

a-c scope

magazine of allis-chalmers people



summer issue, 1963

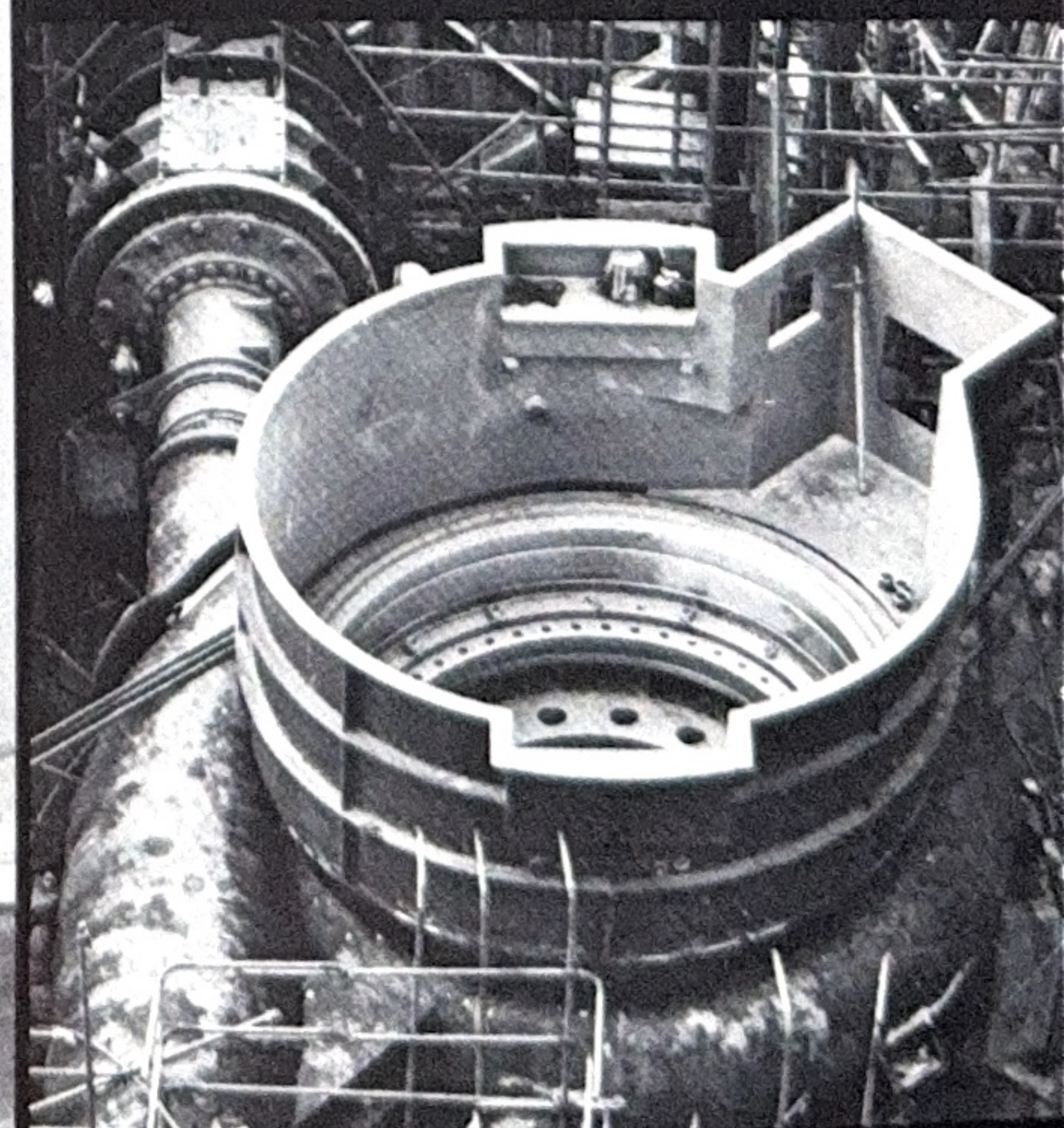
Geyser by Pulse Generation, page 15.



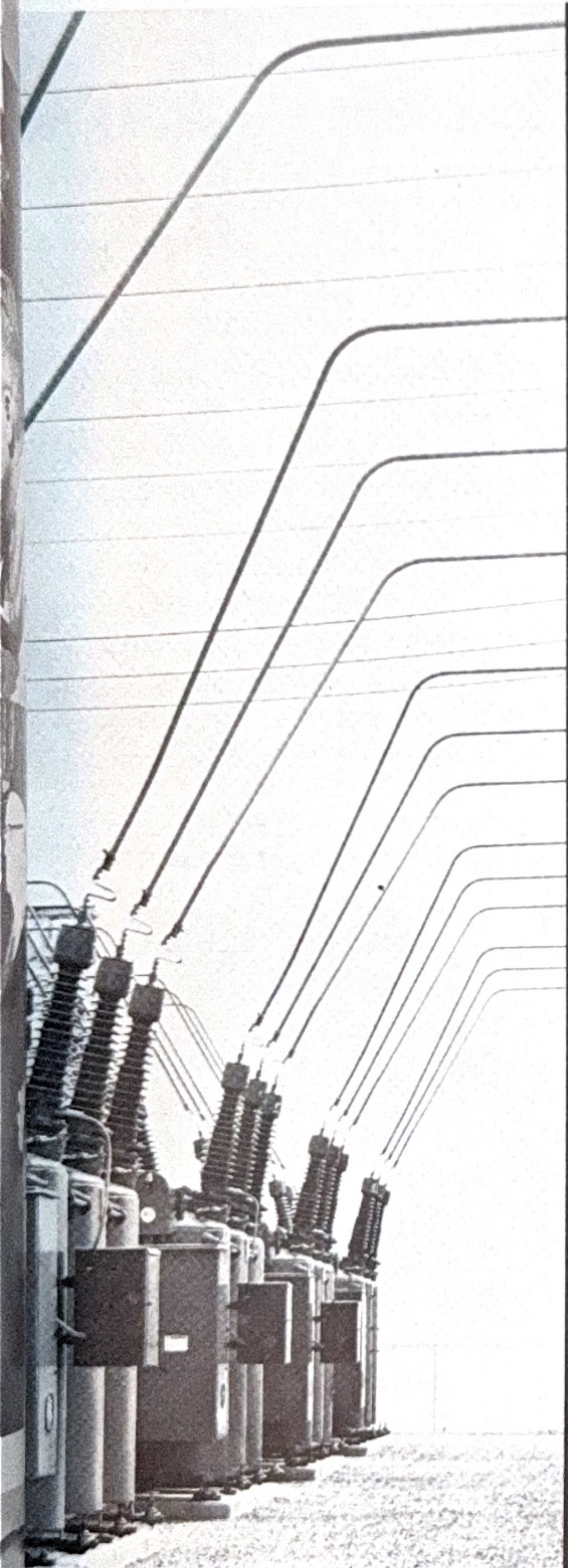
Oxnard: Small in Number, but . . . , page 6.



These People Have Ideas, page 8.



Hydraulic Turbines that Irrigate, page 10.



Send Coal by Wire, page 2.



"Part-time" Salesmen, page 14.

Superhighways built of wire

Electrical interconnections — a growing A-C market

The United States and parts of Canada are fast becoming one vast electric power system — a system tied together by high tension lines which are growing in length and power capacity.

This means tremendous opportunity for Allis-Chalmers people. We design and manufacture an array of equipment vital to interconnected power systems — an \$8 billion market. Our product capabilities, moreover, are in tune with the trend toward more powerful transmission systems.

On these pages, L. C. Aicher, an authority on interconnections who serves with our Electrical Transmission and Distribution Division, discusses interconnections and what they mean to Allis-Chalmers.

Mr. Aicher, specifically, what is the function of interconnections?

To put it very simply, interconnections as we know them today permit two or more power systems to join forces by way of high tension power lines. These interconnections enable the systems to buy, sell or exchange power as the need arises.

Interconnections give individual utility companies greater latitude in providing for growing power demands. They make it possible for utilities to more fully use the facilities they now own and plan to build in the future. In short, interconnections help assure greater economy of operation, which is passed to consumers in the form of inexpensive electricity. In many areas, in fact, electricity rates are continuing to drop.

We have heard a lot about interconnections in recent months. Are they something relatively new?



L. C. Aicher: "Interconnections give electric utilities greater latitude."



"These utilities are planning huge investments in interconnection systems."



"Providing the power equipment they will is right up our alley."

Not at all. A prophecy of exactly what we are doing today appeared in 1931. Interconnected power systems have been with us for many years.

Then why are we hearing so much about the subject today?

What we have been hearing about lately is a movement toward an even greater degree of interconnections, involving much more powerful and longer transmission lines.

To trace history a bit, the early years of the electric utility industry were marked by isolated generating plants built to serve only an immediate area. As the demand for power grew and technology improved, transmission lines carried the power farther and farther from the generating plant.

As larger and more efficient central generating stations developed, the smaller, less efficient plants were retired, and the larger plants that remained were interconnected with transmission lines. Not only did one power company interconnect its own plants, but power companies started joining with each other, pooling their resources.

A number of systems found interconnections for emergency situations extremely helpful during World War II

when they could not acquire new equipment readily.

However, as recently as 1955, the electric utility industry still included a large number of relatively small and independent systems. Generally, each system did its own planning for expansion and provided its own reserve capacity, although there was some reliance upon interconnection help in case of emergency and for synchronous clock control.

What is the status of interconnected systems now?

Numerous pooling agreements between adjacent systems resulted in 28 more or less regional systems or pools by 1960. More recently, these 28 joined forces, becoming six. Capacity was from 8 million to 65 million kilowatts.

Then, late in 1962, three of the six closed interconnections resulting in a synchronized system of 146 million kilowatts. This system serves all of the U.S. east of a line roughly cutting through eastern Montana and eastern Texas, and including sizeable parts of the provinces of Ontario and Quebec.

This is like the tale of the "10 Little Indians" — and then there was one.

Only in a sense. Remember, while these utilities are sharing facilities, they

CONTENTS

	Page
Superhighways of Wire.....	2
Scientific, Engineering Award...	5
"Plan for Progress".....	5
Our Pocketsize Plant.....	6
Eight Dissatisfied People.....	8
Turnstile Turbines.....	10
"Allis-Chalmers in Perspective".....	12
Tips for a Happy Vacation.....	13
Around Allis-Chalmers.....	13
Employee "Touch" Triggers Sales.....	14
They Make Mines Blow Their Top.....	15
Lachine Ad Award, Mobile Betatron, Webb Visit.....	16

PHOTO CREDITS

Page 3, Michael Durante, Harold Shrode, West Allis Works; Page 4, Dan Plichta, West Allis Works; Page 5, Russ Einwalter, Clarence Hansen, West Allis Works; Pages 6-7, Jack Bartness, West Allis Works; Pages 8-9, Dave Ward, La Porte Works, Charles Schorman, Norwood Works, Boston Beaver, Pittsburgh Works, Ed Kiernan, Boston Works; Pages 10-11, Photos courtesy Bechtel Corporation, San Francisco; Page 12, Bartness; Page 14, H. R. Smith, LaCrosse Works, Bob Laker, Cedar Rapids Works, Schorman; Page 15, Official U.S. Navy Photo; Page 16, Hansen, Plichta, W. K. McConnell, Montreal.

A-C SCOPE

MAGAZINE of ALLIS-CHALMERS PEOPLE

Jack Bartness Editor
J. J. LaBarbera... Art Director

Published by Information and Community Services, Industrial and Community Relations Division, Allis-Chalmers Mfg. Co., Milwaukee 1, Wisconsin.

remain independent companies, responsible to their own customers and operated by their own managements. Through interconnections, these pooling utilities actually become something of a trading company and the commodity they are trading is electric power. Both investor-owned and publicly-owned utilities are pushing in this direction because of the many benefits.

If there already is considerable interconnection, why does our Electrical Transmission and Distribution Division feel this is such a fertile market?

It's comparable to our highway situation. We have thousands of miles of highways, but there is a strong demand for new and better highways. Superhighways are taking the pressure off the smaller roads, and even the smaller roads are being improved and repaired.

The same thing is true of interconnections. Many of the interconnections we have now sort of grew like Topsy. Now, thanks to improved technology, we can do things better. Where we had two-lane roads before, we can now have superhighways, which help eliminate hodgepodge. The extra high voltage transmission lines are our superpowerways, the backbone of the nation's power supply systems.

Exactly what is meant by extra high voltages?

