Reactor, Lemont

Schematic view of the EBWR facility shows the m
tiple levels in the power-generation portion un
the dome. A-C turbine-generator (ground le
operates on steam produced in the nuclear reac
below.