WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED
WESTERN HIGHWAYS BUILDER

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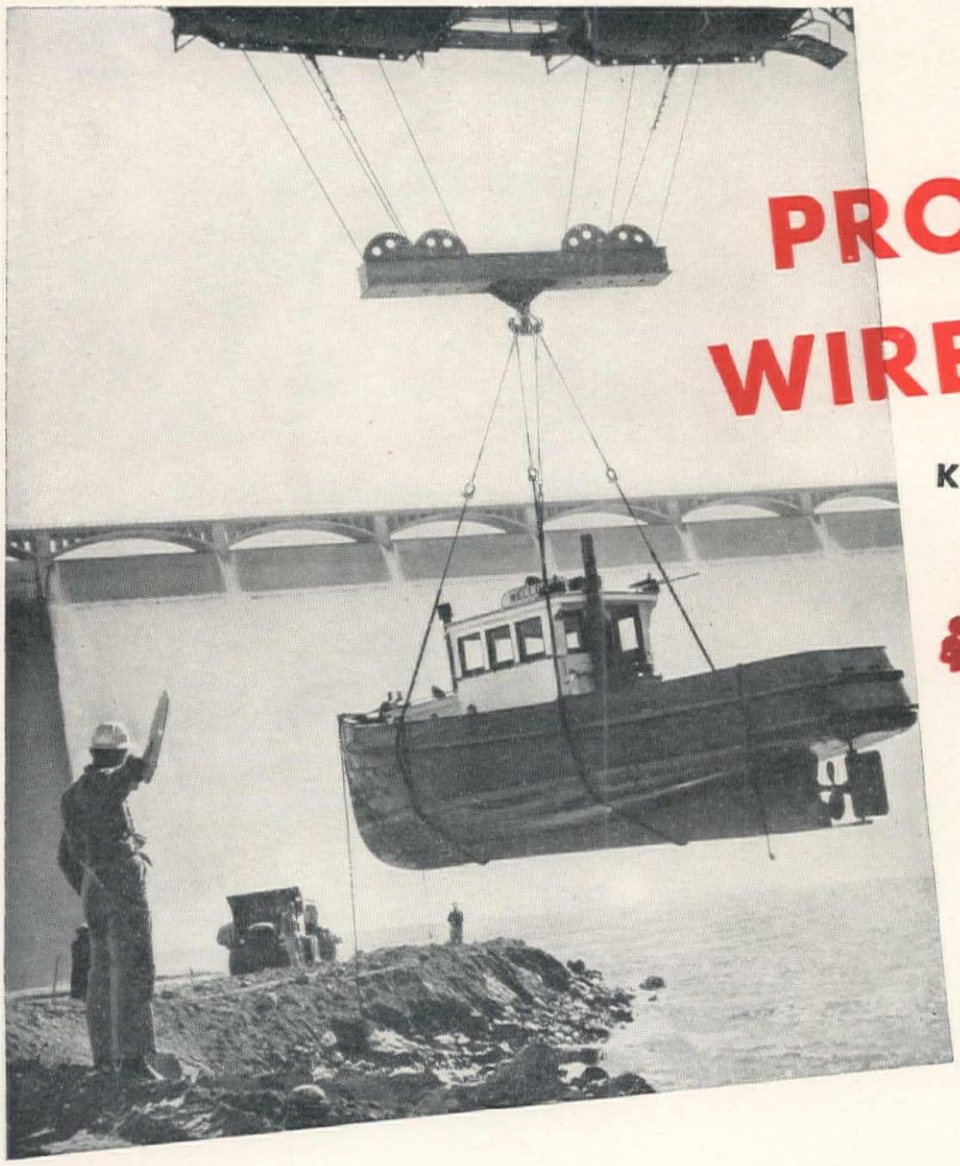
IN THIS ISSUE

ONE OF TWELVE tunnels through which water impounded behind Grand Coulee dam will be lifted by pumps to supply the Columbia Basin irrigation project. Tunnel is 23 ft. in diameter, tapers to 18½ ft. The twelve vary from 487 to 530 ft. in length. Bureau of Reclamation photo.



PROTECT WIRE ROPE

KEEP IT FLEXIBLE

PREVENT RUST

AVOID CORE ROT

REDUCE WEAR

ROPE protected by *Texaco Crater* won't die young. This world-famous lubricant reduces the friction and wear of rapid flexing over sheaves. It prevents corrosion from weather or mine water. It preserves the core and keeps the rope flexible. In short, *Texaco Crater* keeps rope strong longer.

Texaco Crater has been preferred by operators everywhere for more than 30 years. It keeps its excellent protective qualities even in the presence of dust, dirt and abrasives.

Use *Texaco Crater* on open gears, too. It cushions load shocks, quiets noise, reduces wear.

Let a Texaco Lubrication Engineer assist you in making your rope last longer. Just call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

REG. T. M.

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

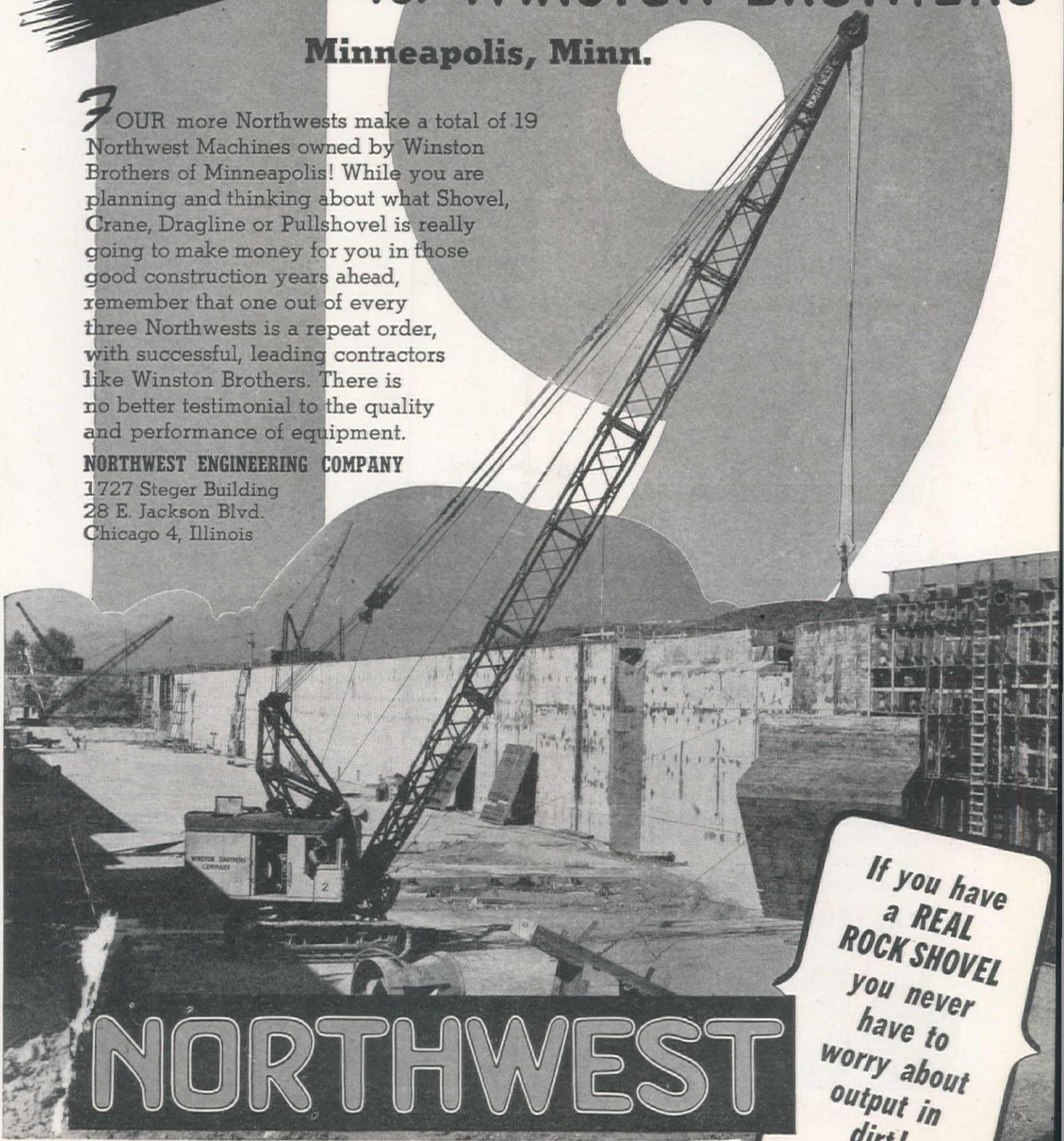
TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON SUNDAY NIGHTS ★ METROPOLITAN OPERA BROADCASTS SATURDAY AFTERNOONS

four more NORTHWESTS makes Nineteen — for WINSTON BROTHERS

Minneapolis, Minn.

FOUR more Northwests make a total of 19 Northwest Machines owned by Winston Brothers of Minneapolis! While you are planning and thinking about what Shovel, Crane, Dragline or Pullshovel is really going to make money for you in those good construction years ahead, remember that one out of every three Northwests is a repeat order, with successful, leading contractors like Winston Brothers. There is no better testimonial to the quality and performance of equipment.

NORTHWEST ENGINEERING COMPANY
1727 Steger Building
28 E. Jackson Blvd.
Chicago 4, Illinois



If you have a **REAL ROCK SHOVEL** *you never have to worry about output in dirt!*

Northwest Sales Agents: ARNOLD MACHY. CO., INC., 149 W. 2nd South St., Salt Lake City, Utah;
BALZER MACHY. CO., 2136 S.E. Eighth Ave., Portland, Oregon;
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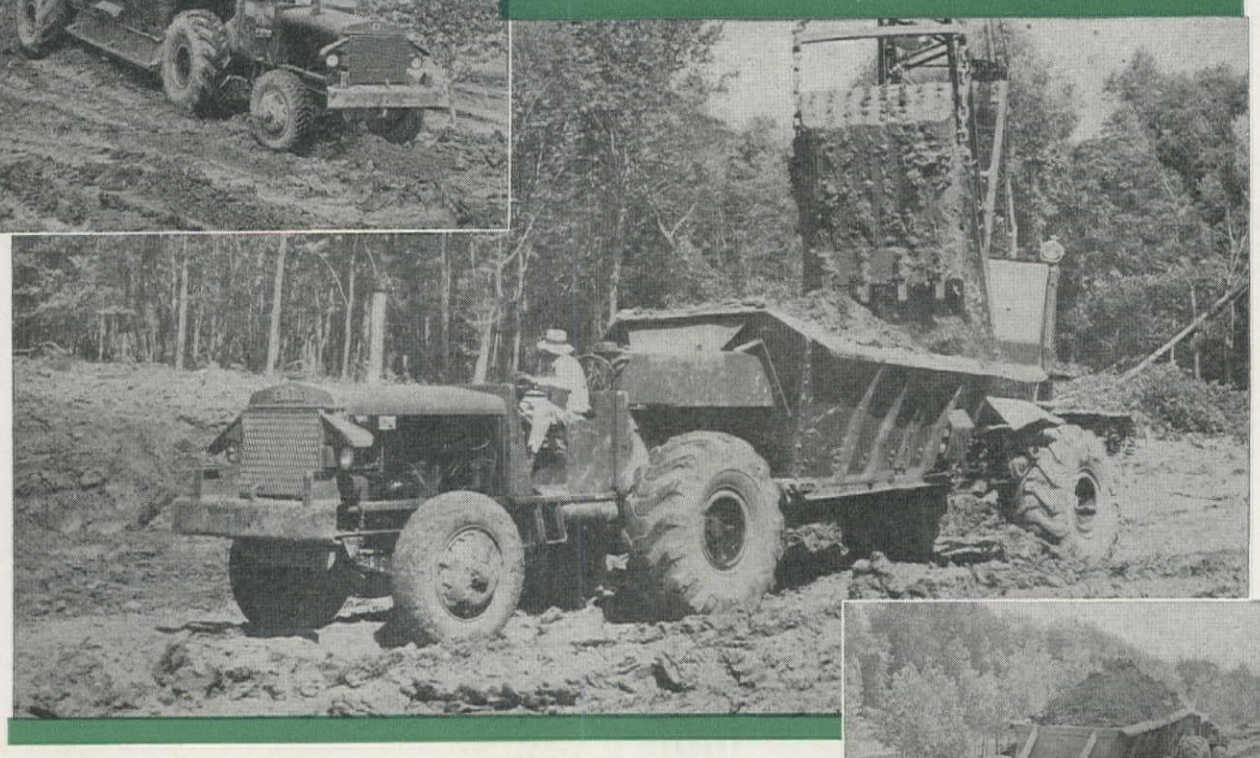
"ON THE LEVEES" it's 81% Euclid