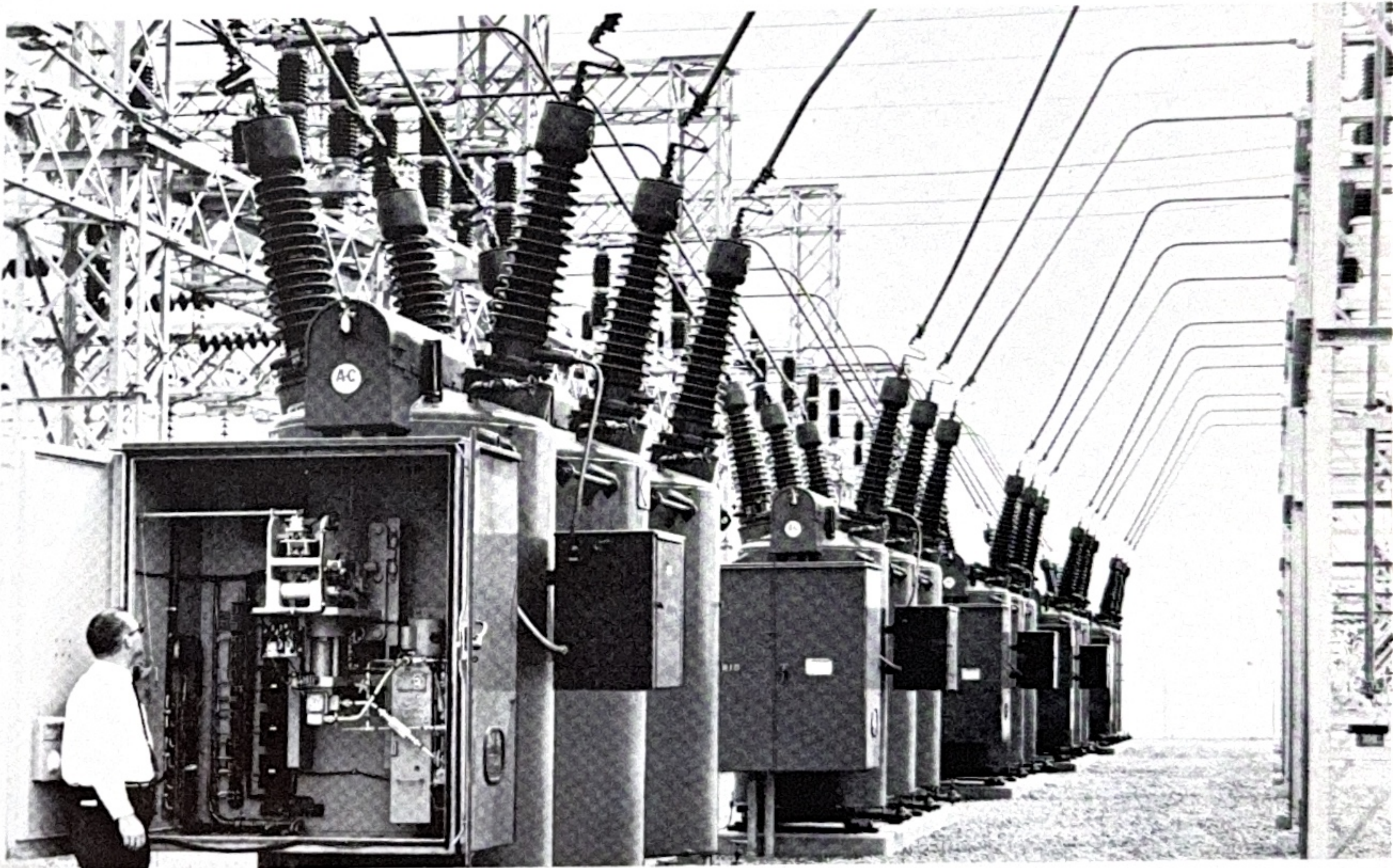
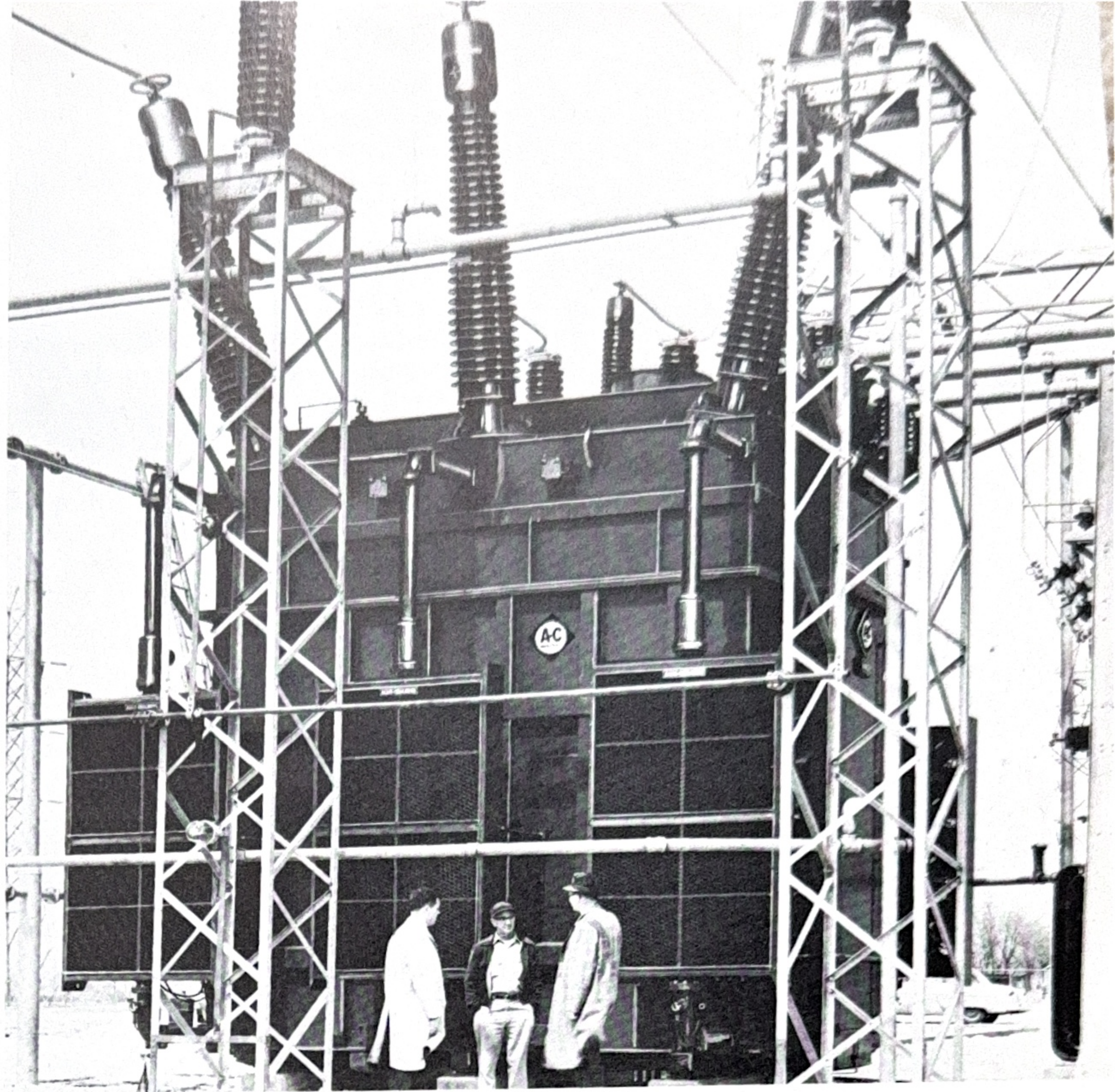
Generally, extra high voltages are those above 230,000 volts. We are now talking in terms of transmission lines of 345,000 volts, 500,000 volts, and even 700,000 volts. Most transmission lines now are 138,000 volts or below.

The higher the voltage, the more economically electricity can be "shipped" over long distances. The higher the voltage, of course, the more powerful the transmission equipment involved. This is right up our alley.

We've said a lot about high voltage networks. What about the equipment we manufacture for the lower voltage networks?

This remains a good market for us and it should get better. Remember, the extra high voltage systems will be used largely to get power from one distant location to another, in lieu of a generating station.

These networks will feed existing lower voltage systems, and those that are yet to be built to take care of a growing population. Be assured, there is a tremendous market potential for the lower voltage circuit breakers, transformers and other electrical equipment in the ratings we are now making.



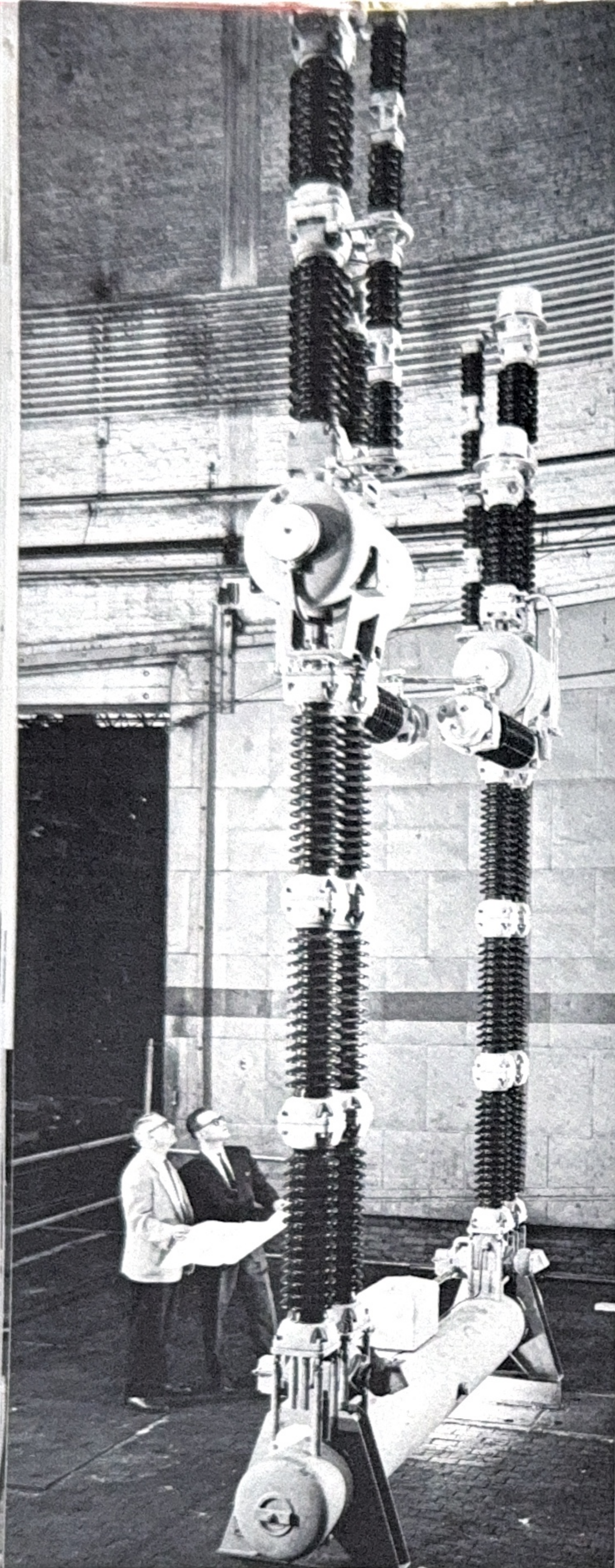
Giant power transformers (top) made at West Allis Works and oil circuit breakers (bottom) produced at Boston Works are among the many Allis-Chalmers products that serve interconnected power systems, both the lower voltage and extra high voltage (EHV) networks.

I've heard that improved transmission systems have "cut the apron-strings" of power stations. What, exactly, is meant by this?

It means that because of improved transmission technology, power plants

need not be built smack in the middle of the area they serve. Extra high voltage lines allow power companies to locate at the most economical site, and pipe the power, inexpensively, to wherever it's needed.

Several utilities are building plants



A new Allis-Chalmers product for EHV systems is the air blast circuit breaker to be made at West Allis through an agreement with Brown Boveri, Switzerland. Shown, Sam Borshay (left), Service department, Ted Jetzer, Brown Boveri.

Superhighways built of wire

outside their franchised area, close to a coal mine. This is sometimes referred to as hauling coal by wire.

One study of two large groups of utilities revealed that for each dollar spent on interconnections, \$4 can be saved on generation.

Are the plants that locate close to mines the "Mine-Mouth" type plant that much has been written about?

Yes. And we are bound to see more of this type of plant. Coal is now, and will be for a long time to come, the prime fuel for producing electricity. But the transportation of coal now costs about half as much as the cost of mining. Some experts predict that by 1980, transportation costs will be about as much as mining.

So, it is obvious that the closer you can get to the mine, the more economical it is to produce the power — provided you can transmit the power economically.

In the Keystone project underway in Pennsylvania — involving 18 investor-owned utilities — one of two mine-mouth plants is expected to use 160 million tons of Pennsylvania coal over its life. The project involves construction of more than 600 miles of new 500,000 volt transmission lines from West Virginia, near Wheeling, eastward to the Philadelphia and New York areas.

In addition to affording flexibility in locating plants, what are other advantages of interconnections?

Interconnections permit utilities to pool their reserve generating capability as insurance against the unscheduled loss of a generator. This assures customers of power during such emergencies; also when normal maintenance requires generating units be taken off the line, and in meeting their peak load requirements more economically.

What is a peak load?

Certain times of the day and certain seasons of the year, some customers will

require more power than others. During the day, for example, when factories are going full blast, the drain on power is far greater than at night when plants generally operate with smaller crews.

But utilities must gear themselves for the peak periods, even though their generating equipment stands idle during slack periods. However, through interconnections, utilities can and are sharing their reserve power, reducing the capacity they must have on hand.

How does this work?

Let's say it's summer. Down South, air conditioning systems require considerable power. Then Northern stations come to the rescue by speeding low cost power over high voltage systems.

Come winter, the South is enjoying mild temperatures and the North is straining its furnaces to keep warm. Then it's time for Southern hospitality and electric current is rushed to the north.

On a day-to-day basis, sections of the country, particularly due to the time differential, have varying demands for electricity. So a utility in one time zone can help out another up to its ears in turn-on switches, and then be on the receiving end an hour or two later when the table is turned.

To what extent will utilities be building transmission facilities in the future?

Investor-owned utilities alone have announced plans for an \$8 billion — yes, billion — high voltage transmission program involving upwards of 100,000 miles of new line. By 1970 or earlier, these lines will interconnect United States' power systems from coast to coast.

Huge investments of this nature assure economy of operation. This economy is a prime reason why the United States and Canada have more electric capacity than the next five nations combined.

A-C equipment for interconnections

Allis-Chalmers plants at Boston, Gadsden, Lachine, Pittsburgh and West Allis manufacture equipment for the electrical interconnection market. In thumbnail form, here's what the equipment is and how it is used:

POWER TRANSFORMERS — Used on transmission lines to raise or lower voltage. Allis-Chalmers is capable of building any size power transformer, limited only by shipping restrictions.

METERING TRANSFORMERS — Measure voltages and current for billing purposes. Also used in system protective schemes. Again, we are capable of making larger sizes as the demand arises.

SHUNT REACTORS — Outwardly resembling a transformer, they are used to compensate for certain undesirable characteristics in 345,000 and 500,000 volt transmission line.

CIRCUIT BREAKERS — Automatically switch power on and off in emergencies to protect system. Make lower voltage, oil circuit breakers at Boston. Recently concluded a licensing agreement with Brown Boveri to manufacture its design of air blast breakers for extra high voltage systems at West Allis.

SWITCHGEAR — Comprised of circuit breakers, controls, relays and meter-

ing transformers, these "packages" serve at substations to protect the electrical system from damage.

DISTRIBUTION TRANSFORMERS — They reduce sub-transmission voltages at the point of use and help maintain constant voltages.

REGULATORS — Used on distribution lines to help maintain a constant voltage.

CAPACITORS — Manufactured by a jointly owned subsidiary, used on lines to control voltage by power-factor adjustment.

Inventor honored

The father of "Power Shift" rear wheels has received Allis-Chalmers Scientific and Engineering Award for 1963.

Walter F. Strehlow, manager of engineering coordination for our Tractor Group, becomes the fourth man to receive the award — a medallion of eminence, a certificate of merit, and \$5,000. He was selected by a committee of judges not associated with Allis-Chalmers.

Before "Power Shift" wheels, the changing of wheel tread width on a farm tractor was hard, cumbersome and hazardous. It usually required from four to six hours, extra equipment such as jacks, chain hoist, sledge hammer, blocks and pry bars, plus an extra man.

Through Strehlow's invention, the farmer makes a simple adjustment with a wrench for the desired rear wheel spacing, and the tractor's engine power does the rest — all in a matter of minutes.

Because of the importance of correct wheel spacing to match a particular farm application, farmers were quickly at-

tracted to the "Power Shift" wheel principle.

Each basic farm application requires a different wheel setting to insure maximum performance in such operations as plowing, planting, harvesting, mowing and transporting.

All major manufacturers of wheel tractors now provide "Power Shift" wheels as optional equipment under a license from Allis-Chalmers, verifying the invention's major contribution to farm mechanization.

Strehlow's 49 years with Allis-Chalmers are studded with engineering achievements. He holds more than 30 U.S. patents and 20 foreign patents covering developments and inventions applicable to farm equipment.

It was his work in the 1930's which led to the introduction of rubber tires to succeed steel lug wheels on farm tractors.



Invention of "Power Shift" rear wheels for farm tractors gained Allis-Chalmers Scientific and Engineering Award for Walter F. Strehlow, manager, engineering coordination, Tractor Group.

Senior Engineering Committee present when President R. S. Stevenson announced Strehlow's award: from left, F. J. MacDougall, director, Purchasing; J. L. Singleton, senior vice president; Strehlow; Stevenson; Will Mitchell Jr., director, Research; R. S. Reaves, chief engineer, West Allis Tractor Engineering; W. M. Terry, general manager, Electrical dept., Industrial Equipment; John W. Carlson, general manager, Construction Machinery, and vice president; A. W. Van Hercke, emeritus member.



Merit Employment Policy — 'Plan for Progress'

Our Company recently participated in the signing of an agreement called "Plan for Progress," which matches in purpose Allis-Chalmers own Merit Employment Policy.

"Plan for Progress" was signed by President R. S. Stevenson for the Company and Vice President Lyndon B. Johnson, on behalf of President Kennedy's Committee on Equal Opportunity.

W. J. McGowan, director, industrial and community relations division, said about the A-C Merit Employment Policy and the "Plan for Progress":

"The Company's Merit Employment

Policy,' which is a part of the 'Plan for Progress' agreement, signifies our intention of providing equal employment opportunities throughout the Company. This is the Policy:

"It is the policy of the Allis-Chalmers Manufacturing Company that all applicants for employment be recruited and hired and thereafter assigned, transferred, upgraded, promoted, and compensated solely on the basis of merit, service and ability to effectively perform work assignments and without regard to non-valid points of individual distinction, such as race, creed, color or national origin."

"This policy is based on consideration of the sound business purpose of promoting effective and efficient operations and is in accordance with basic American political-legal and ethical concepts."

"Allis-Chalmers is one of more than 100 national firms to enter into a 'Plan for Progress'."

"We anticipate the continued understanding and cooperation of all our people in contributing to the effective operation of the Merit Employment Policy and thus helping to insure the success of our 'Plan for Progress'."

Our pocketsize plant

Oxnard — small in number, but . . .

Oxnard Works is Allis-Chalmers bantamweight. But don't let the size fool you.

Oxnard is one of the most self-sufficient plants in the Company. Its line of tillage equipment, sold world-wide, is among the most rugged farm machinery found anywhere.

Figures don't run high at Oxnard. General Manager E. E. Houston points out, "We average about 110 employees and have 13 acres of land. But within our gates are a foundry (seven men); an engineering department (11 men); complete manufacturing and shipping facilities for products like tool carriers, subsoilers, chisel cultivators, disc harrows, angle dozers; a seven acre farm plot where we experiment with equipment; offices and an employee parking lot.

"About the only thing we don't have is a lab. But there are plenty of labs in Los Angeles, just 60 miles south of us."

Its relatively small size, however, has

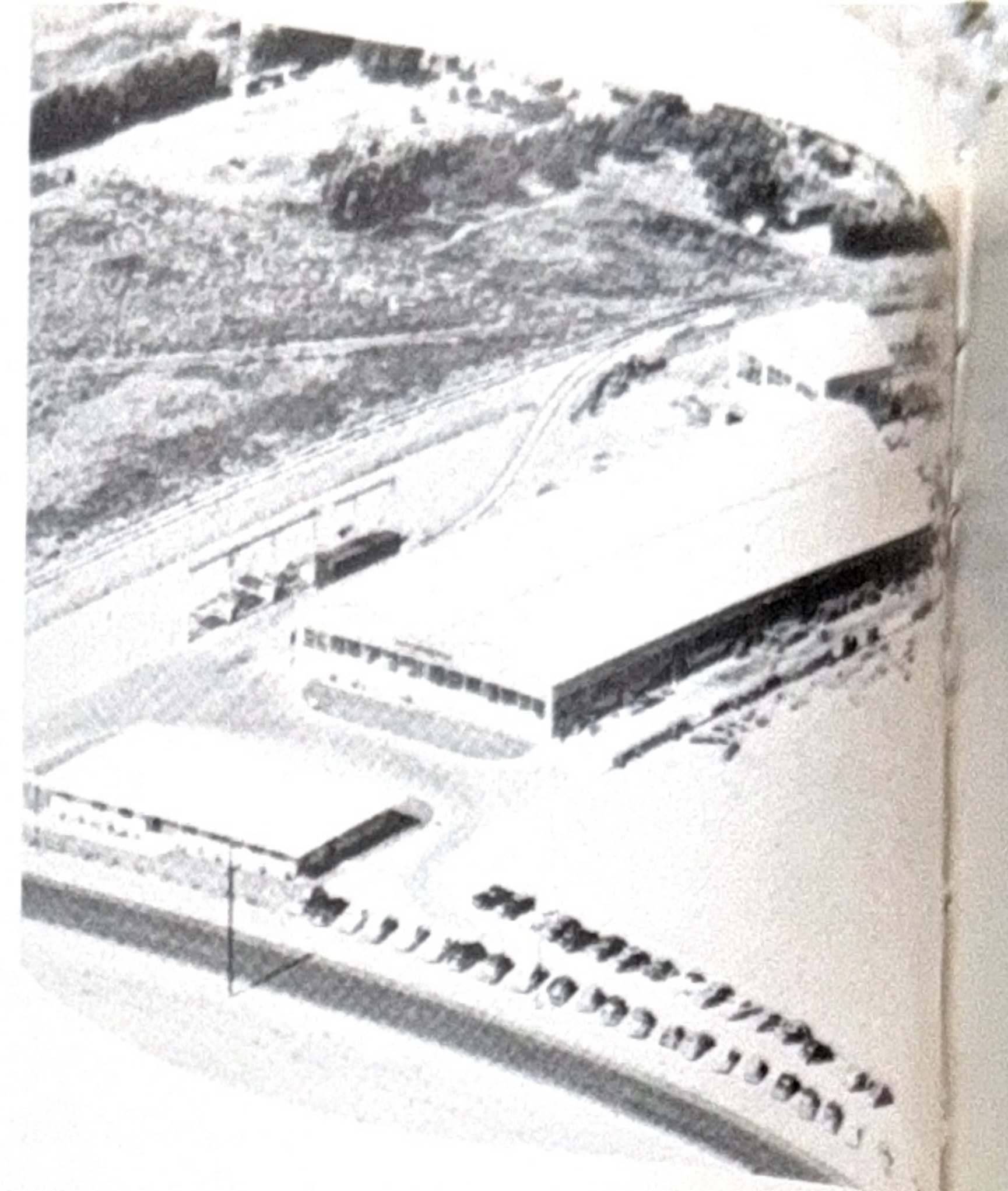
not sheltered Oxnard from the intensity of competition faced by larger Allis-Chalmers plants. Houston said, "Competition is stiff. You've got to get in quick with improved models and new products before the market is filled."

"Getting in quick" is traditional at Oxnard. Houston attributes this faculty to his people and to the size of the plant itself.

He said, "The attitude of our people is to get the job done and then get onto something else. Our size makes us very flexible and fluid on any given item. We have proved this several times. The fact that we have virtually everything we need right here, of course, is a big asset."

Houston, who has been at Oxnard over 20 years, feels he shares with other Oxnard employees "the personal satisfaction of seeing something coming out in a small plant. You get a better feel of your own part in it."

He added, "You're probably closer to other people and things are more informal. Employees make suggestions — or gripe — directly to me and other top management people."



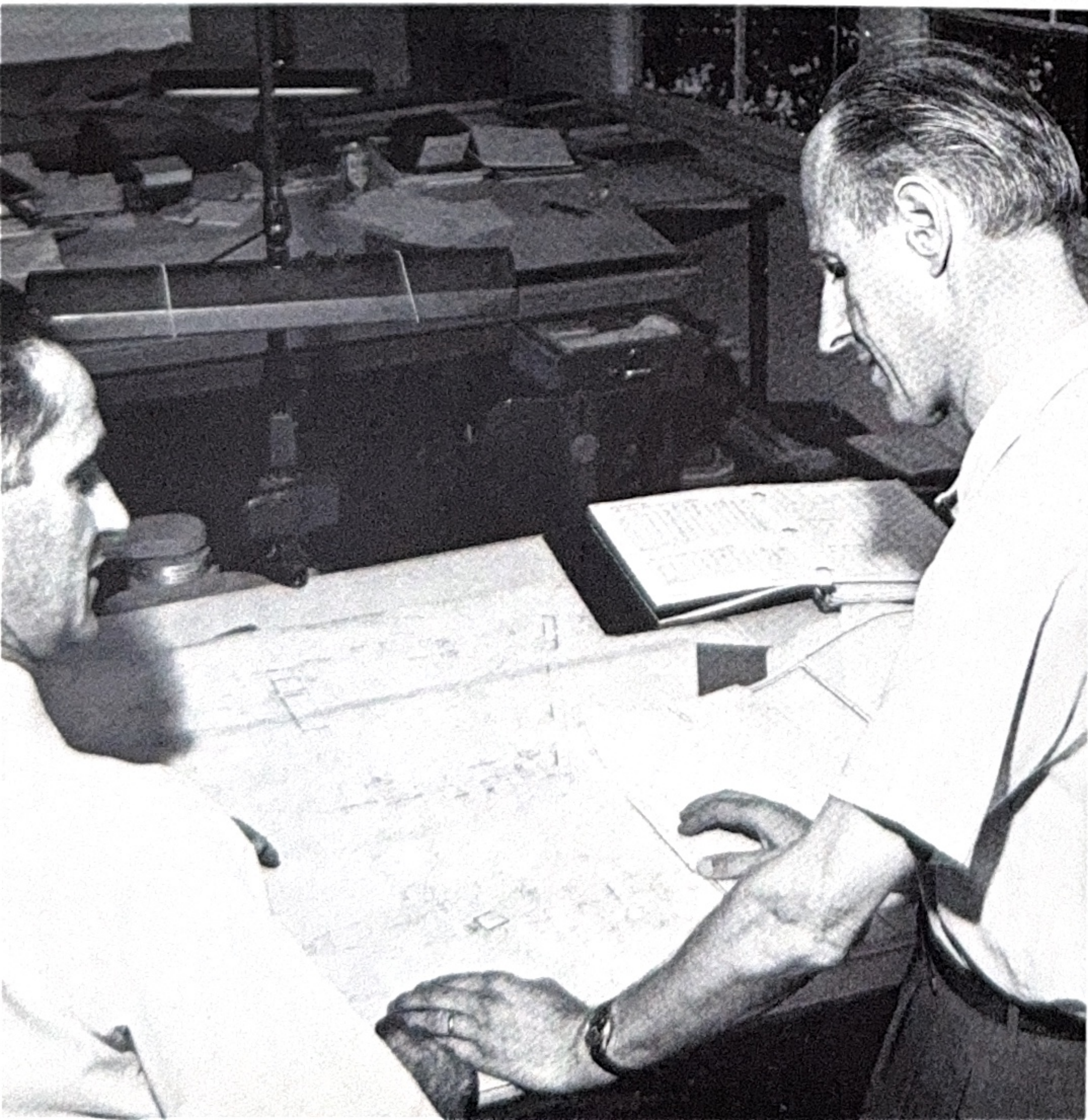
He also had praise for the versatility of his shop and office people. Because of the plant's size, few enjoy the luxury of specialization.

For example, Vern Halverson, works comptroller, is also Vern Halverson, works purchasing agent, and Vern Halverson, traffic manager.

Frank Rydberg, assistant works comptroller, also is the plant personnel manager. As such, he supervises all employee benefit programs, and handles hiring and payrolls.

Rydberg admits that the size of the plant simplifies his many responsibilities. "When we have something important to tell all employees we can easily arrange a mass meeting. We can show things like safety movies to everyone at once. I can personally encourage employees to participate in things like our scholarship program because I generally know who has eligible children."

Like most Oxnard employees, engineers Don Cleland (left) and Ferdinand Mirus were born outside California; Cleland in Kansas and Mirus in Germany. Allis-Chalmers has been in Oxnard since 1938.



Assembler Gus Perez works on an angle dozer section. Despite its size, Oxnard has the people and facilities to design, engineer, manufacture and field test its products, which are sold world-wide.



Rydberg, like Houston and Halverson, is a transplant from the West Allis Works. In fact, one of the most difficult persons to locate at the Oxnard Works is a native Californian.

With 1,000 new people a day pouring into California, this is nothing unusual in the state.

In the shops, you will find men like Miles Plumley, who was a foreman in the West Allis Tank and Plate Shop before sinus condition and Wisconsin's cold winters persuaded him to try Oxnard.

Another shop employe, Ed Schilbrack of Tomahawk, Wis., came west 10 years ago because of a daughter who suffered from asthma.

Oxnard's weather is about as ideal as you will find anywhere. This pleasant coastal community of 50,000 people is air-conditioned by the Pacific ocean.

Located 60 miles from some of the hottest weather in the state, Oxnard's summer high during the hottest month of July averages only about 74 degrees. In winter, the average high has dropped to only about 67 degrees. Rainfall is moderate, and there is no smog.

If the climate helps attract people to the community, the Oxnard Works helps anchor them there. In an area where there is much seasonal work, the plant affords steady employment through its diversified line of products.

Oxnard Works is proud of the "staying power" of its employes. Said Rydberg, "We have very few one week vacations."

In a Company noted for its concern for safety, Oxnard more than holds its end. In four out of the past six years, Oxnard people have gone without a single lost time mishap. In 1960, there was one lost time accident. An employe turned an ankle.

Despite the fact that so many come from other states, Oxnard employes quickly adopt the area as their own and show it through their civic participation.

A number serve on projects ranging from 4-H club work to cancer drives. Perhaps the best barometer of the willingness of Oxnard people to "help out" is their annual contribution to a donor's organization called "AID," which helps support the Community Chest and other charities.

Said Rydberg, "Ninety-nine per cent of our people are on our payroll deduction plan for "AID." We always go over our estimate."

General Manager E. E. Houston checks out the performance of an Oxnard chisel cultivator furrowing out a spinach plot on a nearby farm.



This is Oxnard's entire foundry force. The men produce all the grey iron castings for the plant. Front row, from left, are Wendell Dayton, foreman, Silverio Madrid, Bob Woolsey; rear row, Bogdan Futuyma, Dieter Farber, John Reyes, John Wormsley. Reyes and Wormsley hold their safety glasses for picture purposes. Oxnard has about one-third of one per cent of A-C total employment.





JOHN H. NICKLAS, supervisor,
fuel element engineering, Nuclear
Power department — Washington:

(Nicklas holds seven patents; 30 more ideas are pending patent award or are under consideration.) "Ideas are unpredictable. I may become so completely immersed in a problem that ideas to solve it come from the subconscious, at any hour. Sometimes the problem and ideas become so muddled that I try to forget the problem for days before renewing the attack. Sometimes ideas come in an avalanche. I try to broaden my knowledge in many fields since methods to solve problems in one field may be used in my own. To approach a specific problem, I try to obtain as much definition as possible, determine the boundaries, determine what could be lived with, what is undesirable to live with, and what could absolutely not be tolerated."



Eight dissatisfied people

"The successful people are the ones who can think up stuff for the rest of the world to keep busy at." — Don Marquis.

Ideas keep Allis-Chalmers going. They come from dissatisfied people in all phases of our operations, people who don't like the way things are, and change them. But just how is an idea born? This question was asked of eight employees who have made it their job to come up with ideas.