Down in the levee country where soft, wet borrow pits usually necessitate dragline loading of hauling units . . . where difficult haul roads and soft fills make the use of ordinary hauling units impractical . . . Bottom-Dump Euclids are the outstanding choice of leading contractors.

Of the total 30,369,500 cu. yds. let on contract * in 1945, 81% is yardage hauled by Euclids. On many of the large contracts Euclid hauling equipment is being used exclusively.

This unusual record is the result of the fine performance of Euclids on levee work for many years. Their large capacity, flotation and tractive power, and ease of handling are some of the reasons why Euclids have consistently hauled more levee dirt than other makes and types of earth moving equipment.

See your Euclid distributor for complete information and specifications on the Bottom-Dump or Rear-Dump Euclid models best suited to your particular hauling needs.

*Memphis, Vicksburg and New Orleans districts.

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO

EUCLID EARTH MOVERS

REAR-DUMP EUCLIDS
Capacities of 15 to 22 tons — 9.2 to 20.7 cu. yds., struck . . . loaded top speeds of 22 to 35 m.p.h. . . . powered by 150 to 275 h.p. Diesel engines.

BOTTOM-DUMP EUCLIDS
Capacities of 20 to 32 tons — 13 to 42.9 cu. yds., struck . . . loaded speeds from 26 to 34.4 m.p.h. . . . powered by 150 to 275 h.p. Diesel engines.

EUCLID LOADER
Fast loading of hauling equipment . . . makes shallow cuts to 9'6" wide . . . maximum cutting depth of 24" . . . the 54" belt is powered by 150 h.p. engine.

EUCLIDS *Move the Earth*

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WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED
WESTERN HIGHWAYS BUILDER

Covering the Western Half of the National Construction Field

Contents for February, 1946

J. M. SERVER, JR.
Editor

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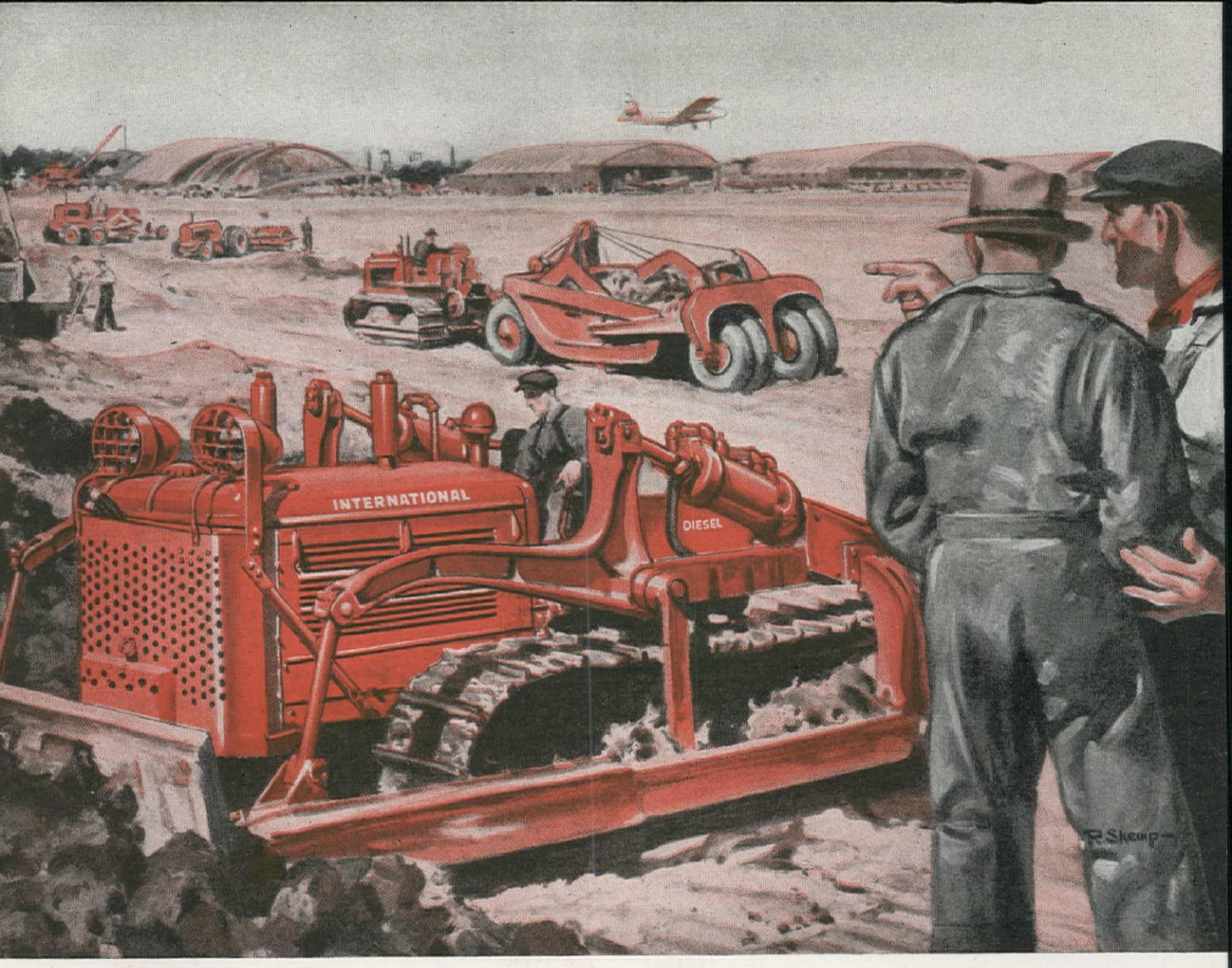

Speed Up Your Work Schedule with INTERNATIONALS

• That means you make more money, if you've figured right. And you figured right if you put International Tractors and International-powered equipment on the job. There's nothing that can beat them, size for size, in dirt moving, construction and maintenance work.

International Tractors keep moving—forever digging into the work laid out for them—at rock-bottom cost. They keep moving because they're rugged enough for the most punishing kind of work—because they're powered by International heavy-duty Diesel engines.

These great machines have the bulldog hang-on you want when cutting and filling with 'dozers, rippers or scrapers. They have the weight distribution and ratio of horsepower to weight that means sure-footed traction and mastery of any terrain.

Be sure to check with the International Industrial Power Distributor near you on the many advantages which International TracTracTors, Wheel Tractors and International-powered equipment have to offer.

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Industrial Power Division
INTERNATIONAL HARVESTER COMPANY
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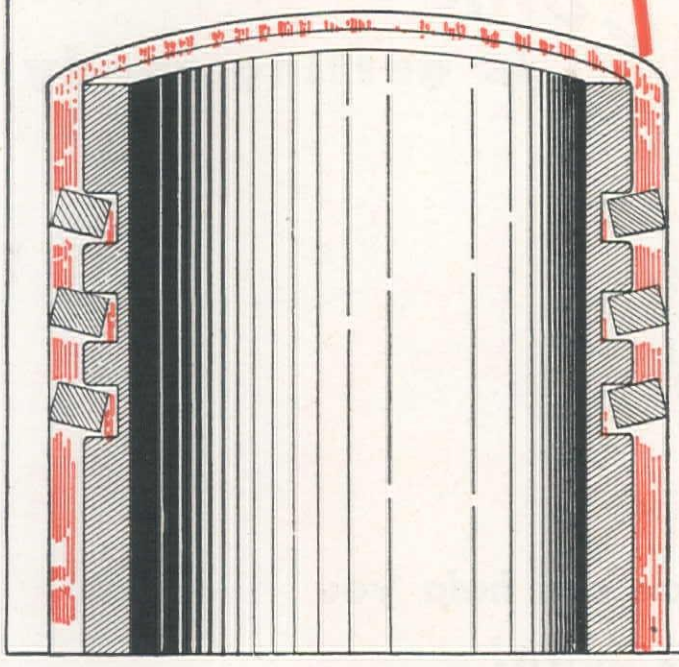
INTERNATIONAL Industrial Power

Diesel Engine DANGER points



"ROCKING" PISTON RINGS SCORE LINERS

"Rocking" piston rings, the result of excessive wear in the ring grooves of Diesel engine pistons, are the source of considerable lay-off time and expense to Diesel operators—Wear-enlarged grooves permit rings to rock, and "bite" into cylinder walls. The result is usually a costly overhaul to replace not only pistons, but worn liners as well. It's a danger point in many Diesels—but "rocking" rings and their cause, enlarged ring grooves, can be minimized.

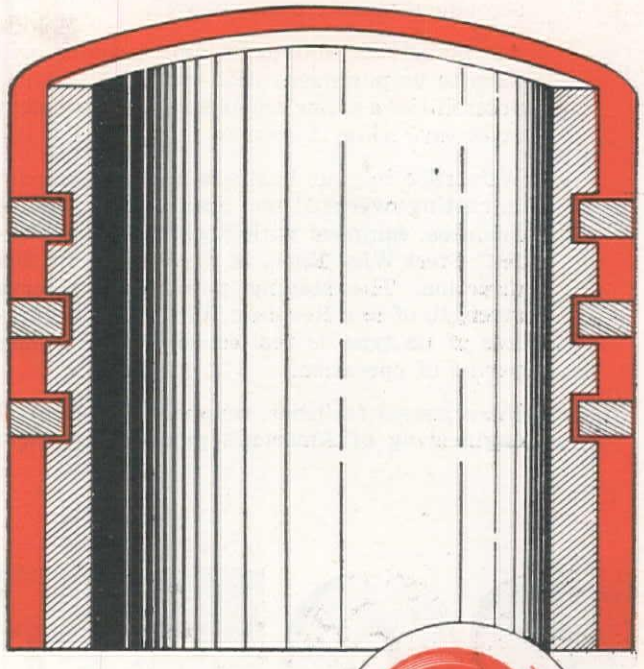
RPM DELO Oil clings to hot engine areas often left exposed to wear by ordinary uncompounded oils.