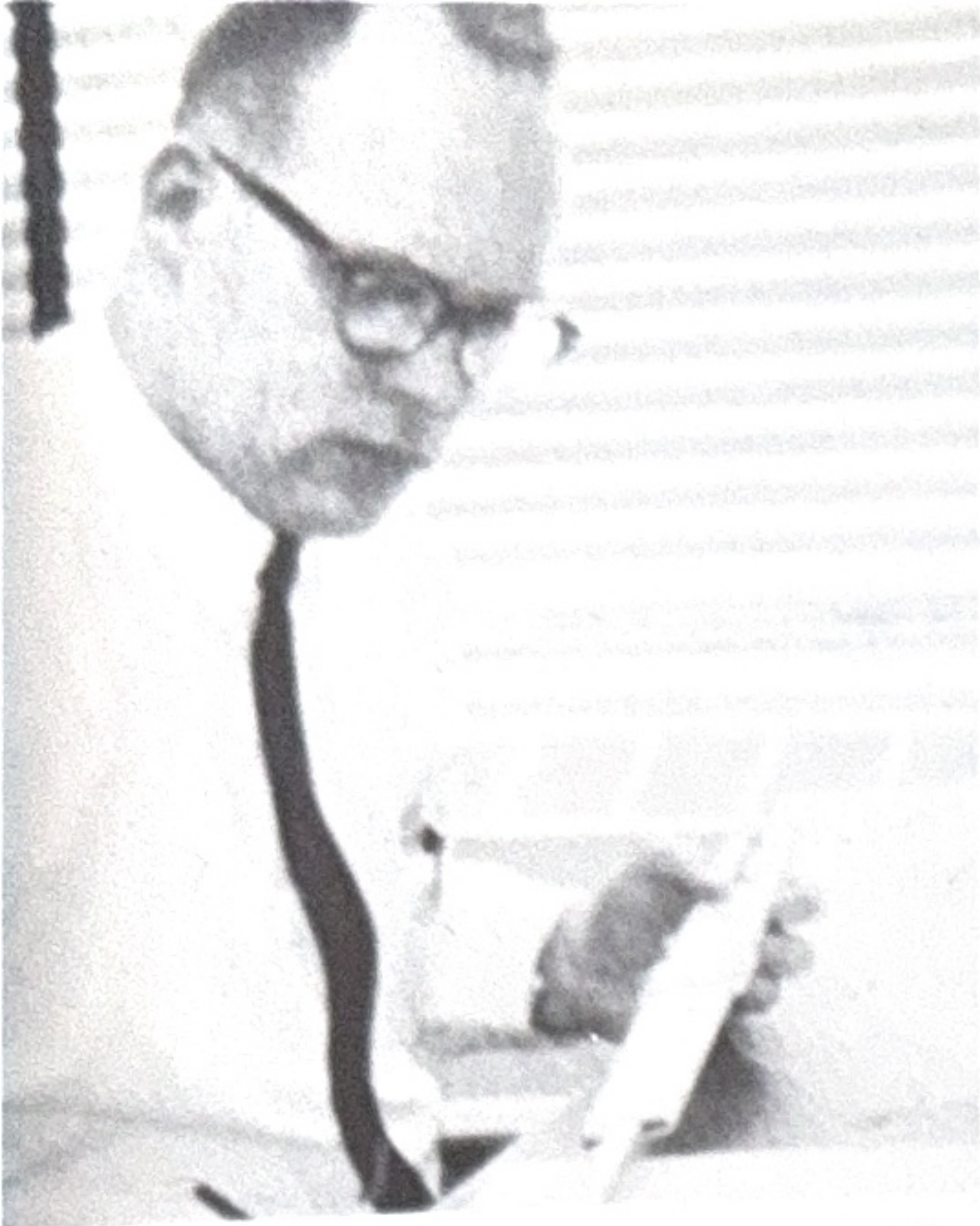


EDNA ZOELLER, technician,
Research Division:

"I'm impatient, like variety, and I find it's fun running races with myself. All of these things have led me to find better ways to do my job of analyzing samples for carbon and sulphur content in the research analytical laboratories. I use three instruments in my work. By paying close attention to their capabilities and determining how to get the most out of them, I have learned to keep all three instruments in operation at the same time. There's where the 'variety' and 'races' come in. As for impatience, there was a delay in getting answers to the foundry on nodular iron they were pouring. This was because the sample I needed to obtain the answers took time to prepare. By experimenting, I found I could get the correct answers from a different type of sample which is more easily obtained."

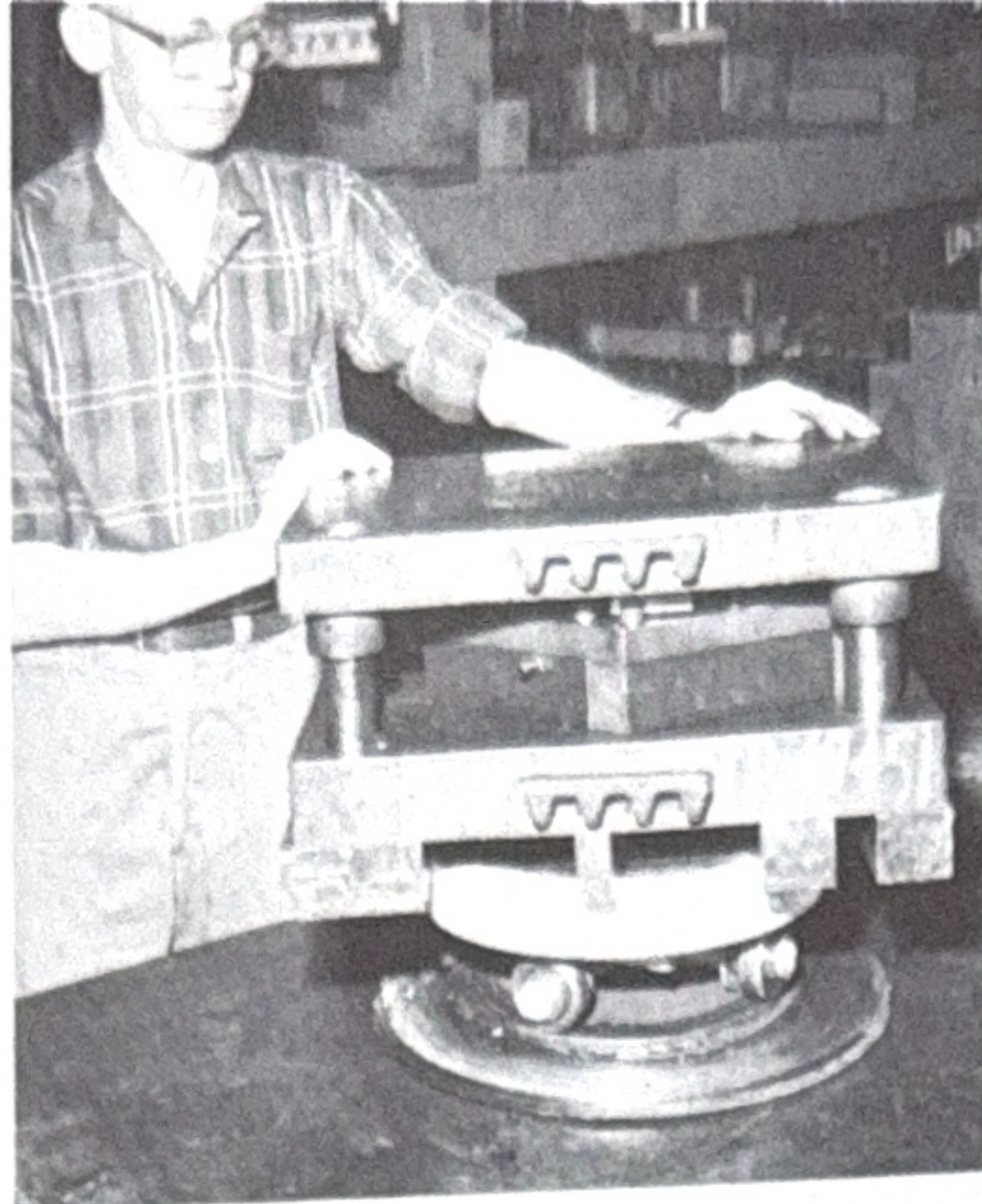
W. M. CORDELL, blockman,
Indianapolis Farm Equipment Branch:

(Cordell has twice been one of the top 20 A-C blockmen of the U.S. and Canada.) "There's no magic to getting workable sales ideas. But I do follow two basic ground rules: be optimistic and be willing to try a different approach — with enthusiasm. This may mean retesting an approach that may have failed before on a different customer. Sales ideas stem from attention to detail — knowing your products and knowing your customers and their families, your dealers and their employees. We all like to be brought in on things. For that reason every person in the dealer organization is included in my conversation. On the farm, the farm hand, or the farmer's son may be just the person to give you the necessary information for a successful sales approach."



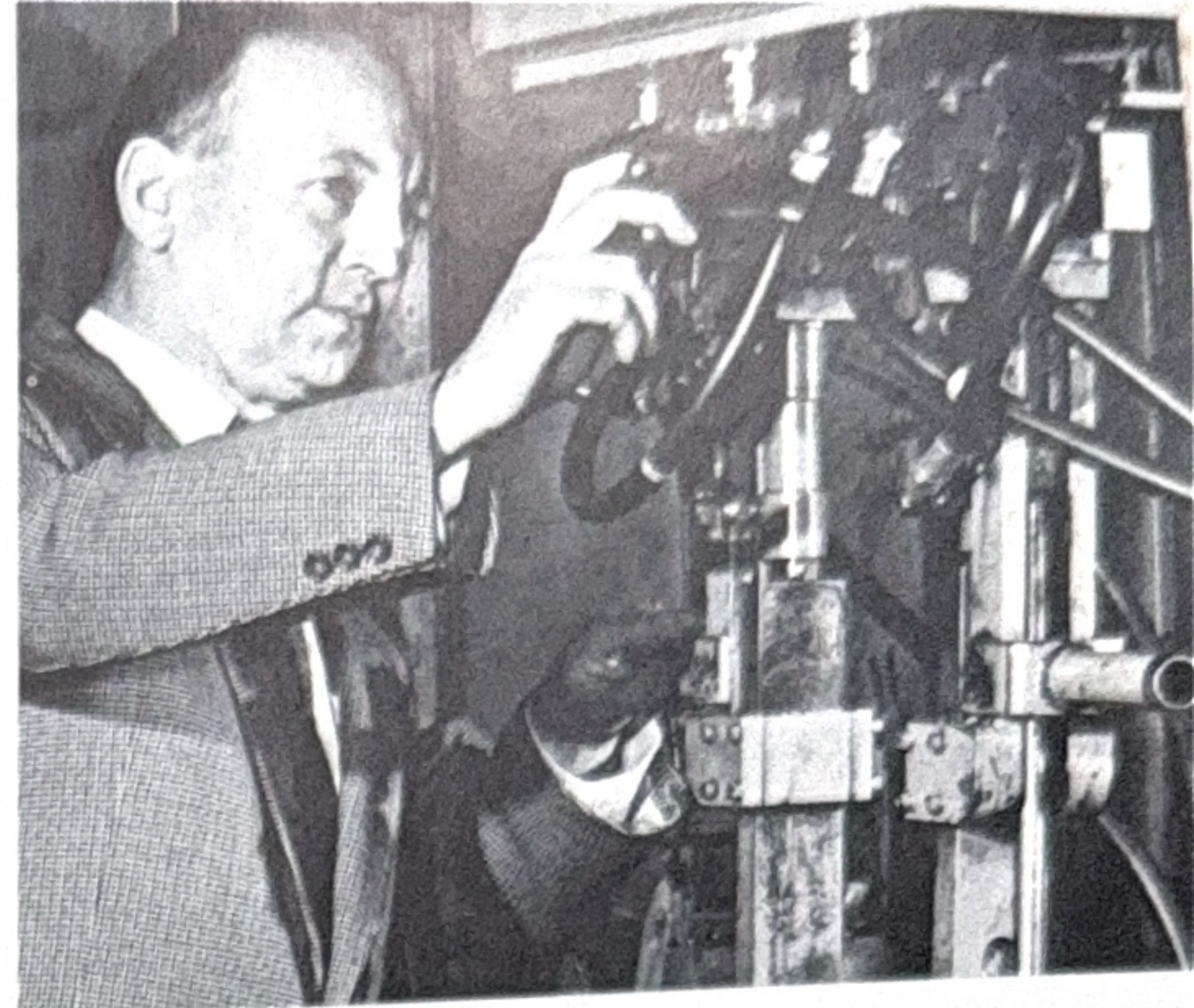
ERROL RAUGHT, salesman,
Syracuse District Office:

"A good salesman should be an 'idea sponge' with an open mind and enough common sense to apply the right idea to a situation. The chief objective of a salesman is to have a customer think of him as an engineer who solves his problems. Each customer has many problems — our job is to come up with ideas to solve them through experience with other customers, tips from product departments, or just plain ingenuity with product knowledge. On the other hand, through trade publications, product seminars, conversations or experiences, we gain an idea that should be attractive to certain customers with similar processes. Then we go looking for the problem to fit the idea."



ROBERT V. CROUCH, die handler,
La Porte Works:

(Crouch has submitted a number of ideas through the A-C Suggestion Award program.) "All of us like to have our work go smoothly. In my case, ideas spring up, in part, to correct things that are not functioning as well as I'd like them to be. For example, wood blocks and a lift truck were used to turn large dies for correct position for machine set-up. I proposed a die turner, made of scrap parts, which consists of a turntable mounted on roller bearings. Now the die can be positioned far more easily. I find that I can provide quicker service to the press operator without loss of time. I do not have to maneuver the lift truck as much, which cuts down on the possibility of injury to someone."



JOE LOHMAN, tool engineer,
Pittsburgh Works:

"Good ideas most often result from team effort. In my previous job as maintenance foreman, and now as a tool engineer, I have seen this happen repeatedly. To illustrate, the side frames on a wound-core distribution transformer were formerly bolted. This was slow, expensive, and clamping pressures were uncertain. Then someone got the idea that a strap side frame put under controlled pressure, and locked in place, would be quicker, better and cheaper. This original idea set off a chain reaction of ideas which finally resulted in better design, better tooling, better production, and lower costs. The only ideas I don't like are those which people keep to themselves."

VERNE R. VIELE, assistant electrical
engineer, Boston Works:

"New ideas are born because someone wants to do his job better. No one has a corner on the market dealing in new ideas. But every employe has an edge when it comes to correcting the inefficiencies in his own job since no one is closer to the job than he is. Any worthwhile idea lends a hand in performing the job more uniquely. Sometimes it takes courage to promote ideas that seem ridiculous. Yet, every idea should

be given a chance. When a person feels his idea has merit, he should discuss it with someone — and not be discouraged by the first negative response. Even the greatest inventors had to plug away before people accepted their contributions. When the best efforts of every employe are put forth, the collective result can spell out a tremendous advance for his company."



CLOICE E. TEMPLE, purchasing agent,
Norwood Works:

"Good ideas come to those who are ready for them. Being 'ready' means that you have formed the habit of thinking constructively, are optimistic, want to create worthwhile things, and believe steadfastly that you can do it. Here are some points to consider when trying to solve a problem with a new idea: Fix the objective clearly in your mind. Convince yourself 'it must be done.' Listen

objectively to and read avidly things pertinent. Be different — that is, depart from the commonplace and routine. Let the imagination run wild, but keep one foot on the ground. Work on ideas at different times of the day and in different environments — early in the morning, on park benches, before meals. And be sure to write down the different ideas that occur."



Turnstile turbines

A-C units pay bill for California irrigation project

The defiant South Fork of California's Feather River has always balked at the simple use of its waters. As the principal water supply for the 24,000-acre Oroville-Wyandotte Irrigation District, it makes the inhabitants work for what they get.

A case in point is a giant engineering and construction project extending 40 miles along the river area, starting 80 miles north of Sacramento in north-central California.

Begun in 1960, the immense project was completed Jan. 1, 1963. Eventually it will about double the amount of water available for irrigation and domestic uses for the district, located southwest of the South Fork.

But this time the rebellious river is being made to pay the construction bill

itself. Making this possible are three new power houses along or near the South Fork.

All are studded with Allis-Chalmers equipment.

Electricity generated at the power houses will be purchased from the irrigation district by the Pacific Gas and Electric Company. The agreement with the utility, involving over \$3 million a year in payments, enabled the comparatively small district (15,000 people and a tax income of about \$270,000 in 1960) to float a \$62-million bond issue to finance the project.

Charles E. Muller, manager of utility sales for our San Francisco District Office, said that three Allis-Chalmers hydraulic turbine generators will produce annually 433 million kilowatt hours of power to tie in with PG&E's steam generation lines.

They are located at the Woodleaf, Forbestown and Kelly Ridge power houses, along with our switchgear, power transformers and controls.

Muller said, "As principal supplier of power house equipment, Allis-Chalmers has unit responsibility for the power generation, transmission and system control package."

The South Fork project already has been cited by one publication as "the beneficiary of high caliber performance and teamwork by all three members of the construction team — owner, engineer and contractors."

The owner, of course, is the irrigation district itself. The Bechtel Corpora-

FIVE PLANTS INVOLVED

Five Allis-Chalmers plants supplied equipment for the Feather River project.

Boston — circuit breakers.

Norwood — pumps and motors.

Pittsburgh — current, load center and distribution transformers.

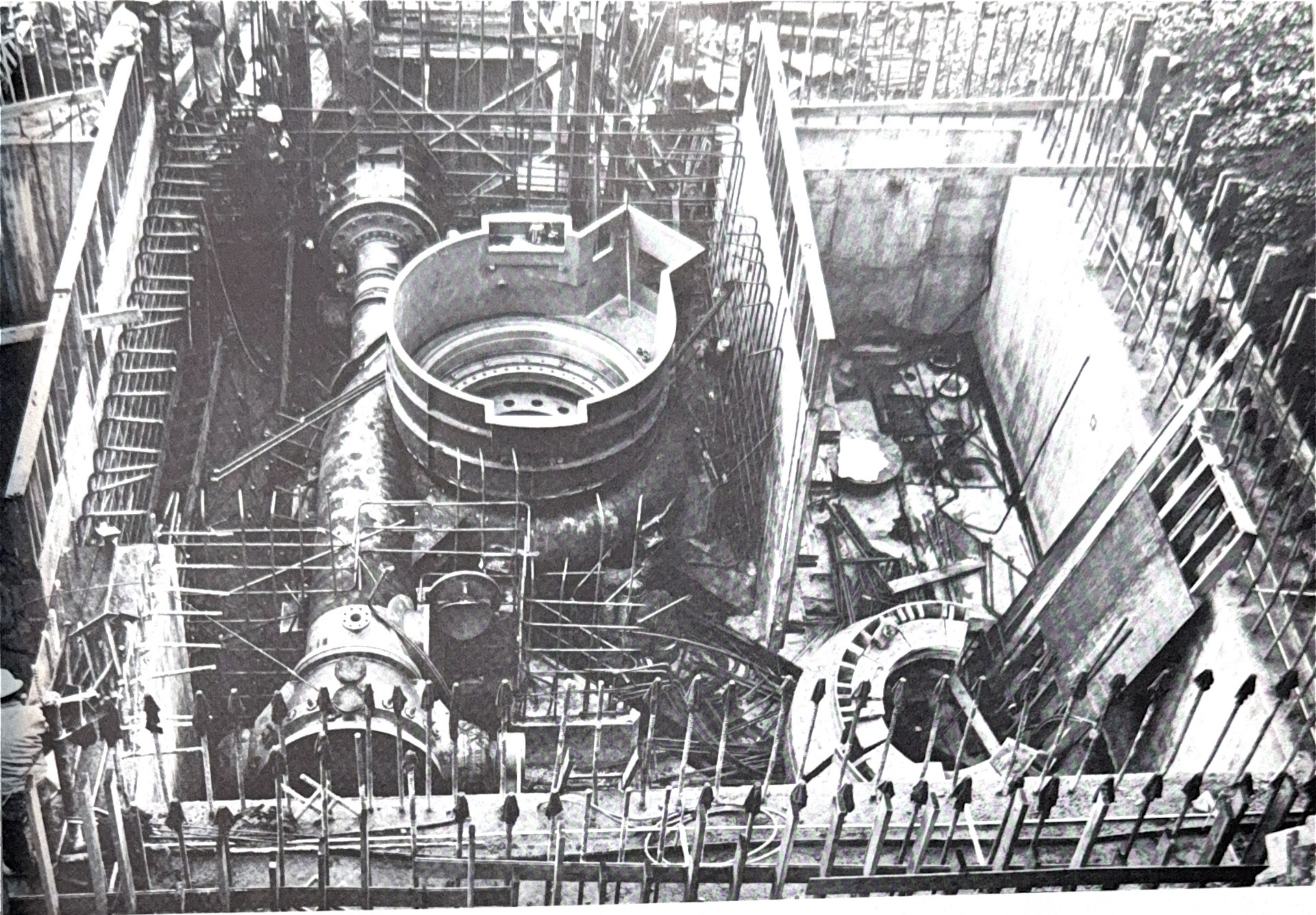
West Allis — switchgear, power transformers, generators, exciters, motor control centers, starters, heaters.

York — turbines, valves.

Pipe such as this helps link the 40-mile long network of reservoirs, river and power houses in the Oroville-Wyandotte irrigation project.

This man-made diversion dam adds to the beauty of the already majestic California wilderness. Water diverted from this stream joins with waters of the Feather River's South Fork via a tunnel.





Electric power from Allis-Chalmers generators to be purchased by the Pacific Gas & Electric Company made it possible for the Oroville-Wyandotte Irrigation District to finance the huge project. Visible here is the spiral casing for the Kelly Ridge power house hydraulic turbine.

tion of San Francisco is the engineering firm in charge of design and management and construction. The contracting was a joint venture of five firms doing business under the name of Oroville Project Contractors, with Guy F. Atkinson Company as sponsor.

Allis-Chalmers was a supplier to these contractors.

The magnitude of the project is reflected in these bare statistics: seven new dams and minor reconstruction of an existing dam; 17 miles of tunnels in

seven separate sections; about 11,000 feet of penstocks in three separate sections to bring water to the power houses; 21 miles of irrigation and power canals and conduits, and 21 miles of forest service, county and project access roads.

Vouching for the complexity of Allis-Chalmers role, alone, are three file cabinets at the San Francisco office. All bulge with data pertaining to our equipment purchased for the project.

For the contractors, in particular, tackling the project required confidence in

themselves and in the firms supplying them with equipment.

Their contract does not have the usual "force majeure" clause which extends construction deadlines for delays caused by strikes, unusual weather, earthquakes.

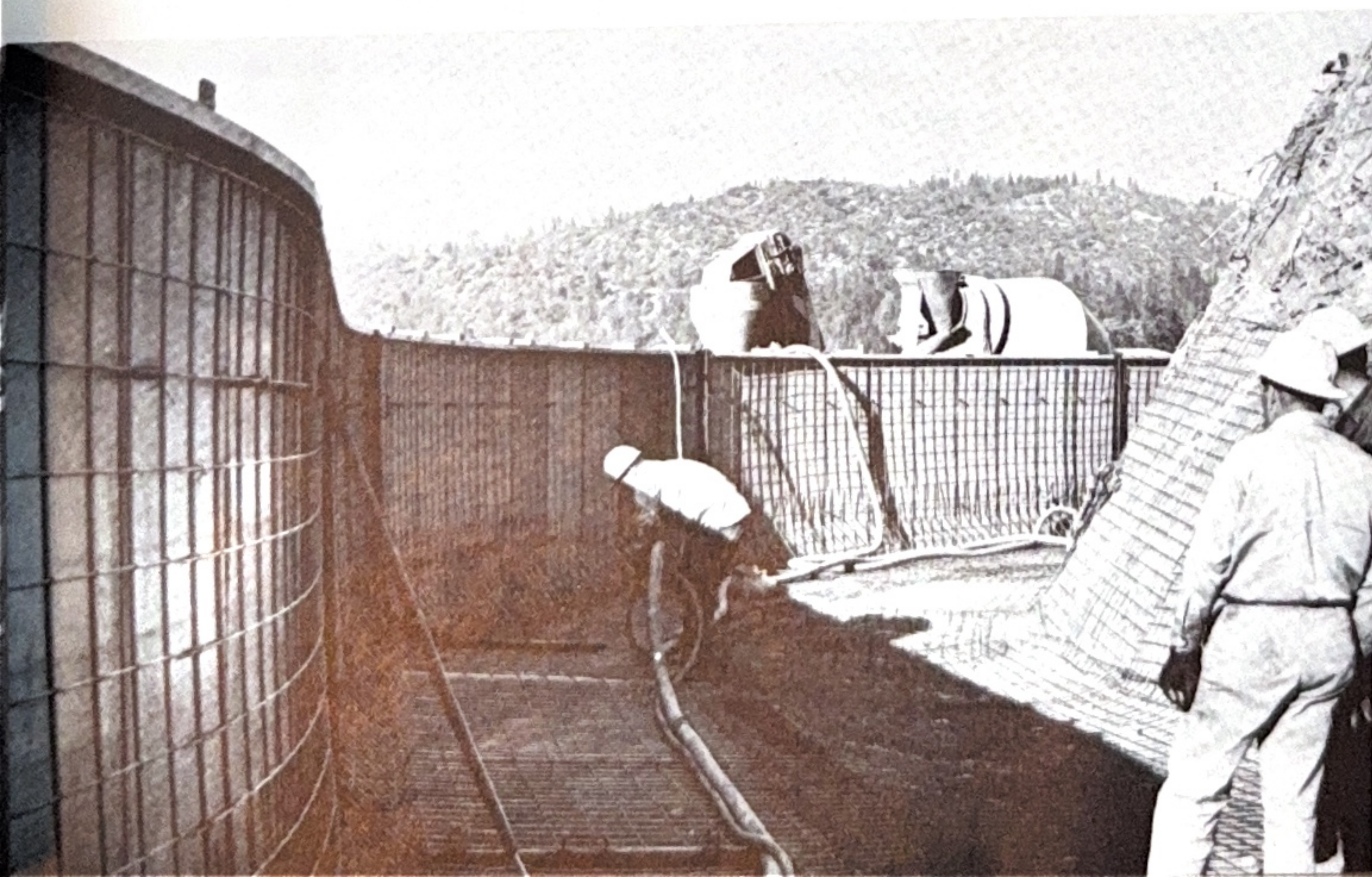
There is no compensation for things like increased dam foundation excavations, or additional work due to geographic conditions.

Had the contractors failed to meet the July 1, 1963 deadline, they and their sureties would have been liable for a penalty of \$8,250 a day — equivalent to the daily payment due from PG&E on the power contract.

On the other hand, the contractors, as of January 1, were eligible for a \$7,600 bonus for each day they beat the July 1 deadline. Since they met the Jan. 1 date, they received the full bonus.

The water problems faced by the residents of the Oroville-Wyandotte Irrigation District are not unusual in California. The state has plenty of water, but the streams do not give it up without a fight.

Forms and reinforcement are being placed in a section of the Miners Ranch canal, a connecting link between a diversion dam and a reservoir in the complex California project.



Turnstile turbines

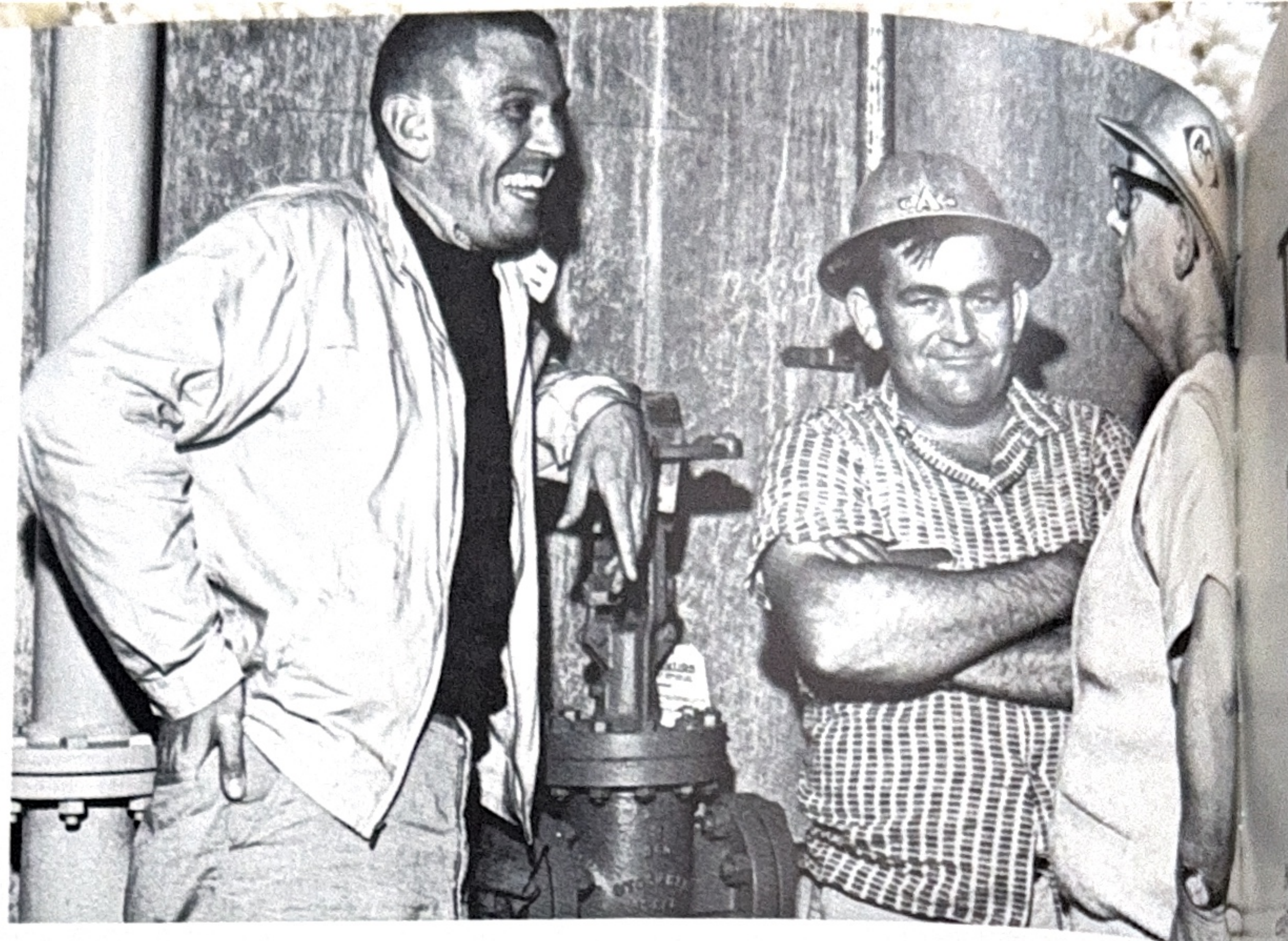
The outstanding characteristics of water occurrence in California is its geographic maldistribution.