RING GROOVE WEAR REDUCED BY RPM DELO OIL

In a series of 1000-hour laboratory tests, Standard scientists proved that ring groove wear can be minimized with RPM DELO Diesel Engine Lubricating Oil.

Piston ring groove wear in an engine operated on a top quality straight mineral oil was thirty times that experienced with RPM DELO Oil in an identical test.

RPM DELO Oil reduces wear due to a metal-adhesion additive which makes it cling to and lubricate hot engine areas other oils often leave bare, and to other compounds which eliminate stuck rings and engine deposits, prevent bearing corrosion, stop oil foaming.



To match the fine performance of RPM DELO Oil use these equally efficient companion products from the same famous "RPM" line—

RPM HEAVY DUTY MOTOR OIL
RPM COMPOUNDED MOTOR OIL
RPM GEAR OILS & LUBRICANTS
RPM GREASES

Standard Fuel and Lubricant Engineers are always at your service. They'll gladly give you expert service—make your maintenance job easier. Call your local Standard Representative or write Standard of California, 225 Bush Street, San Francisco 20, California.

STANDARD OF CALIFORNIA

OLD MAN COMPETITION...

is getting ready

The right wire rope can help you keep costs down!

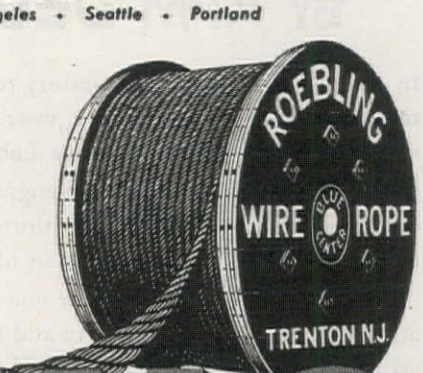
The heyday of high production, with cost a secondary consideration, is over.

All industrial equipment and supplies will have to be purchased with their cost-cutting possibilities a prime consideration. Equipment must *save* while it *serves!*

Wire rope in your business must do its part in cutting overhead too. Meeting competitive business, equipped with Roebling "Blue Center" Steel Wire Rope, is a *sure* step in this direction. The staying power and reserve strength of *any* Roebling Wire Rope, regardless of its type, is real economy over a long period of operation.

Unsurpassed facilities, research and practical engineering of America's pioneer wire rope maker, assure you top service in installation or maintenance. Roebling Wire Rope will help to remove the danger of costly shutdowns due to replacements . . . will help you profitably meet the coming years of competition.

JOHN A. ROEBLING'S SONS COMPANY
OF CALIFORNIA
San Francisco • Los Angeles • Seattle • Portland



ROEBLING

PACEMAKER IN WIRE PRODUCTS

WIRE ROPE AND STRAND • FITTINGS • SLINGS • COLD ROLLED STRIP • AERIAL WIRE ROPE SYSTEMS • ROUND AND SHAPED WIRE • SUSPENSION BRIDGES AND CABLES • WIRE CLOTH AND NETTING • HIGH AND LOW CARBON ACID AND BASIC OPEN HEARTH STEELS • ELECTRICAL WIRES AND CABLES • AIRCORD, SWAGED TERMINALS AND ASSEMBLIES

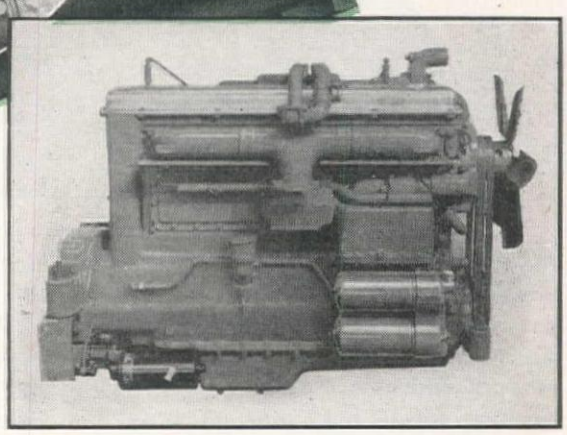
GET 3-way PROTECTION with WINSLOW OIL CONDITIONERS

1 REAL CONDITIONING begins with the water-repellent surface which stops most moisture. Within the element, residue moisture is absorbed; corrosive acids are *neutralized;* gums, resins and varnishes are removed.

2 THOROUGH FILTRATION is accomplished by ingenious design features. Entire outside surface filters the oil, stopping large particles. Smaller grit is trapped as filtering channels narrow toward center, making full use of capacity. Winslow Elements do not remove the beneficial additives from modern compounded lubricating oils.

3 FULL-FLOW oil conditioning, pioneered and perfected by Winslow, allows only *conditioned* oil to reach wearing surfaces, brings oil into more frequent contact with elements for quicker removal of impurities. Fill out and mail the coupon today for details.

You incur no obligation by asking Winslow engineers to make recommendations on any problem of filtering liquids of any nature.



● To afford bearings full protection under toughest trucking conditions, these Hall-Scott Model 400 heavy duty 250 hp. engines are designed for Winslow full-flow oil conditioning.

WINSLOW
ENGINEERING COMPANY
4069 HOLLIS STREET, OAKLAND 8, CALIFORNIA

WINSLOW ENGINEERING COMPANY, Dept. 17
4069 Hollis Street, Oakland 8, California

Please send me, without obligation, the colorful 20-page booklet entitled "*The Case of the Dirty Drip* or *The Inside Story of Winslow.*"

Name_____

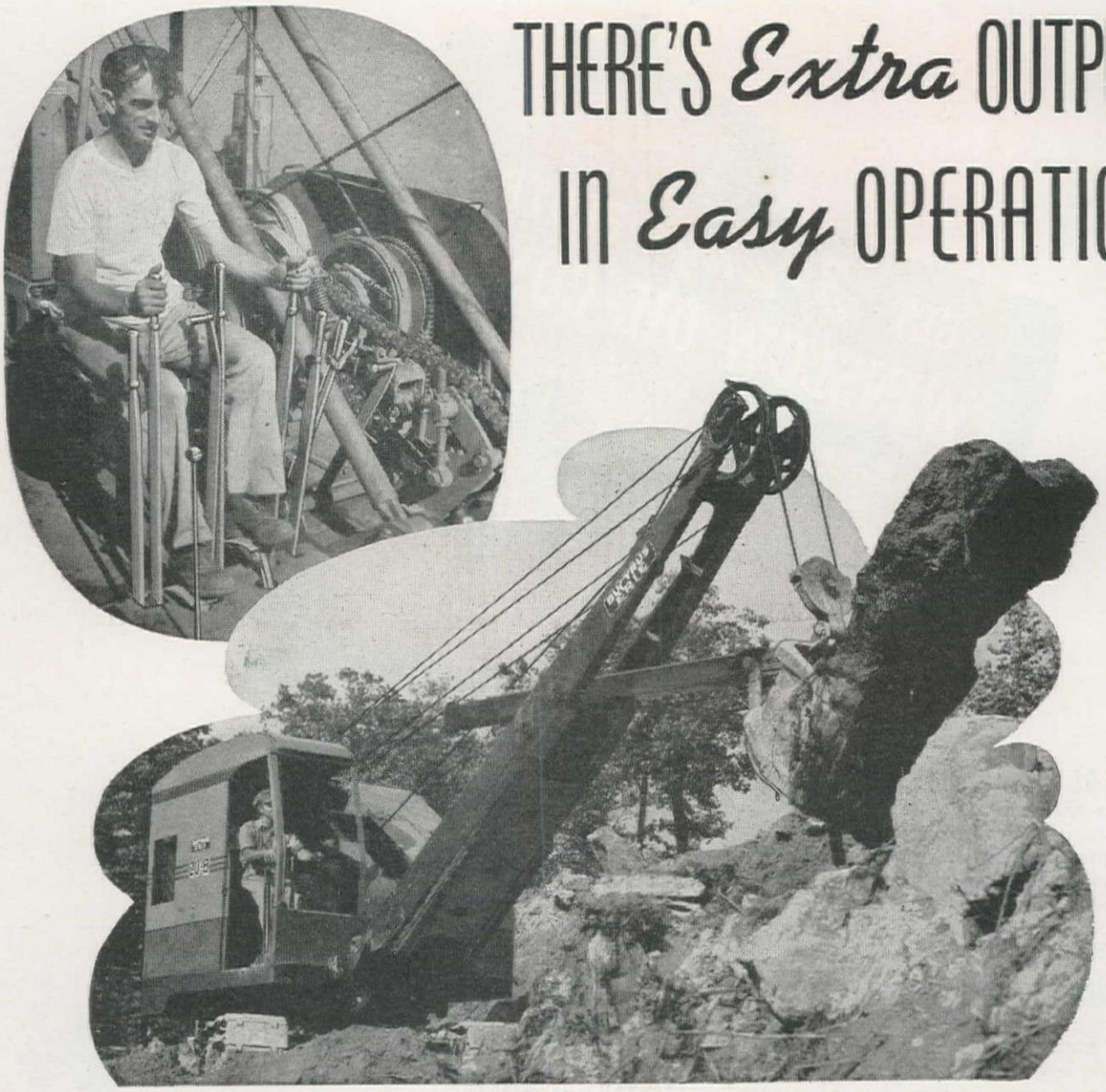
Company_____

Street_____

City_____ Zone_____ State_____

TC-4601

THERE'S *Extra* OUTPUT IN *Easy* OPERATION



The toughest kinds of civilian and military digging have proved the output value of the full, smooth control you get with ⅜-, ½-, and ¾-yard Bucyrus-Eries. Accurate feel, smooth quick response, and properly proportioned power make it easy for the operator to combine crowd, hoist, and swing for big output. He is in direct control during every part of the digging cycle, permitting him to set an even, high-speed digging pace. The conveniently located, easily moved levers and the comfortable cab reduce his fatigue, let him maintain the fast pace for long periods.

10E45

Besides full, smooth control there are numerous other reasons why Bucyrus-Eries are leading yardage-producers. The full Bucyrus-Erie performance story will convince you.

SEE YOUR BUCYRUS ERIE DISTRIBUTOR

EXC-2

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CLYDE EQUIPMENT COMPANY	Portland — Seattle
INTERMOUNTAIN EQUIPMENT CO.	Boise — Spokane — Walla Walla
THE LANG COMPANY	Salt Lake City
THE O. S. STAPLEY COMPANY	Phoenix
R. L. HARRISON COMPANY	Albuquerque
BROWN MOTORS	Reno

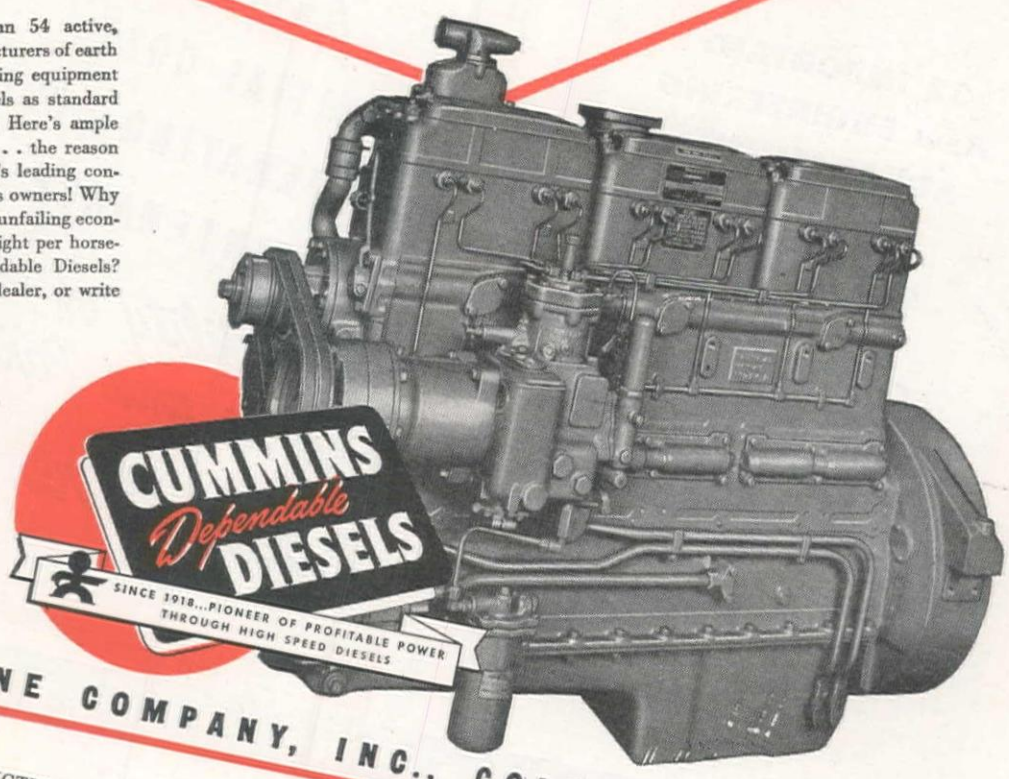
Shovels • Dragshovels • Draglines • Clamshells • Cranes • ⅜ to 2½-yd.

You can pull steeper grades... move more dirt

or handle more tonnage ... in less time ... *at*

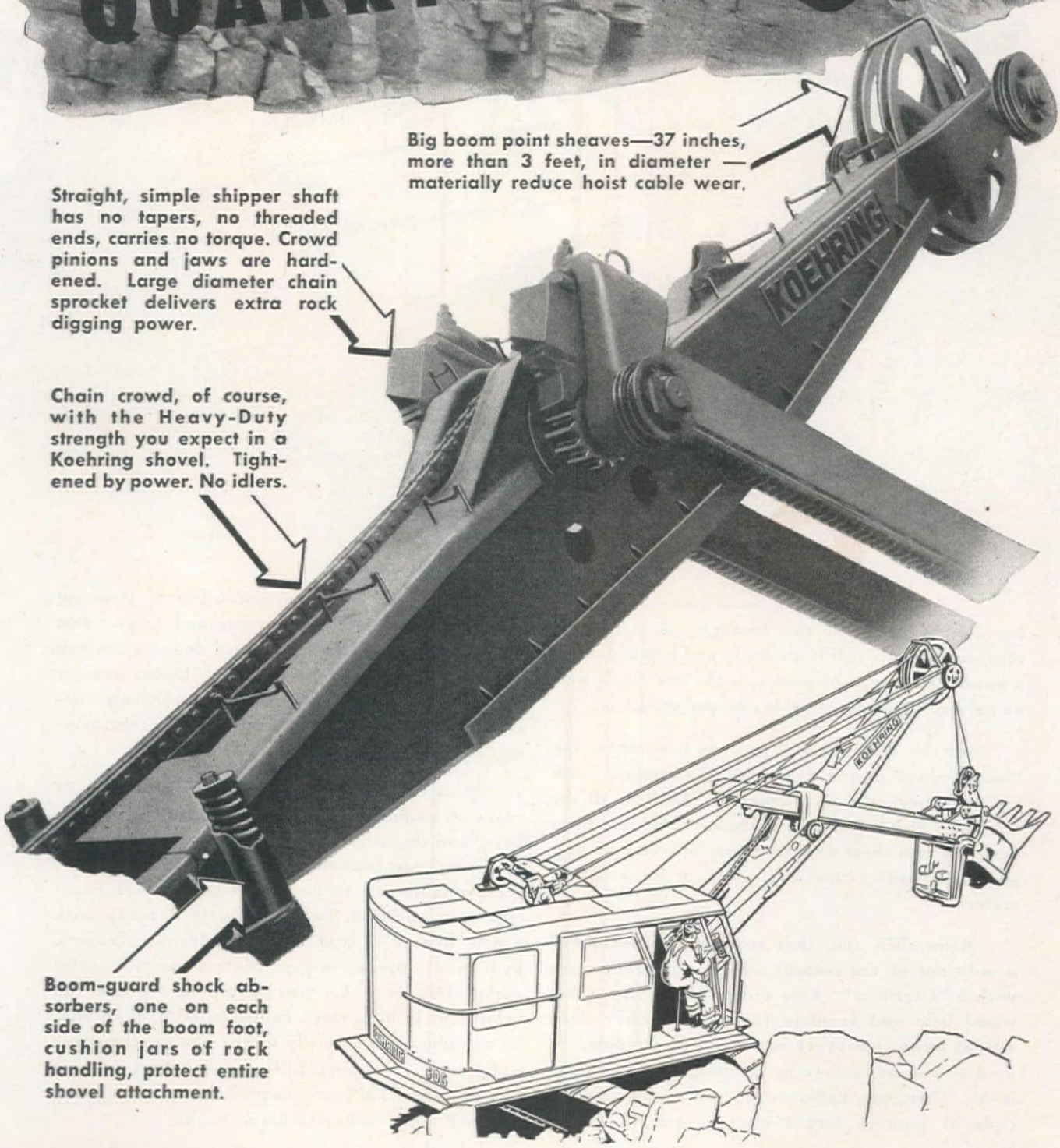
***lower cost*—with a Cummins Dependable Diesel!**

PROOF! No fewer than 54 active, major manufacturers of earth moving and material handling equipment today offer Cummins Diesels as standard or optional original power. Here's ample proof of profitable power ... the reason why any list of the nation's leading contractors is a list of Cummins owners! Why not get the full facts on the unfailing economy, reliability and low weight per horsepower of Cummins Dependable Diesels? 150-200-275 hp. Ask your dealer, or write Cummins direct.



CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA

KOEHRING SHOVEL BOOM FOR QUARRY-DUTY 605



Big boom point sheaves—37 inches, more than 3 feet, in diameter — materially reduce hoist cable wear.

Straight, simple shipper shaft has no tapers, no threaded ends, carries no torque. Crowd pinions and jaws are hardened. Large diameter chain sprocket delivers extra rock digging power.

Chain crowd, of course, with the Heavy-Duty strength you expect in a Koehring shovel. Tightened by power. No idlers.

Boom-guard shock absorbers, one on each side of the boom foot, cushion jars of rock handling, protect entire shovel attachment.

PACIFIC HOIST & DERRICK CO. . . . . **Seattle, Washington**
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WESTERN CONSTRUCTION EQUIPMENT CO. . . **Billings, Mont.**
KOEHRING COMPANY WEST COAST PARTS WAREHOUSE . **Sacramento, California**

Lowest Possible Cost ... begins

Since every earthmoving job begins with the loading operation, the scraper that gets full loads easily and quickly, with a minimum of tractor power, is the one that's well on its way to lowest possible cost per yard.

For this reason it will pay you to compare the "load-ability" of the new LPC "Carrimors" with any other scrapers on the market. Look at all the advanced features LaPlant-Choate engineers have designed into these new scrapers, just to help you get peak loads faster and easier in all kinds of material.

Remember, too, that superior "load-ability" is only one of the reasons why you'll profit more with a "Carrimor". Low center of gravity, short wheel base and freedom from unnecessary dead weight mean that every ounce of tractor power is used to best advantage in handling maximum pay loads. Then, too, LaPlant-Choate's exclusive principle of positive forced ejection assures faster, cleaner dumping, with no possibility of jamming sticky material between the gate and apron. Best of all, LaPlant-Choate's advanced design gives you uniform spreading at consistently higher tractor speeds because the cutting edge is positively controlled and completely independent of other moving elements.

Built by earthmoving specialists with over 33 years of engineering and manufacturing "know-how" and thoroughly proved on hundreds of tough jobs from coast to coast, these new LPC "Carrimors" are available now in 8- and 14-yard struck capacities. In addition, LaPlant-Choate is ready with a new line of 2- and 4-yard hydraulic scrapers, hydraulic dozers, power control units — *plus* (some time later this year) a sensational new development in high speed rubber-tired hauling rigs. So whenever you're ready to buy new earthmoving equipment, remember LPC — for lowest possible cost per yard. LaPlant-Choate Manufacturing Co., Cedar Rapids, Iowa; Oakland, Calif.

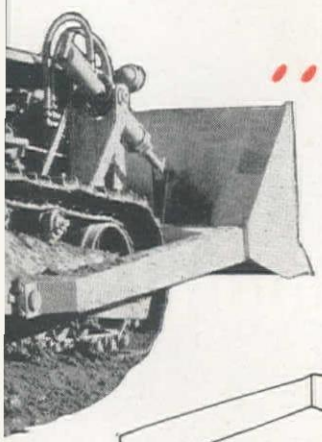
LaPLANT

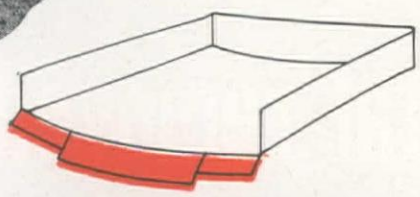
Engineered

per yard with the loading

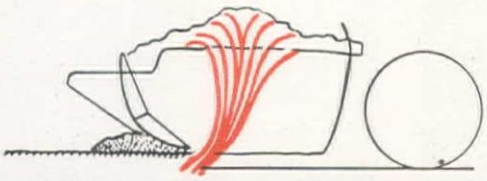
here's why LPC scrapers get bigger loads

...faster-easier-with less power

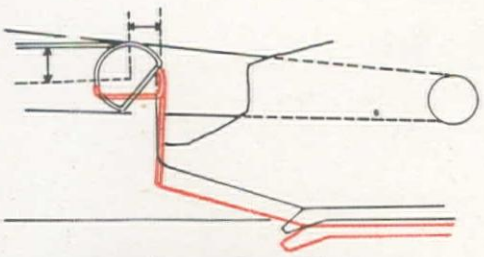




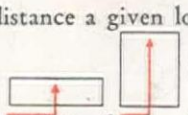
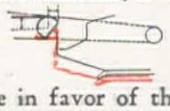
Bowed Offset Cutting Edge



Exclusive "Fountain Action"