The major sources of water are in the northern part of the state where, for the most part, they waste into the ocean unused. On the other hand, the great productive land areas are located in the central and southern regions where water supplies are insufficient.

Another outstanding characteristic of the water resource is the timing of its occurrence. Throughout the state, the bulk of the rain and snow occurs in a few winter months, while the summers are always long and dry.

Although the runoff from the higher mountain ranges is regulated to a considerable extent by the effect of the mountain snow packs, most of the stream flow in California closely follows the pattern of rainfall, and comes during the winter and early spring months — frequently in the form of damaging floods of high intensity and short duration.

The economically important part of the stream flow that is delayed until the late spring and early summer snowmelt period is insufficient to provide for the



Taking a moment out from the pressing job of meeting deadlines are (from left) Charles E. Muller, manager of utility sales for our San Francisco District Office; E. H. Brown, a general superintendent for Oroville Project Contractors; Herb Phillips, York Works erection superintendent.

larger demands for water in the summer and fall.

The need to get water in the right places at the right time led to the South Fork project. Prior to the start of the project, only about 4,500 of the 24,000 acres in the district were under irrigation for crops, olives, nuts, citrus and other fruits.

Also, water for irrigation and domestic uses was rationed and no new facilities could be served.

The South Fork project is changing all that. And helping make these changes possible is Allis-Chalmers equipment, converting the energy of the restless river into a steady stream of electricity.

'Allis-Chalmers in perspective'

Twenty-five of the Company's top regional and home office financial representatives met in West Allis in April for a "Dollars in Action" conference. In the keynote speech, "Allis-Chalmers in Perspective", Company Treasurer G. F. Langenohl reported many things of interest to all Allis-Chalmers people. Some of his comments follow:

Sales — "New business is brisk and 1963 will show sales volume gains. Almost all our major divisions will participate in this rise . . . through more aggressive marketing of existing lines, introduction of new products or penetration of new markets."

Growth Pattern — "Since the late 1930's . . . we've grown as the USA has grown. When you're close to the day-to-day or even year-to-year tumult and transformation, this growth may sometimes be obscured, but it's a long-run trend and there's no reason to feel it will slacken."

Profits — Allis-Chalmers "has a right to raise its sights. We have a right, for example, to look for higher operating rates and more profitable use of our manufacturing capacity."

"Allis-Chalmers has the financial



G. F. Langenohl: "We've got financial strength and are looking for ways to flex our muscles."

strength to underwrite any program that promises a fair profit.

"Today your Company is doing more things, studying more new ideas, exploring more ways to increase profitability than at any time in its 117 year history."

Price Levels — "Adequate prices are the most effective antidote I know for shrinking profits."

Financing — "In financing . . . we've gone into credit methods and financing arrangements that were unheard of just a few years ago . . . Instead of just being



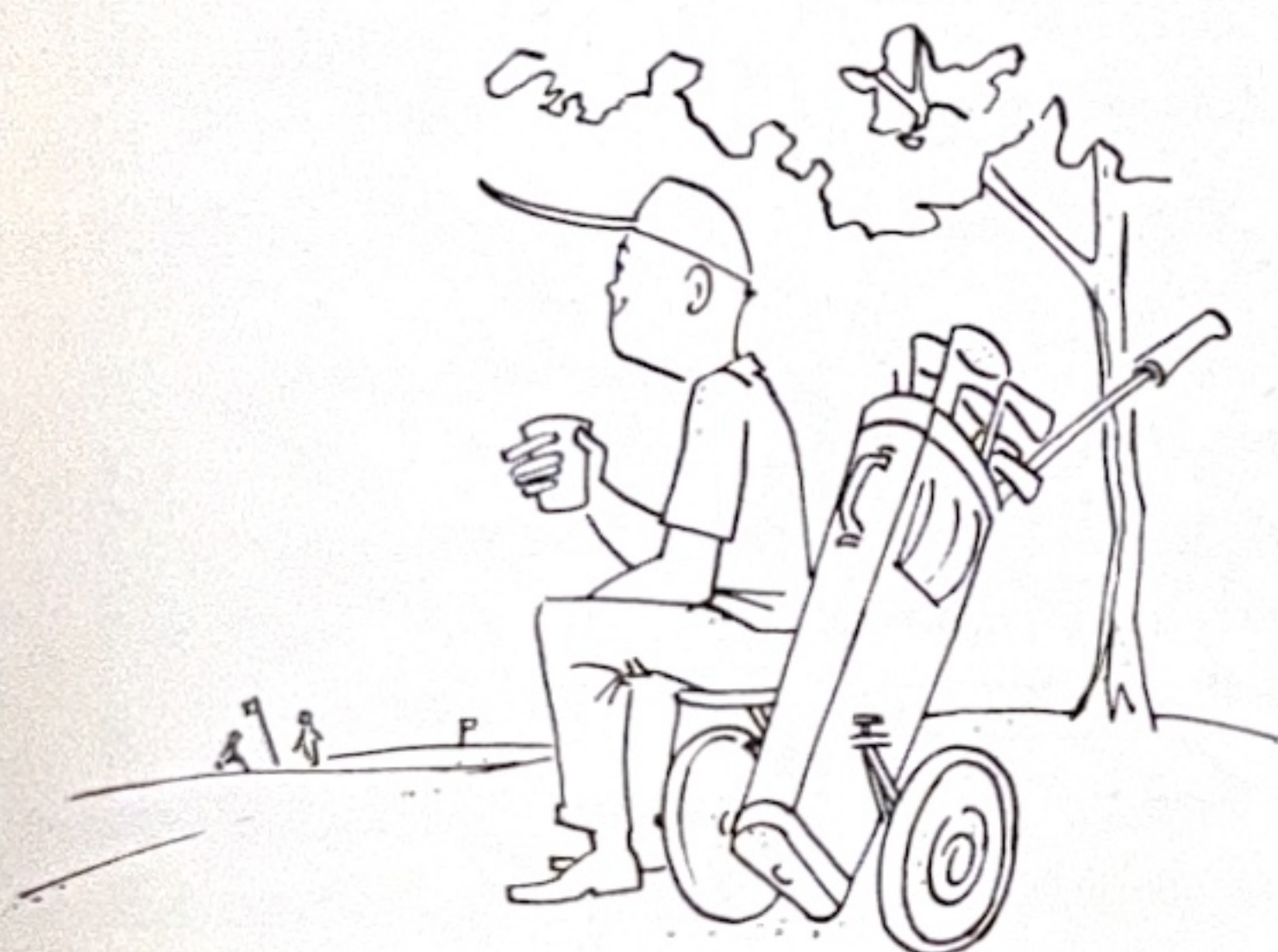
a manufacturer selling equipment, we now must sometimes build whole plants, train people to run them, finance the total costs of construction and guarantee long-term future plant performance. Instead of making a fork lift truck and selling it to a dealer or distributor, we now open strategically-located 'company stores,' staff them, equip them and sell direct to the user . . . With our many product lines, this approach takes financial strength. We've got this strength and are aggressively looking for ways to flex our muscles."

Tips for a happy vacation

Allis-Chalmers people this year will enjoy, on the average, more than 21½ weeks of paid vacation and 7 days of paid holidays.

Vacations and holidays, like a choice of clothes, are a personal thing. No one can tell you how to spend them. The suggestions that follow are meant only to help you avoid a few of the pitfalls that face all vacationists.

THE TEMPTATION to pack 36 hours of activity into a 24-hour day is promptly stomped on by the wise vacationer. He knows better than to play 27 holes of golf, followed by a long swim,

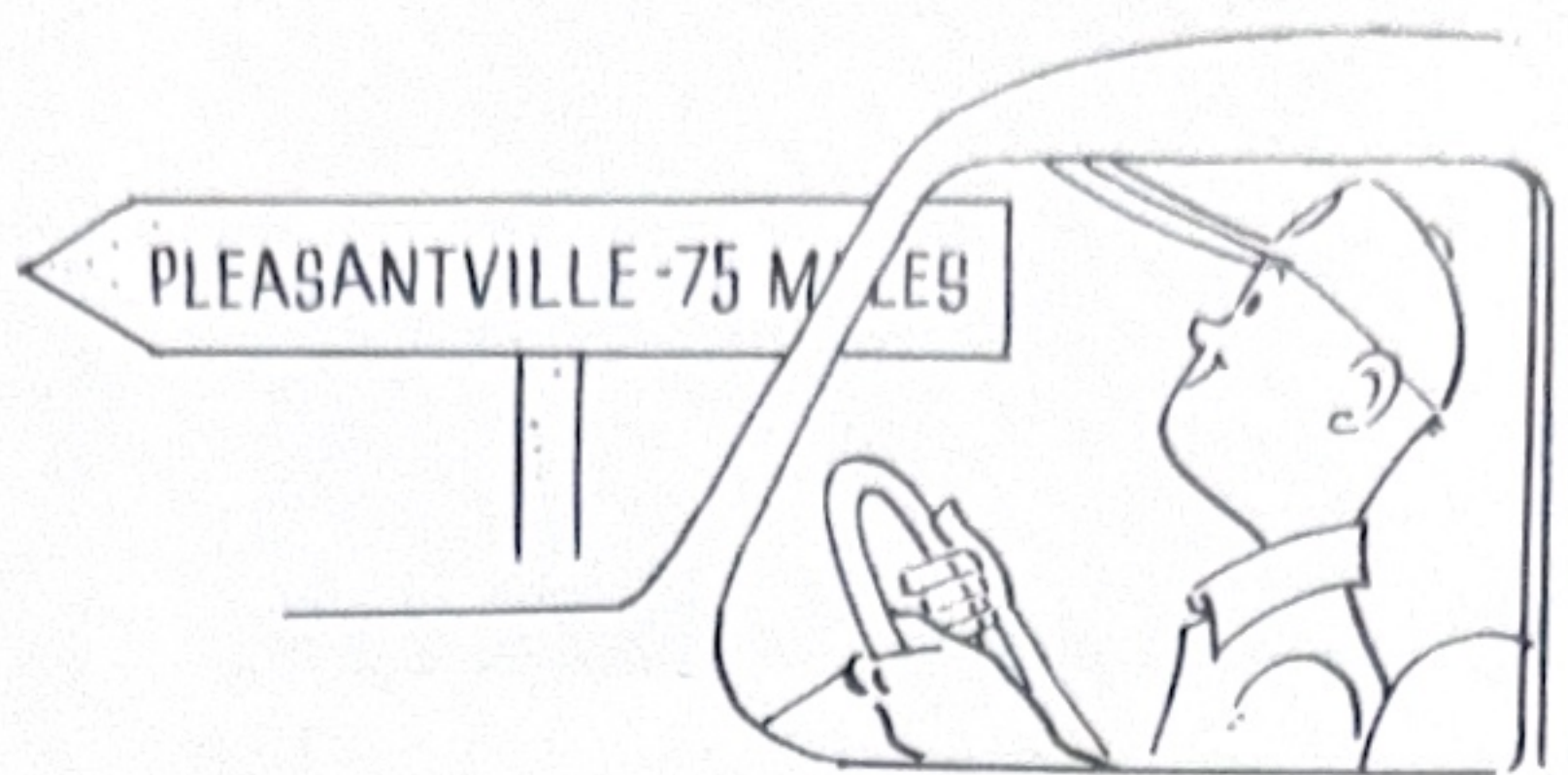


followed by — well, you get the idea. He knows that a few days of this and he'll quietly collapse, unable to fully enjoy the remainder of his vacation.

VACATIONS represent pay for time not worked. The wise vacationer believes it's a shame to cancel out the leisure they should bring with a solid schedule of remodeling, landscaping, or what have you. When he has nothing definite planned, our vacationer uses part of his time to develop interests he can carry over into retirement.

(Speaking of "pay", each Allis-Chalmers employe on the average received \$255 worth of vacation and holiday pay in 1954. Last year, this average was \$477, reflecting higher rates of pay, longer vacations, and more paid holidays.)

GETTING AWAY from it all doesn't necessarily mean you must cover 500



miles a day in your automobile, says our thinking vacationer. He doesn't overlook the excellent attractions in his own state or province — the same attractions that others travel hundreds, even thousands, of miles to see. His Chamber of Commerce can point out hundreds of fascinating areas within a relatively few miles from his home.

CREDIT BUYING, our vacationer knows, can too often carry over, with disturbing results, into vacation planning. He avoids excessive vacation spending that would put him over a financial barrel the remainder of the year. With forethought, he and his family can generally have a wonderful time without the need for a great deal of extra cash.

OF NECESSITY, workday tasks are governed by clocks and deadlines. Vacations are meant to provide a change of pace from this routine. Although our vacationer plans his vacation well, he allows plenty of time to do the unexpected. He does not tie himself and his family to a rigid schedule.

THE EXUBERANCE that accompanies vacations can lead to extended and unwelcome vacations. Our vacationer doesn't take chances when motoring or playing. (First off, he has his car safety inspected and insists that the family snaps on the seat belts.) He knows he'll be needed back on the job where his fellow employes look forward to seeing him — safe, sound and refreshed.

AND A FINAL THOUGHT — In his travels and visits, when someone asks "What's new at Allis-Chalmers?", he accepts it as an invitation to "Sell Allis-Chalmers." He's confident that just a word at the right time is all it takes sometimes to whet interest in our products that results in sales.



Around Allis-Chalmers

PITTSBURGH — President Kennedy's new parttime residence on Rattlesnake Mountain near Washington, D.C. will get its electricity with the help of a Pittsburgh-made surface mounted residential transformer. The distribution transformer was purchased by the utility serving the area.

LACHINE — Overseas visitors to the Lachine Works during the first phase of Canada's "Operation World Markets" campaign were impressed with the plant's diversified range of products and manufacturing facilities. During the course of the campaign, more than 800 key buyers from some 60 countries will be airlifted into Canada for inspection of Canadian products and manufacturing facilities. The visitors came from countries which are in the market for equipment to help them continue their rapid development.

MILWAUKEE — \$420,900 in additional funds for research and development work on using fuel cells in outer space brings to nearly \$1,000,000 the total of contracts Allis-Chalmers has received within the last year from government agencies for fuel cell work. The work is being done in the research laboratories at West Allis.

MILWAUKEE — The prices of certain distribution transformers manufactured at our Pittsburgh and Gadsden Works have been increased 10 to 12 per cent because previous prices left an unsatisfactory margin for continued product improvement and a reasonable return on investment. The prices of some distribution circuit breaker lines were increased 7½ per cent.