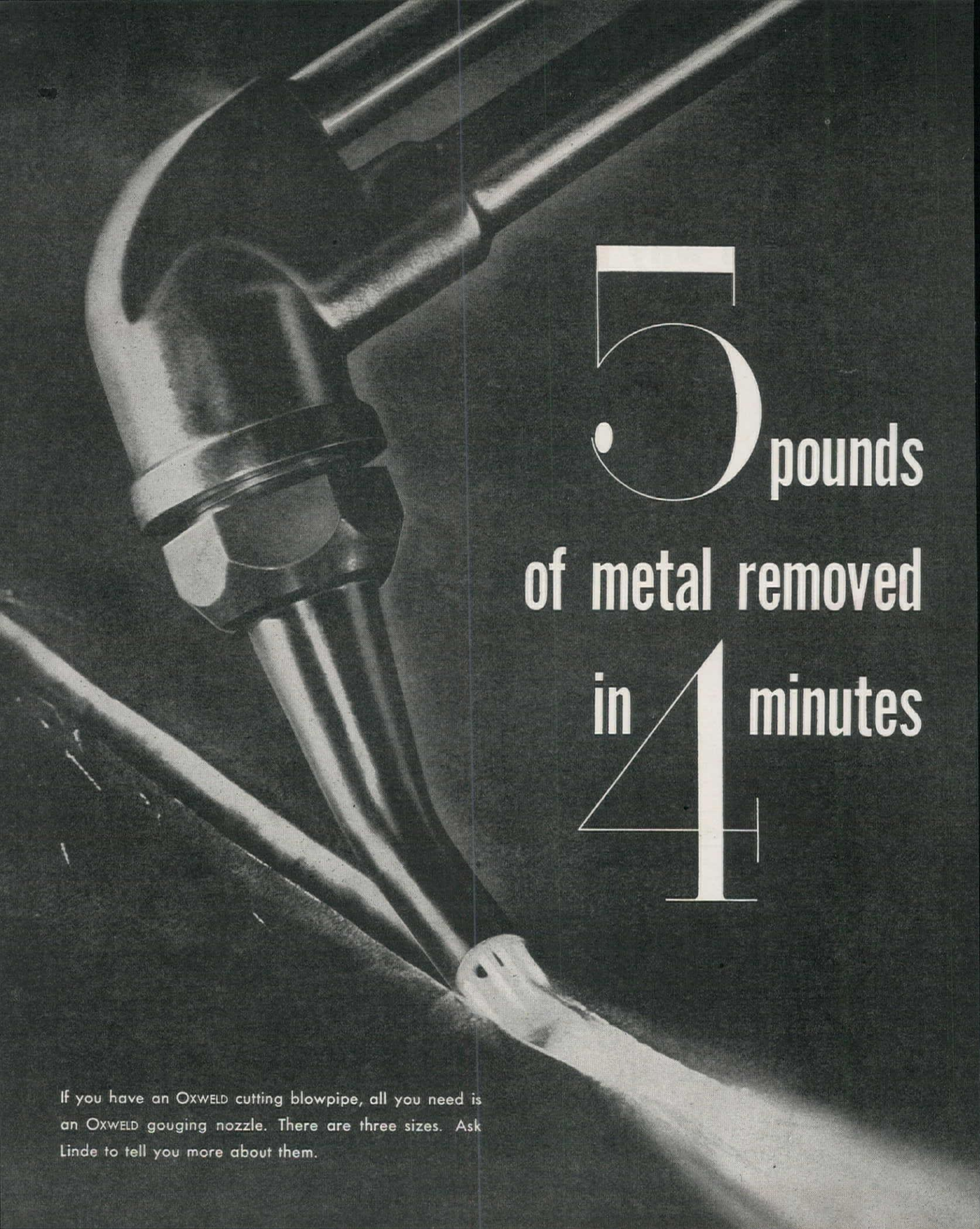
Eccentric Hoist Sheaves

Every LPC "Carrimor" feature is designed to cut seconds off loading time, add more pay load and cut power requirements. For example, the "floating" front apron provides a generous initial opening for loading, without any movement of the tail gate.  The bowed offset cutting edge gives you instant penetration in all kinds of material because all the weight can be concentrated in the center few inches of the digging element.  Once started, the earth is encouraged to flow into the center of the bowl in a continuous stream because the offset cutting edge naturally causes the scraper to cut slightly deeper in the center. Moreover, as the bowl begins to fill, the incoming material continues to "fountain up" through the center of the load, falling forward and to the rear until a full heaped load is obtained.  Since the LPC "Carrimor" is low and wide, instead of high and narrow, you get heaped loads faster with less power because the shorter the distance a given load has to be raised inside the scraper, the less the frictional resistance.  In addition, the bottom of a "Carrimor" bowl is curved and the interior is perfectly clean, with no obstructions to create friction or interrupt the fast free flow of incoming earth. Another exclusive LaPlant-Choate feature that helps speed loading, especially in loose material, is the pumping action made possible by the use of eccentric hoist sheaves.  As these eccentric sheaves revolve, they constantly improve the leverage in favor of the cutting edge, thus producing a greatly accelerated downward throw which "pumps" sand and other material into the bowl with amazing ease. Equally important, since the LaPlant-Choate "Carrimor" has a wide, open-top bowl with no overhead obstructions, it can easily be loaded with a shovel or dragline and used for utility hauling and spreading. Ask to see the new LPC's in action. Compare them with any other scraper you've ever used. Then you'll see why so many agree on LPC—for lowest possible cost per yard.

CHOATE

Earthmoving

lowest possible cost per yard



If you have an OXWELD cutting blowpipe, all you need is an OXWELD gouging nozzle. There are three sizes. Ask Linde to tell you more about them.

These are the advantages of Flame-Gouging

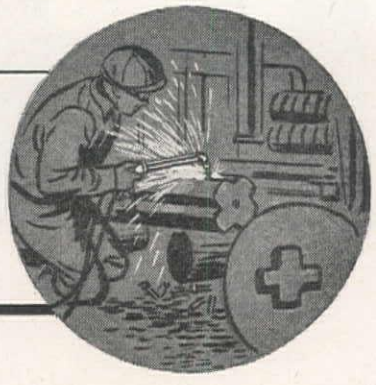
1 It is a faster way to groove weld joints to receive backing-up welds . . . 36 to 48 in. per min. (gouging time).

The bottom shell on a T-2 tanker is prepared for welding at the rate of 16 in. per min. (hourly average).

2 It is a quick and easy way to remove temporary or defective welds.

The operator is removing studs that were used to clamp a testing head to a pipe section.

3 Parts shaped by flame-gouging frequently require no machining before use.



This shaft end, 3 in. wide and 12 in. long, is quickly grooved to fit a clutch.

4 It is a fast way to open up cracks in castings for welded repair or to modify forgings and castings.

This 18½ ft. crack in a cone crusher was gouged out to sound metal in only 4¾ hours.

5 It is one of the quickest, most economical ways to prepare plate edges for welding.

Two plate edges that have been tacked together are U-grooved simultaneously.

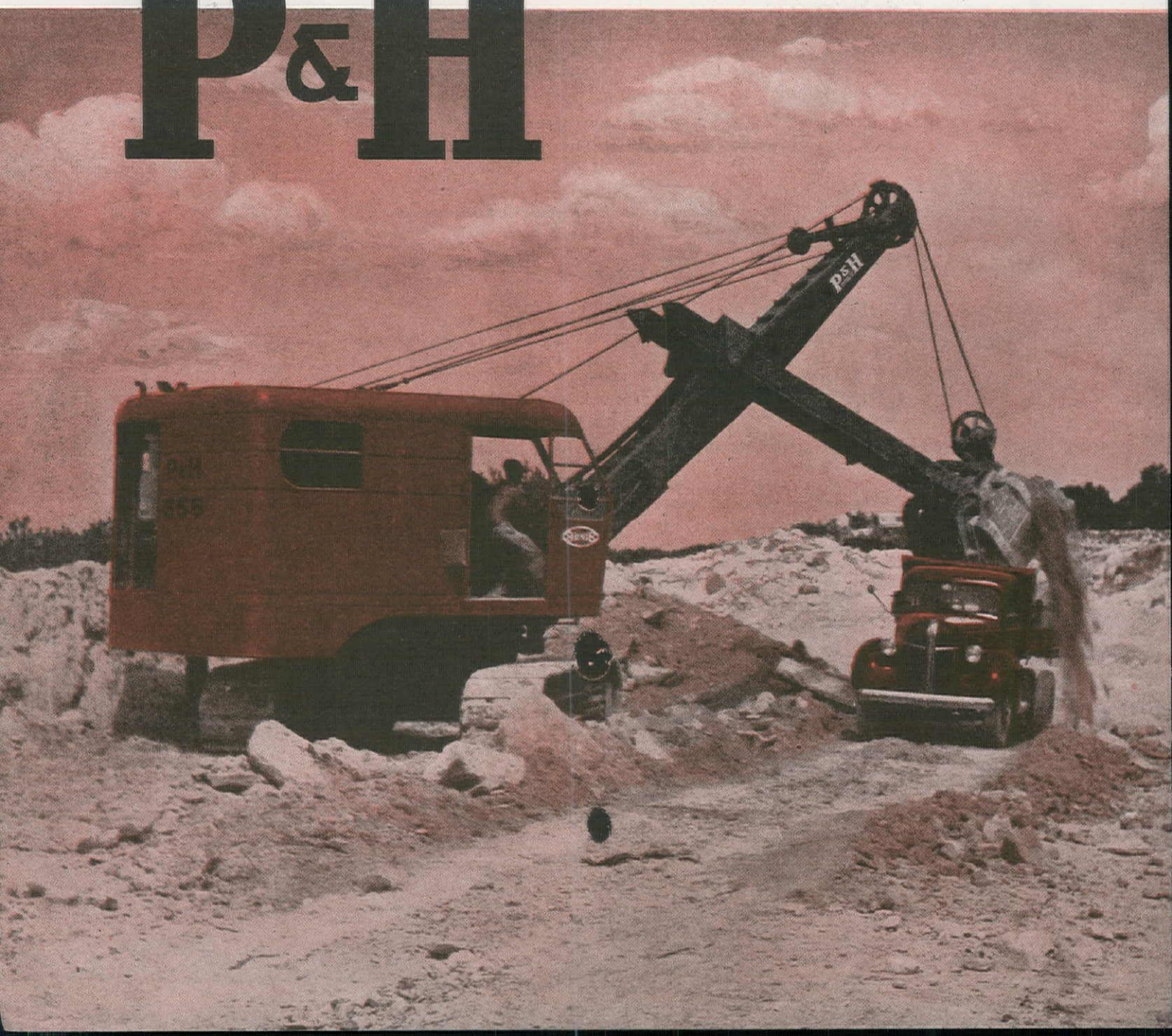
THE LINDE AIR PRODUCTS COMPANY
Unit of Union Carbide and Carbon Corporation
30 E. 42nd St., New York 17, N. Y. UCC Offices in Other Principal Cities
In Canada: Dominion Oxygen Company, Limited, Toronto

You'll need these in the years ahead

It takes a lot of advantages designed into *one* machine to cut your over-all digging costs. And you'll find more of them in a P&H than any other excavator. They'll give you easier operation, greater yardages, greater maneuverability, less trouble, fewer repair bills. You'll need these advantages more than ever in the years ahead.

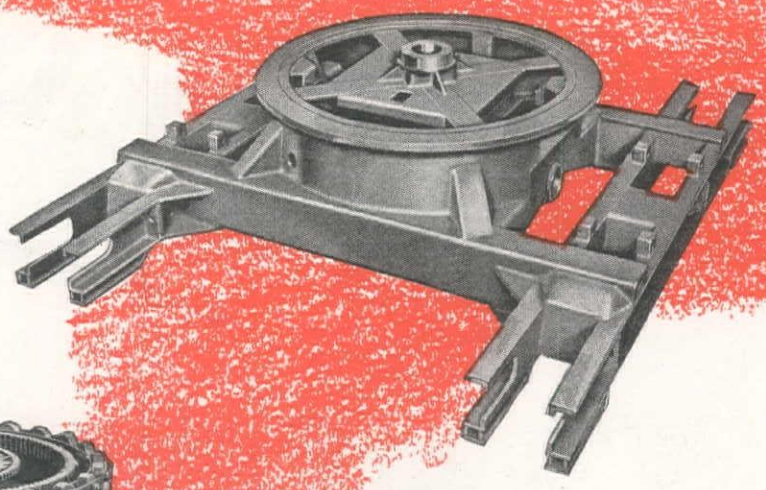
See a P&H at work. Write or phone us for the location of the one nearest to you — or write for complete illustrated bulletin on the size that interests you.

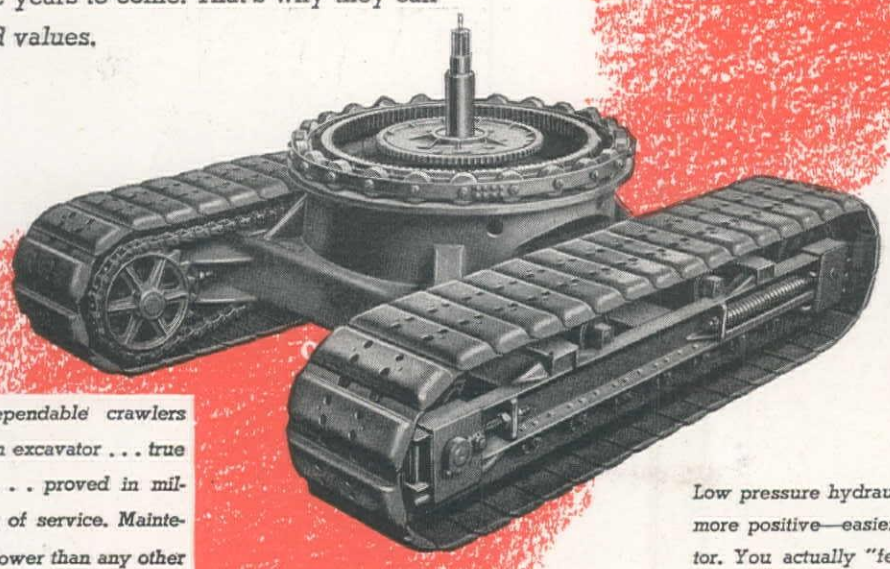
P&H



P&H ADDED VALUES

Your excavator dollars buy more when you buy P&H. Whether you are looking for more rugged construction, easier operation, more reliable travel or lower maintenance costs . . . you'll find them — and more — in P&H's work-tested features. And you, like other P&H users, will find these advantages paying off again and again in the years to come. That's why they call them *added values.*

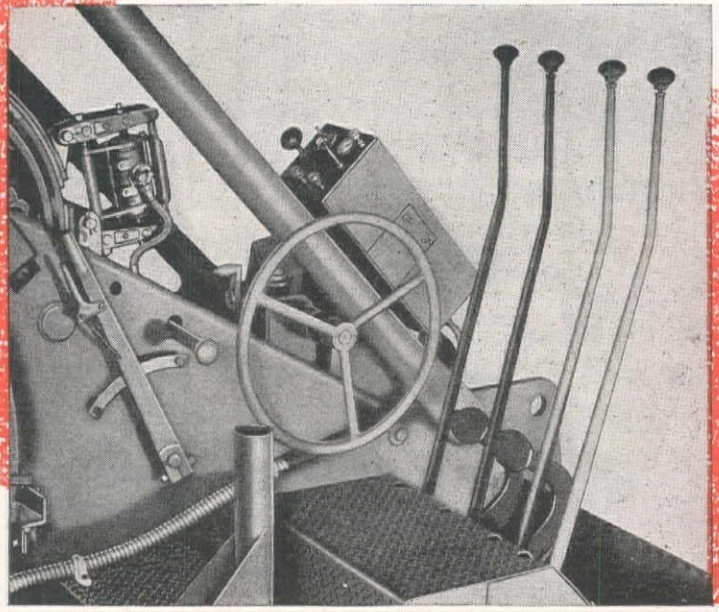




Carbody and crawler frames are welded into one rigid, rugged unit—"weaveproof" construction. Upper, including side stands, is also welded into a one-piece unit of rolled high strength steels.

The most dependable crawlers ever put on an excavator . . . true tractor type . . . proved in millions of miles of service. Maintenance cost is lower than any other type.

Low pressure hydraulic control is smoother, faster, more positive—easier on both machine and operator. You actually "feel" the load at every move, control it better.



Now is the time to look into these and all the other added values P&H gives you. See your nearest P&H representative.

P&H

HARNISCHFEGER CORPORATION

EXCAVATORS • ELECTRIC CRANES • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS

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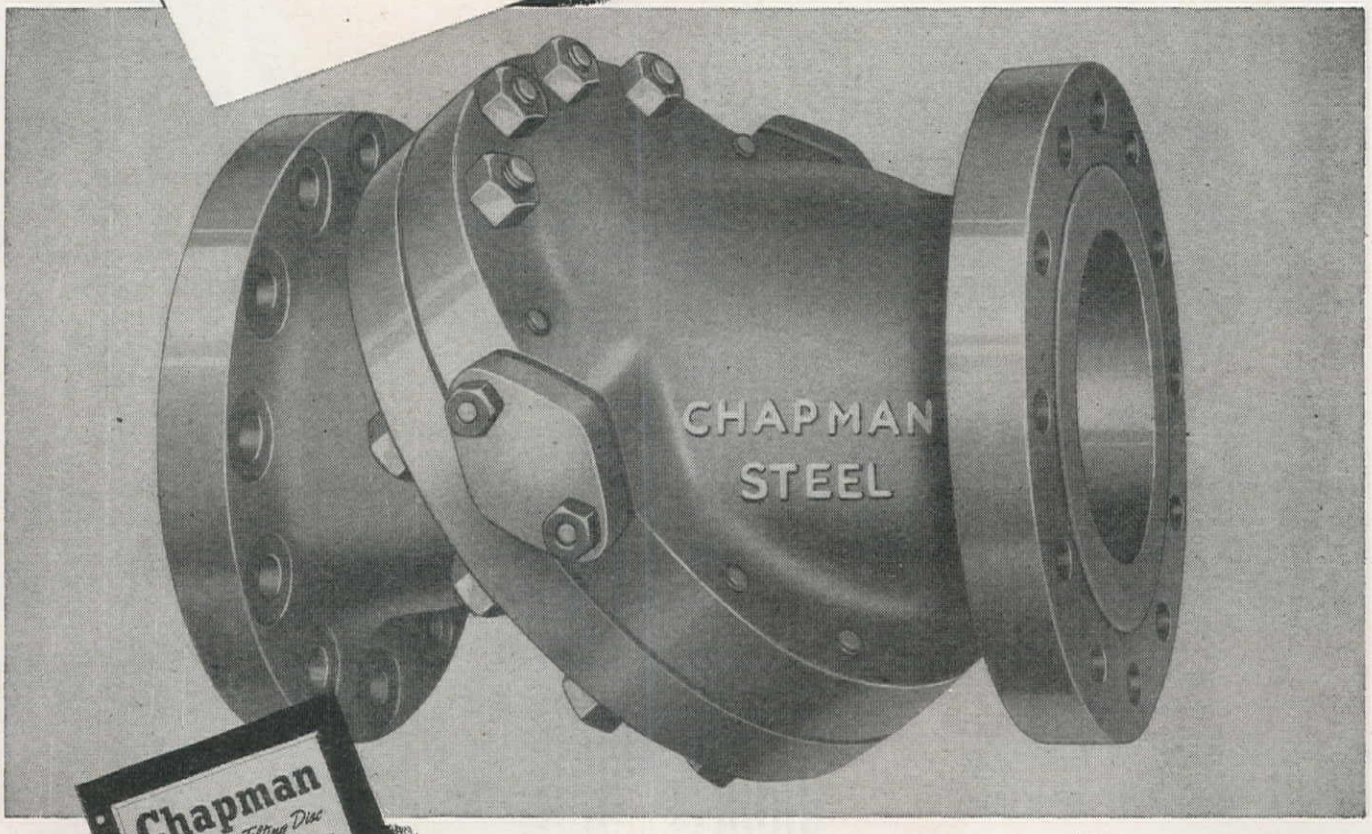
CHAPMAN CHECK VALVES

TILTING DISK



Close Quickly and Quietly

The cushioning effect of the stream against the short flap of the balanced disc permits quick, quiet closing. This prevents water hammer and resultant destructive stresses in pipe lines. Head losses are cut to about a quarter of those caused by ordinary types of check valves. Substantial power savings are possible when these valves are installed on pump discharge lines.

Send for new bulletin containing complete information.

The Chapman Valve Mfg. Company, Indian Orchard, Mass.

CHAPMAN NON-SLAM CUSHIONED CLOSING **CHECK VALVES**

EASY ON UPKEEP...

Structure, Bus Bars and Fittings are all **Alcoa Aluminum**

Protection against the elements is built right into this outdoor substation. It's Alcoa Aluminum throughout. Needs no painting, ever, so you're spared that expense and hazard.

Alcoa Aluminum structural shapes are available in all forms required for such construction. They are assembled with aluminum bolts or rivets. Or they may be welded. Large, lightweight, shop-fabricated sections cut time and labor for field erection of structures.