SPRINGFIELD — Fifty crawler tractors valued at more than \$1.25 million will be manufactured here to assist in a farm mechanization project in the State of Sao Paulo, Brazil. Under the project, 8,000 families will settle on approximately 400,000 acres of underdeveloped land.

YORK — Allis-Chalmers will build seven hydraulic turbines under an \$8 million contract for the Wells Dam project on the Columbia river near Azwell, Wash. Conventional power house structures will be eliminated. Instead, the turbines will be located separately in a series of 10 piers, built into the face of the dam, with spillway gates between each pier.

LA PORTE — Two new one-row cotton pickers have been added to the Allis-Chalmers harvesting equipment line for 1963. One is for average growth cotton, the other is for higher yielding tall varieties. Both were developed with requirements of the smaller acreage grower in mind.



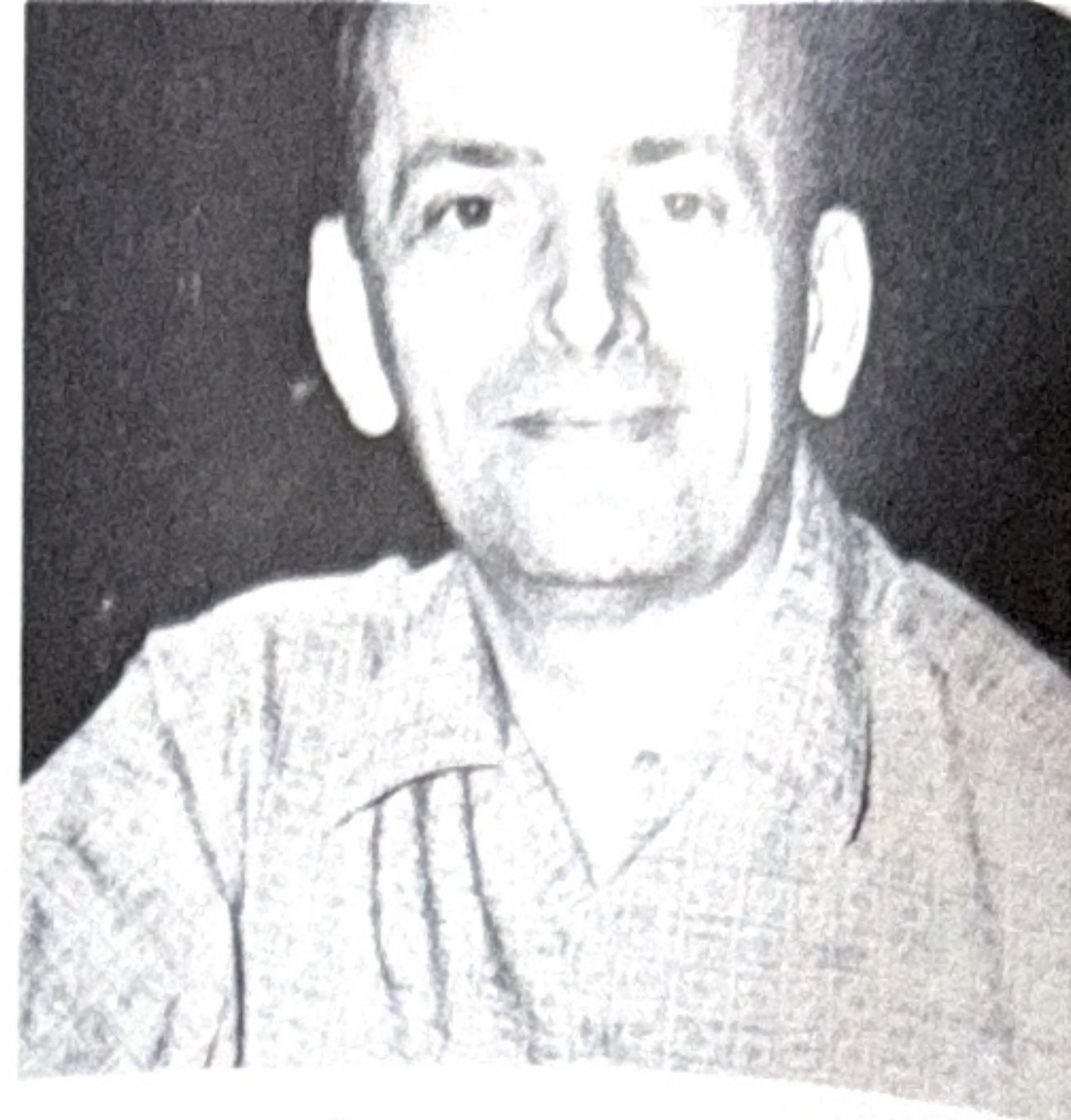
Tom White



Harvey Jerome



Forest Ingram



George N. Myers

Employee 'touch' triggers sales

The non-professional touch continues to produce professional results. Our growing group of "after hours" and "weekend salesmen" in recent weeks have added another batch of orders to the "Sell Allis-Chalmers" program.

In some cases, employees were instrumental in snatching the order right out of a competitor's teeth.

Here's what's been happening:

INDEPENDENCE — H. S. (Tom) White, factory superintendent, learned that his brother-in-law, Elmer Stephenson, was about to buy a competitor's combine. So, Tom discussed the *Gleaner* combine with him. As a result, Elmer now owns Allis-Chalmers Model "E".

CEDAR RAPIDS — Machine shop employee Harvey Jerome went right to work after he learned that Morris Brady, his wife's cousin, was interested in buying a new tractor. Harvey got an employee sales referral card from the personnel office and filled it out. Morris now owns a D-17.

YORK — A large produce farmer near Georgetown, Delaware, was about to purchase a competitive model crawler tractor. Richard L. Kerr, York Works Repair department-Turbine, heard about this through his father-in-law, whose work brings him in contact with produce farmers. Time was short, so the phone

call route was used to relay the information to our dealer in Baltimore. The dealer sold the farmer a \$22,000 A-C crawler-tractor.

YORK — George N. Myers, foreman, Material Handling, buys some of his food at a York food market. The grocer told George he was interested in a tractor with a generator because he lives in the country. George turned in a sales referral card, and the sale was made.

NORWOOD — Jack Barker, department 14, has a friend who is head of maintenance operations at a Cincinnati firm. Through a sales referral card turned in by Jack, the firm now owns two Model C-3 closed coupled pumps with 15-hp motors.

LA CROSSE — Robert Boehm, tool room attendant, is a neighbor to William Kunst, La Crescent, Minn., whose son, Robert, operates the family farm. Robert's referral card, indicating Robert Kunst's interest in purchasing farm machinery, was turned in to our Minneapolis Branch office and relayed to the Winona farm equipment dealer. Robert Kunst purchased a disc harrow and baler.

LA CROSSE — Alfred Martin, steel yard crew member, visited his brother-in-law, Ira Doss, who works on a farm near Creston, Iowa. The owner of the farm, Rudolph Wiesshaar, was considering buying a competitive tractor at the time, but Alfred's referral card, sent to the Des Moines branch, changed that.



Jack Barker

Rudolph now owns a D-19 — and is most happy with it.

LA CROSSE — Harold Lunke, tool room employee, used a referral card to notify the Drott Tractor Co. of Milwaukee, our engine dealer, about a new extension to a hospital in La Crosse. The bids for the new extension included a diesel electric generator of a competitive make. Harold's timely referral card led to a change, and Drott got the order.

DEERFIELD — A Chicago firm which previously purchased three lift trucks through the efforts of Elmer Giznik, cost accounting (A-C SCOPE, Spring issue), recently purchased two more units.

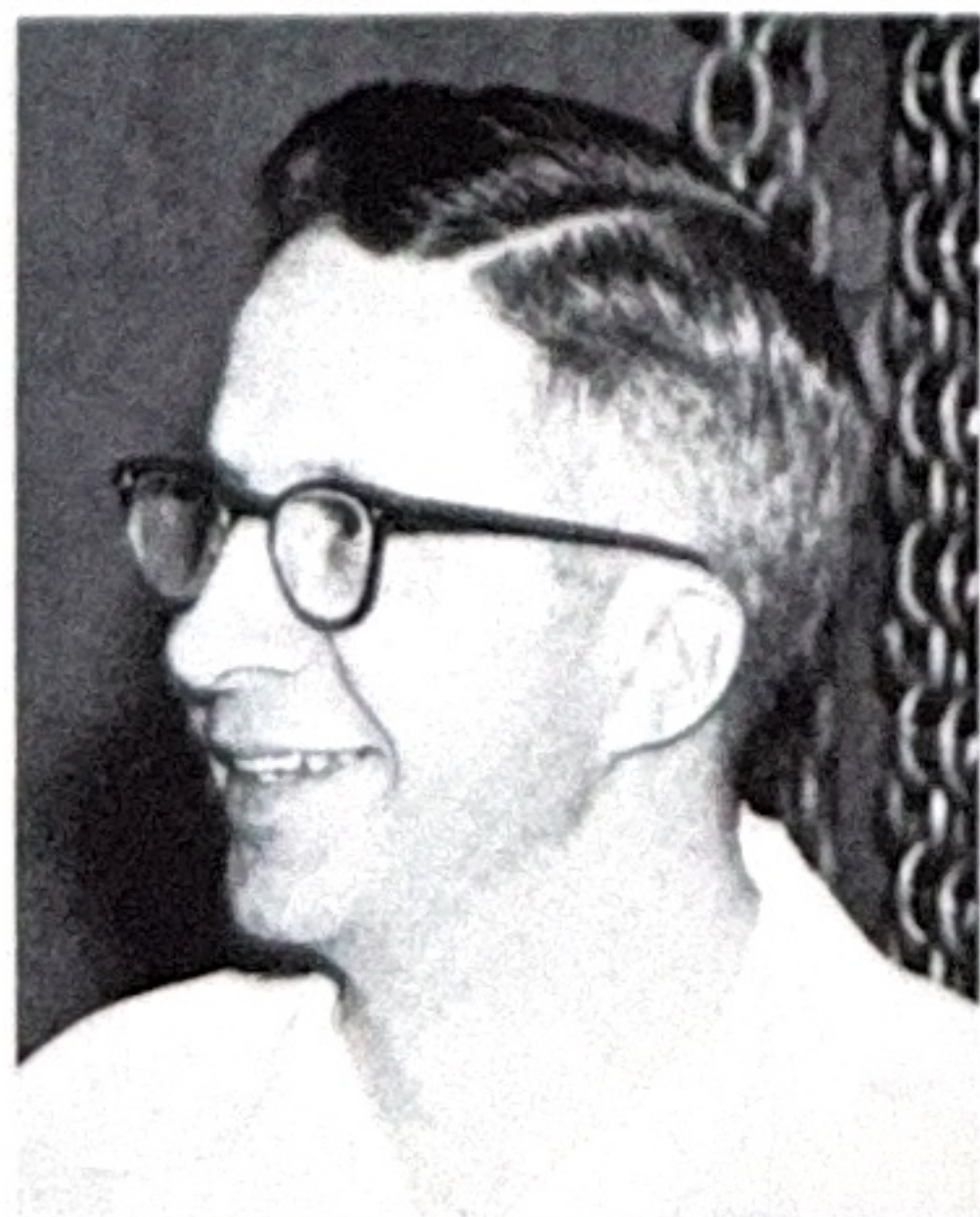
INDEPENDENCE — Forest Ingram, manager, Planning department, is responsible for the sale of a D-19 tractor. Chatting at a roadside watermelon stand, he learned that a farmer, Harry Waggoner, was in the market for a tractor. This tip produced the sale — and the prospect for the sale of two combines.

Alfred Martin

Robert Boehm

Harold Lunke

Richard Kerr



**Our 'distorting'
pulse generators**

They make mines blow their top

The enemy is building intelligent mines these days. So Allis-Chalmers is building mine-detonating equipment that is even smarter.

In the sinister game of cat-and-mouse played between mine and ship in time of hostility, wooden-hulled minesweepers equipped with our pulse generators can rile the mine into tipping its hand.

It works like this:

In harbors and along coasts, the enemy plants mines which are aligned to the natural magnetic field of the earth. As steel-hulled ships pass over, they distort the field and set off an explosion. But wooden-hulled minesweepers create no distortion — except when they want to.

As they explore a suspected mine field, they drag two long cables behind them. Our generators pulse current into the cables, creating a distorting magnetic field which tries to set off the mines harmlessly.

Magnetic mines are not easily duped, however. They are designed to resist sweeping, and will not respond to certain pulses. For this reason, our generators send out a number of different pulse shapes in sequence. One of these should irritate the mine into prematurely blowing its top.

Ralph Grutsch, manager of the Defense Products Division's Marine Sales section, said, "Together with our product departments, we have sold 16 pulse generating systems since we got into the business a few years ago. This represents over \$2 million worth of orders. In fact, we have obtained all the business to be had for coastal and inshore minesweepers during the past 12 months.

"We expect to see anywhere from five to 15 minesweepers a year built in the years ahead, so this is a potentially good future market for us."

Grutsch said, "These generators may not have the glamour attached to them as our equipment sold for Polaris submarines, missile sites, or the aircraft carrier Enterprise, the world's largest ship. But they are highly sophisticated units which provide the bread-and-butter type of business we must seek."