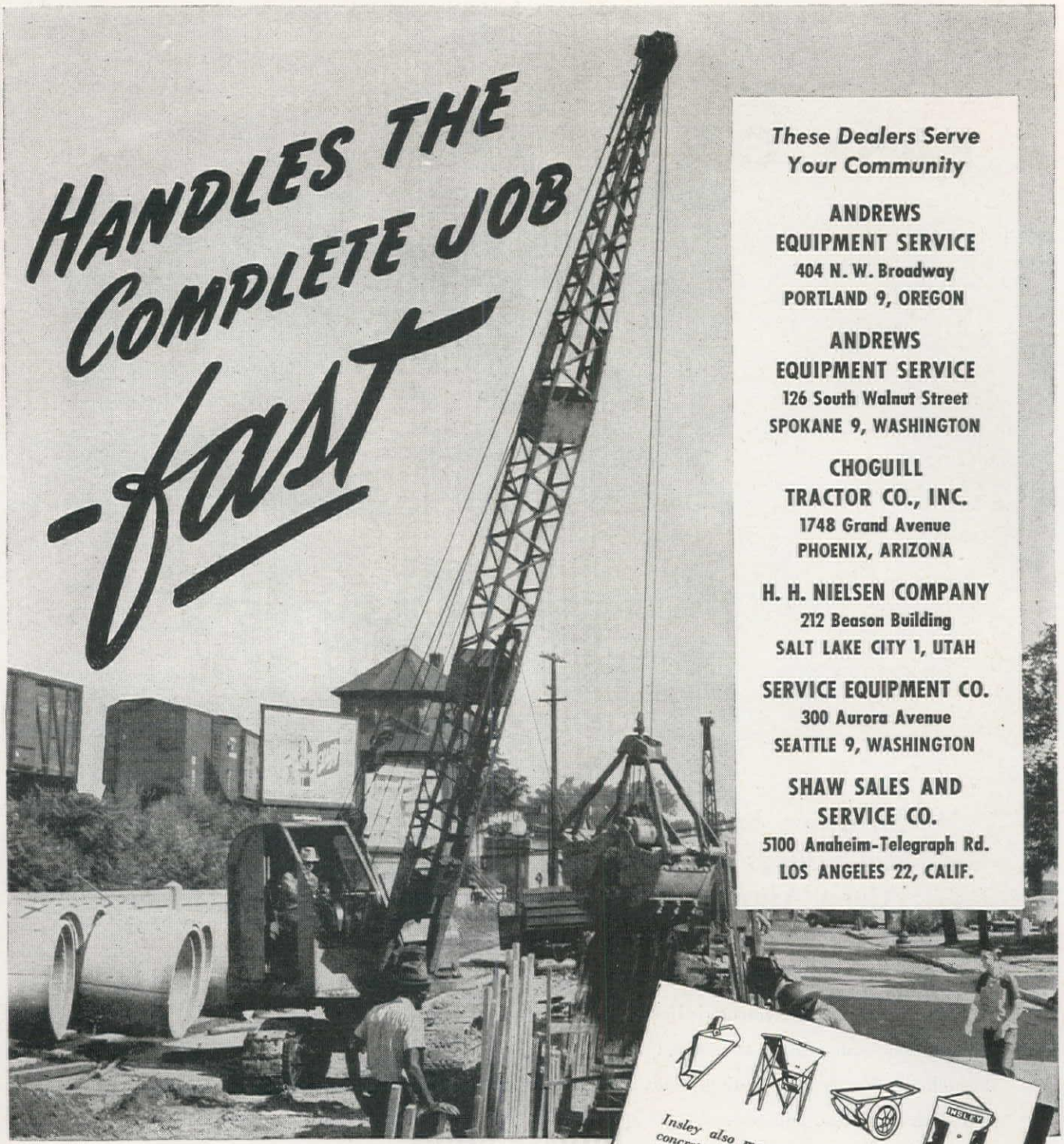
Alcoa Aluminum bus bars are available as flats, rounds, tubes, channels, and angles. Their lighter weight places less burden on supports, often permitting economies in construction.

For data on structural shapes and fastenings, bus bars and fittings, get in touch with the nearest Alcoa office. Or write ALUMINUM COMPANY OF AMERICA, 1811 Gulf Bldg., Pittsburgh 19, Penna.

ALCOA FIRST IN **ALUMINUM**

ALCOA REG. T. M. ALUMINUM A C O A

HANDLES THE COMPLETE JOB -fast



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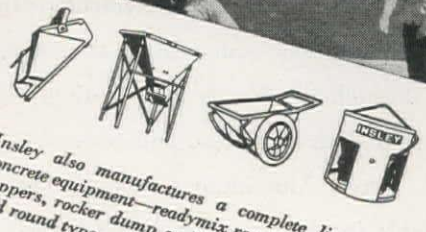


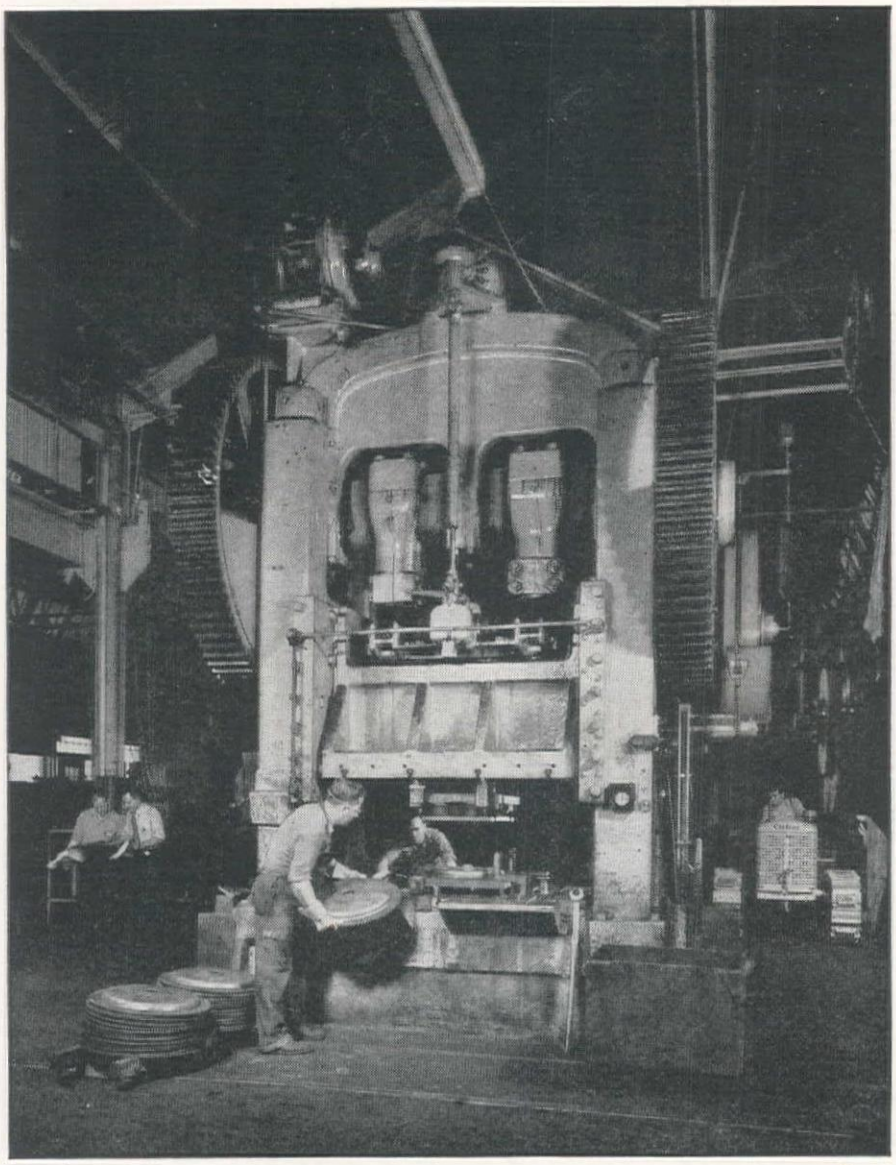
Insley also manufactures a complete line of concrete equipment—readymix receiving buckets, hoppers, rocker dump and standard hand carts and round type concrete buckets.

On this municipal sewer project, where trench depths ran more than 14 feet and widths 6 to 8 feet, a ½-yd. Insley Excavator with clamshell attachment handled the complete job—excavating, laying in the sewer, and backfilling—*and handled it fast.*

When it comes to an excavator that will go in anywhere and get the job done . . . in less time . . . at more profit to you . . . *you can't beat an Insley for lower cost yardage.* Insley Excavators (⅜ or ½-yds.) are designed for use with five interchangeable attachments . . . shovel, crane, hoe, clamshell and dragline.

EXCAVATORS ★ **INSLEY** ★ CONCRETE EQUIPMENT

INSLEY MANUFACTURING CORP., INDIANAPOLIS 6, IND.



Forming rear wheel discs on a 450-ton press in the Oliver "Cletrac" plant.

This is a pressing matter!

In this huge 450-ton press, many heavy precision parts are formed for Oliver "Cletrac" crawler tractors. Like clockwork, a part is formed every few seconds . . . another example of the modern production methods and equipment that permit Oliver "Cletrac" to build in added quality at no extra cost to the user.

Quality is the keynote that characterizes every Oliver "Cletrac" crawler tractor . . . in design, workmanship, materials and performance . . . quality that means years of dependable, economical service.

Maintenance of this standard enables your Oliver "Cletrac" dealer to offer you the finest in crawler tractors . . . for your every need.