Allis-Chalmers equipment in these pulse generating systems include an exciter motor-generator set made at Norwood Works, and the pulse generator, switchboard, transfer panel, contactor

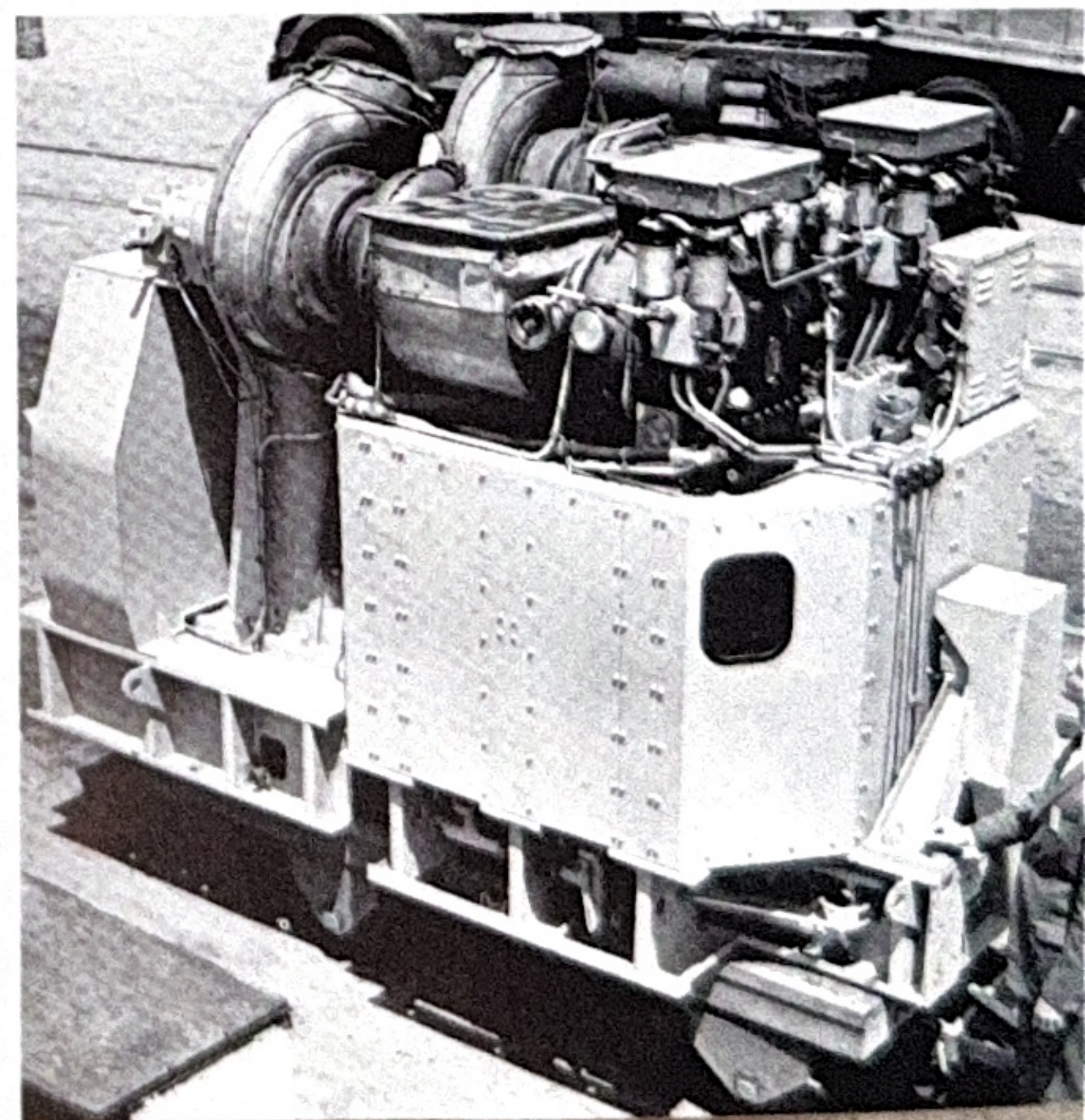


An exploding magnetic mine creates a mountainous geyser at a safe distance from a wooden-hulled minesweeper after a pulse generator set up a distorting magnetic field to cause the blast. Below is one type of pulse generator which we have supplied for these minesweepers. Our rectifiers are used to explode mines acoustically in another type of detonating system.

panel and static inverter made at West Allis.

Pulse generators, said Grutsch, are only one example of the innumerable ways our existing product lines can be adapted for defense applications.

Grutsch said, "For many of these same minesweepers we are supplying rectifiers to provide dc power to devices that will detonate mines acoustically. Some mines are set off by sound, like propeller noise, rather than by distortions in a magnetic field. Our rectifiers help such detonating systems play the right tune."



a-c scope

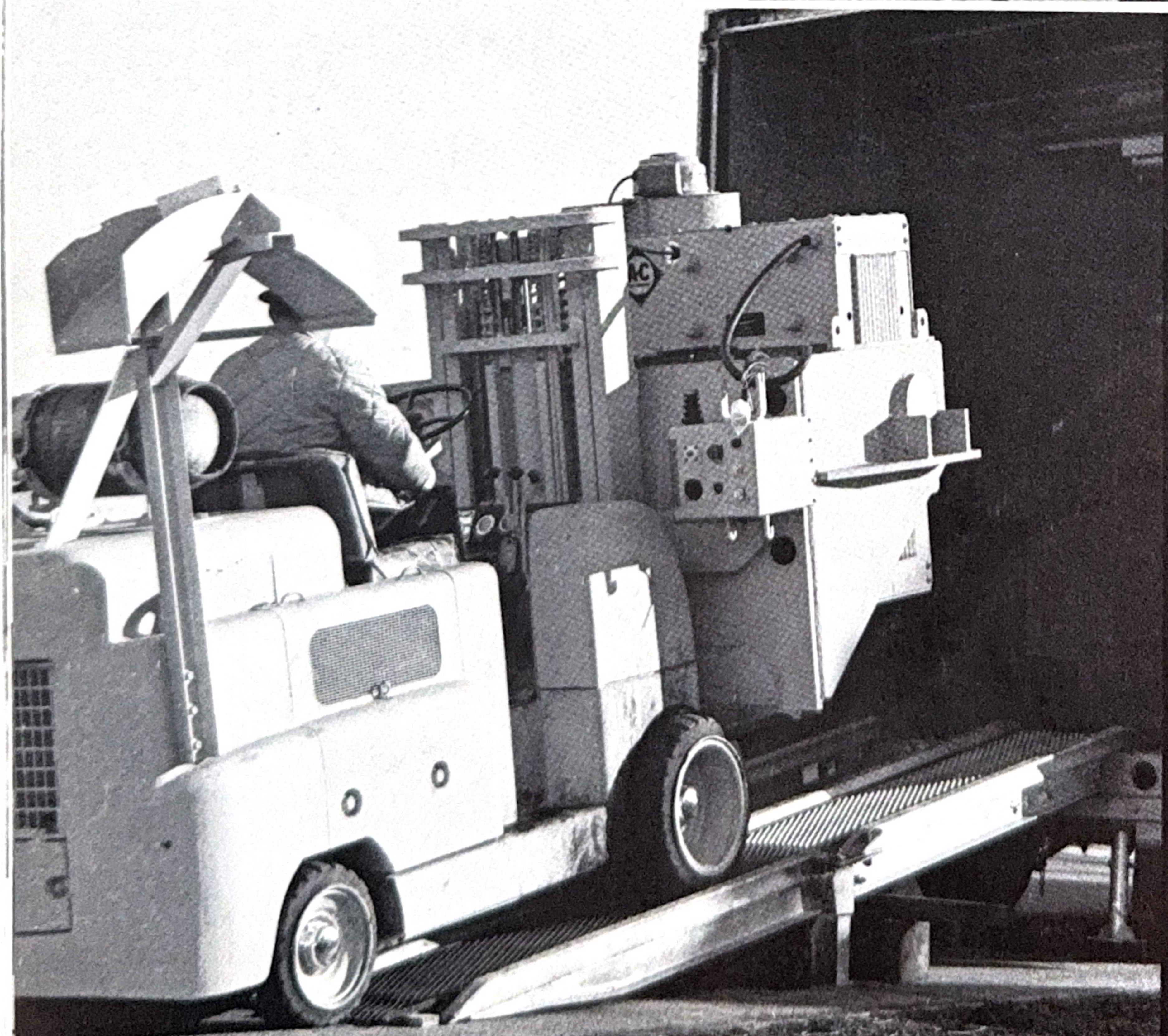
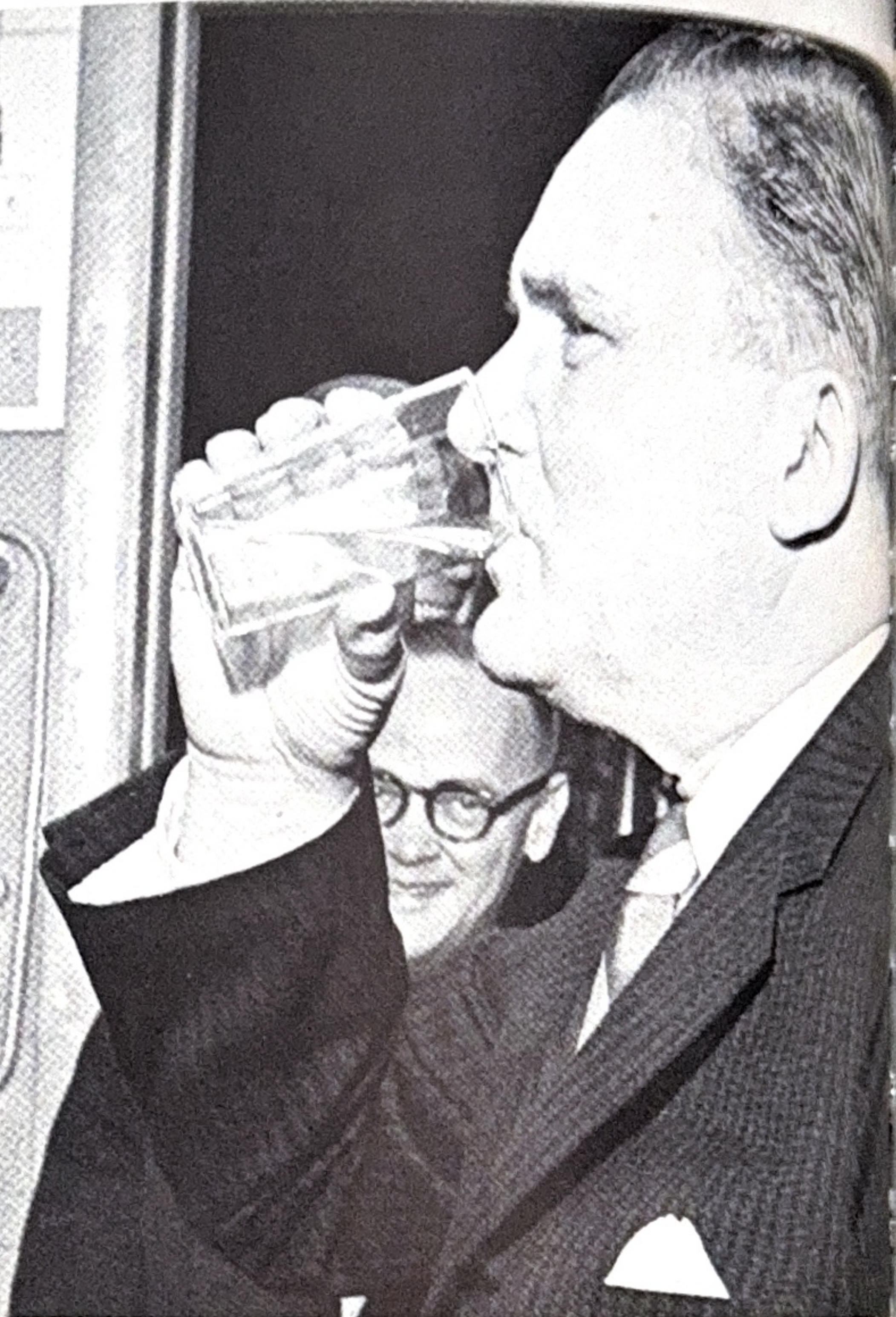
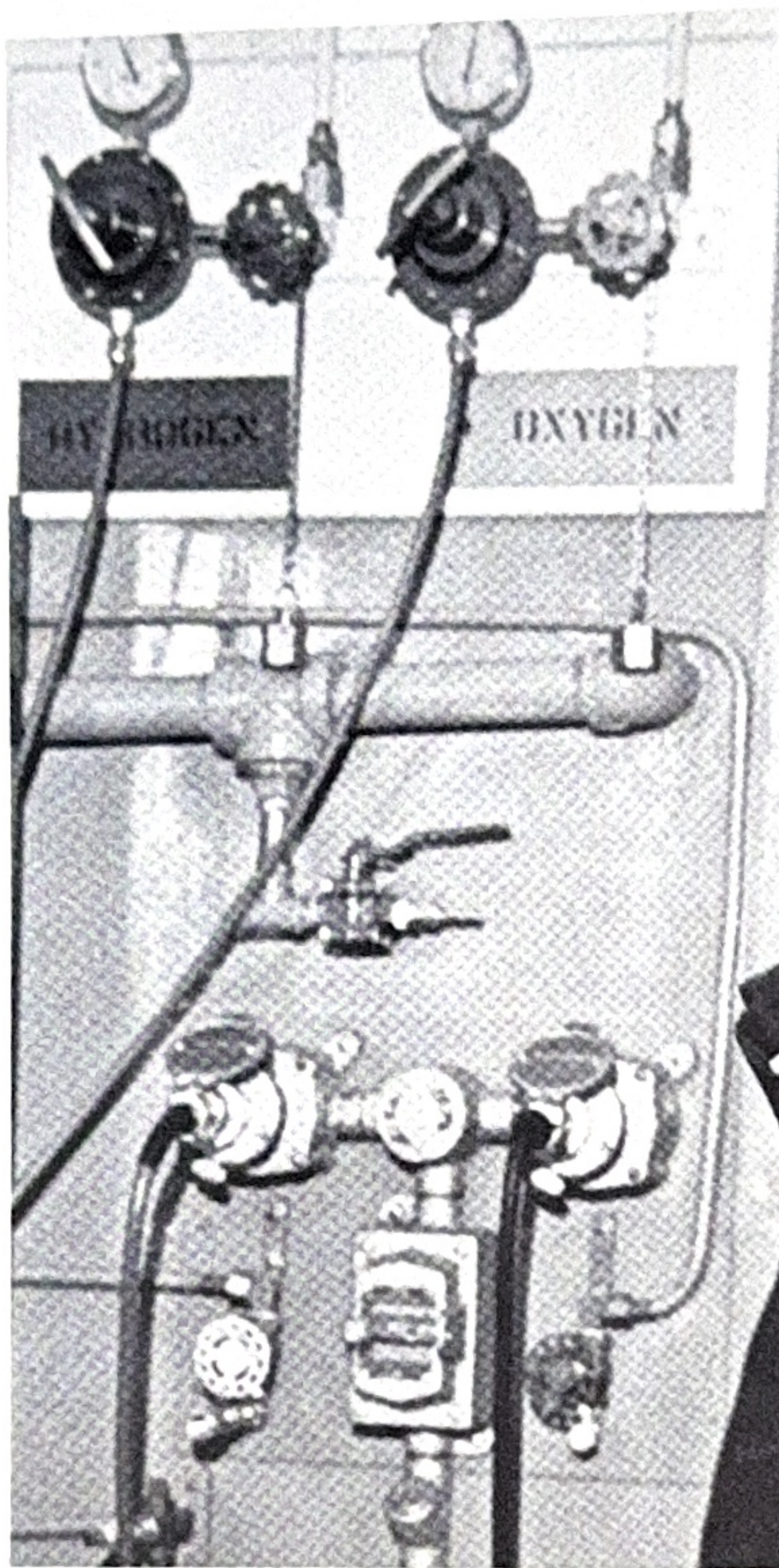
ALLIS-CHALMERS MFG. CO.

Box 512
Milwaukee, Wis.

State Historical Society
Newspaper Section
816 State Street
Madison 6, Wisconsin

An Allis-Chalmers fuel cell will be the first American power unit of its kind to be shot into orbit. Here, James E. Webb, administrator of the National Aeronautics and Space Administration, takes a sip of fuel cell water during a recent visit to the research laboratories at West Allis Works. Besides powering a satellite, our fuel cell produces water that could be used for drinking by space crews, as Webb demonstrates.

The first completely mobile betatron ever built has been shipped to Belgium where it will be used by three firms for "X-raying" castings. The betatron was made at West Allis and the lift truck at Harvey. Harvey and Norwood supplied a diesel electric set and generator for power and auxiliary power.



The Advertising department of Canadian Allis-Chalmers and its advertising agency have been awarded a "Certificate of Merit" for the best advertisement in a recent issue of "Engineering Journal," the official publication of the Engineering Institute of Canada. Art Hincks, department manager, shines up the award.