CLETRAC

THE OLIVER CORPORATION Cletrac

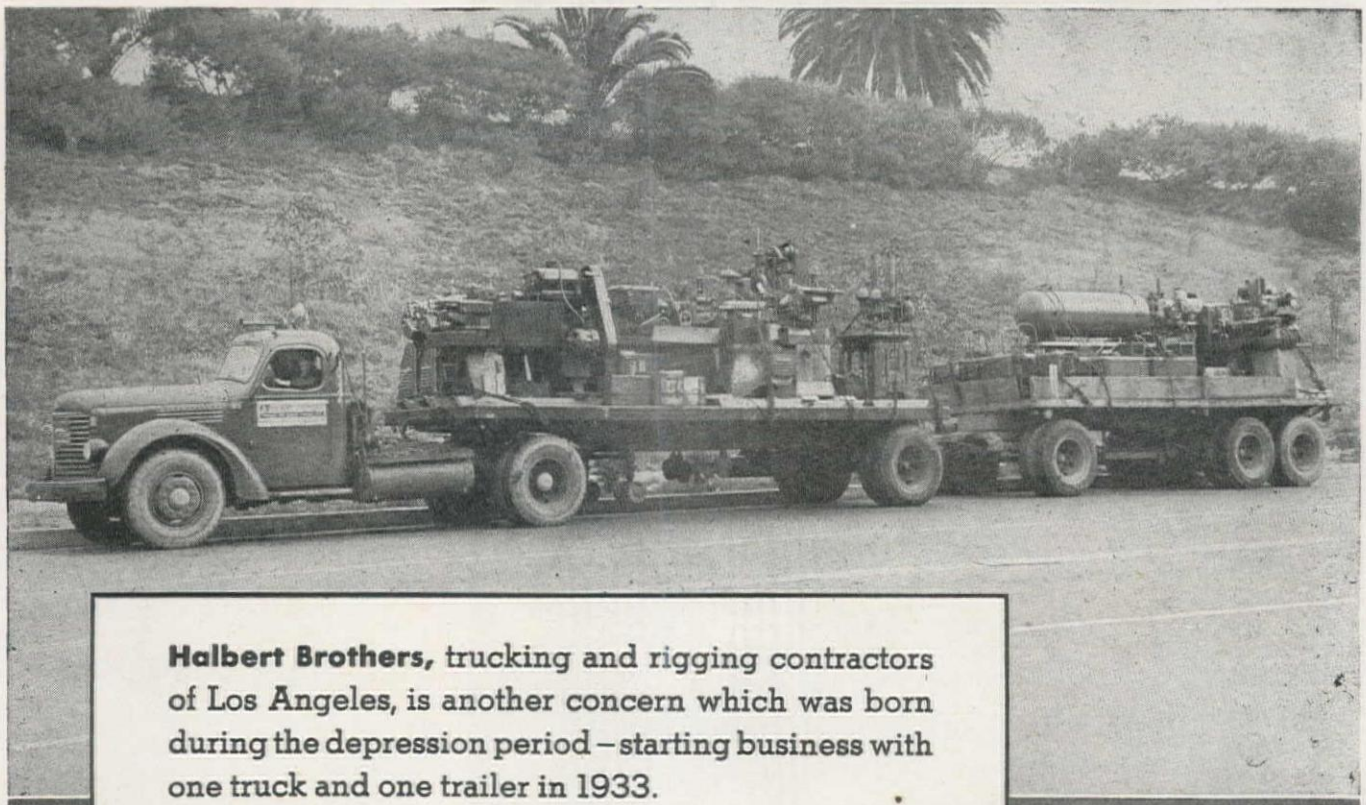
a product of **The OLIVER Corporation**

State of Arizona: Choguill Tractor Co., Phoenix. State of California: Gustafson Tractor Co., Eureka; Mechanical Farm Equipment Dist., Inc., San Jose; Comber & Mindach, Modesto; Nelson Equipment Co., Los Angeles; Tractor & Equipment Co., San Leandro; Flood Equipment Co., Sacramento; W. J. Yandle, Santa Rosa; Hamsher Tractor Co., Stockton. State of Washington: Burrows Motor Company, Yakima; Inland Truck & Diesel Company, Spokane; Pacific Hoist & Derrick Co., Seattle; Melcher-Ray Machinery Co., 202 East Alder Street, Walla Walla; Coleman-Jones Equipment Co., Chehalis. State of Oregon: Loggers & Contractors Machinery Co., Portland and Eugene. State of Idaho: Idaho Cletrac Sales Co., Lewiston; The Sawtooth Company, Boise. Western Montana: Western Construction Equipment Company, Billings and Missoula. British Columbia: The A. R. Williams Machinery Company of Vancouver, Limited, Vancouver.

HALBERT BROTHERS

TRUCKING AND RIGGING CONTRACTORS

Use TRAILMOBILES



Halbert Brothers, trucking and rigging contractors of Los Angeles, is another concern which was born during the depression period—starting business with one truck and one trailer in 1933.

They specialized in moving heavy machinery and equipment for the oil industry and in hauling the contractors' equipment from one job to another. One job satisfactorily completed brought repeat business; one customer told another, with the result that in 12 years they have progressed steadily into one of the top positions among Pacific Coast heavy haulers.

Today, Halbert Brothers operate 42 pieces of equipment... and with the exception of 4 small trucks, all of their equipment has been specially designed and built for machinery hauling. Among their trailers, TRAILMOBILES hold the spotlight.

THE TRAILMOBILE COMPANY · BERKELEY, CALIFORNIA

Although the major portion of Halberts' activities are concentrated in hauling heavy machinery and in rigging, they are also engaged in hauling general freight.

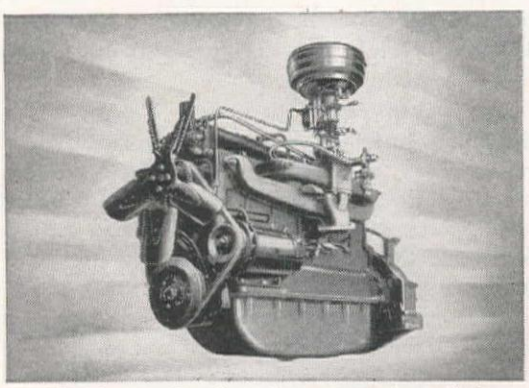
TRAILMOBILE

Los Angeles Berkeley Sacramento Fresno San Jose Bakersfield Stockton Ogden Seattle Honolulu

Ask G.I. Joe about GMC Pulling Power

On every battle front G.I. Joe saw proof of GMC's pulling power. In the South Pacific, in temperatures as high as 130 degrees, GMC "six-by-sixes" hauled huge loads through hub-deep mud and sand. In Europe, GMCs played the leading role on the famous Red Ball Express. In Alaska's ice and snow, Burma's jungles and Italy's mountain trails... wherever heavy loads were pulled through heavy going... GMCs did the job.

G.I. Joe knows about GMC pulling power . . . and what he can tell you is mightily important to truck buyers. For GMC commercial models, ½ to 20 tons, have engines of the same basic design as their military brothers. They offer the civilian counterpart of the power, performance and stamina demonstrated by nearly 600,000 GMC "Army Workhorses."



The famous "270" engine, power plant of the "Army's Workhorse," also powers GMC models in the 3-ton range. All other GMC gasoline engines are of the same basic, war-proved design.

THE TRUCK OF VALUE

GMC TRUCKS

GASOLINE • DIESEL

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

6500-hp vertical synchronous motors in Mill Creek Pumping Station. Note the use of unusual built-in gage boards with instruments for recording bearing and winding temperatures. This control system not only keeps the Ohio from backing up but also drains off excessive rainfall, melting snow, and mounting headwater that would ordinarily swamp the low valley.

Six 6500-hp G-E motors provide the muscle for pumping more than 4,000,000 gpm — in Ohio's largest flood-control project.

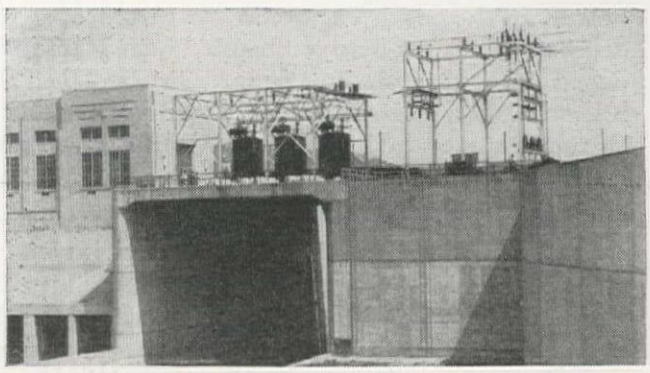
With G-E motors, control, and substation, Mill Creek Pumping Station is almost completely G-E equipped.

This Cincinnati pumping station contains most of the electric equipment to drive six S. Morgan Smith stationary-blade propeller-type pumps. The structure is the largest ever built for its purpose, as are each of the pumping units. The six 6500-hp vertical synchronous motors were designed by General Electric to operate each of the pumps against a 29-foot head, 1500 cubic feet of water per second, or 9000 cubic feet per second total.

The pumps were located below the flood level of the river, and a siphoning action occurred. This was reflected as an unusual peak in the pump's starting torque requirements. To get over this starting peak it was necessary for G-E engineers to design a motor with the proper torque characteristics, yet without increasing the size or cost of the motor. At the same time all six motors had to start without causing excessive disturbance to the power system.

But G.E.'s part didn't stop there. G-E engineers helped to design and co-ordinate the entire electric system, laying out substation equipment to supply power to the pump motors, and installing a completely co-ordinated control system, factory-assembled and tested. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

General Electric's contribution to the Mill Creek project was typical of the Company's service to the construction industry. Our engineers have worked closely with other engineers and pump manufacturers on flood-control projects since 1933. Among these are the projects at Cypress Creek and Nonconnah in Memphis, the Mississippi River project, the Deshee Ditch pumping plant near Vincennes, and the New England flood-control projects. G-E engineers stand ready to co-operate with you in your construction planning.



The Mill Creek Valley flood-control unit consists of a barrier dam at the mouth of the creek, this modern pumping station, and a large discharge bay. Located beside the pumping station are Type H 5000-kva transformers and other power-distribution equipment, with high voltage of 66,000 and low voltage of 6900.

GENERAL ELECTRIC

660-49-162

WORLD-WIDE CONTINENTAL POWER

Yesterday, Continental Red Seal Engines, mounted in landing craft, tanks and other war machines, provided the driving force which hastened the end of the war. Today, proven Red Seal Engines—dependable and economical — are rolling off Continental production lines. Red Seal Engines for farm tractors, highway trucks and industrial equipment are speeding the return to normal living. If it's power you need, you'll find a Continental engine to meet your requirements. Red Seal Engines, gasoline or diesel, from 5/8 to 251 horsepower, ready to do their part wherever there's work to be done.

Charles W. Carter Company

SALES AND SERVICE

Continental Red Seal Engines and Parts

Los Angeles • Sacramento • San Francisco • Oakland • Fresno

POWER BY

Powerful as the Nation — Continental Motors Corp. America's Standard

Red Seal Engines

CONTINENTAL

They never say "*uncle*"

. . . not these Gardner-Denver S-55 Sinkers that daily pile up records of greater footage! Every part that goes into them is rugged and precision built to assure long life and lowest service costs. Vibration is reduced—excessive wear is eliminated because of proper balance between the air power, striking power and rotative power. And the S-55 is exceptionally easy riding . . . has remarkable hole-cleaning ability.

Fast and powerful, the Gardner-Denver S-55 speeds up even the toughest jobs. Low power consumption and minimum maintenance cost make the S-55 the economy tool of the field.

For complete information and illustrated bulletin, write Gardner-Denver Company, Quincy, Illinois; Western Branch Offices: Butte, Mont.; Denver, Colo.; Los Angeles, Calif.; Portland, Oregon; Salt Lake City, Utah; San Francisco, Calif.; Seattle, Wash.; Wallace, Idaho; El Paso, Texas.

GARDNER-DENVER

Since 1859

Lithographed on stone by Edward A. Wilson

Supply lines, deferred throughout the war years, are now a "must" in many communities. They represent a long term investment for taxpayers. The pipe used should have a known record of long life and low annual maintenance cost. It should be confidently expected not only to outlive the term of the bond issue, but to serve for generations after the bonds are retired. It will if it is U. S. Super-de Lavaud Cast iron pipe, centrifugally cast in sizes up to 24 inches, or U. S. Pit Cast pipe made in sizes up to 84 inches.

U.S.
cast iron
PIPE

U. S. PIPE & FOUNDRY CO.
General Offices: Burlington, N. J.
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FOR SALE

In order to release items essential to the speedy reconversion of all lines of industry and business, Calship is placing on sale immediately all surplus materials, equipment, tools and facilities used in its wartime construction of ships.

Everything in this huge, 14-way shipyard at Terminal Island is to be sold. There are a total of nearly one-half million individual items, covering 18,000 classifications. Many of them are difficult or impossible to buy.

WIDE CHOICE OF MATERIAL

In addition to metal working tools and equipment of every category, there are surplus materials consisting of all types of shipbuilding items such as turbines, gears, generators, etc.; steel plates and shapes, pipe fittings, valves, and all other types of ship materials in large quantities and all sizes.

QUANTITY BUYERS PREFERRED

To facilitate the handling of this tremendous stock of materials, sales will be limited to those prepared to make quantity purchases. There will be no bidding. All prices are fixed and f.o.b. Terminal Island. No red tape stands between purchase and delivery. Material and equipment is being sold *as is*.

For Details Write or Wire:

Industrial Equipment Company, Care of California Shipbuilding Corporation, P. O. Box 966, Wilmington, California.

Exclusive Sales Representatives for . . .

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Why a BG Bucket Loader Loads faster from Stock Piles

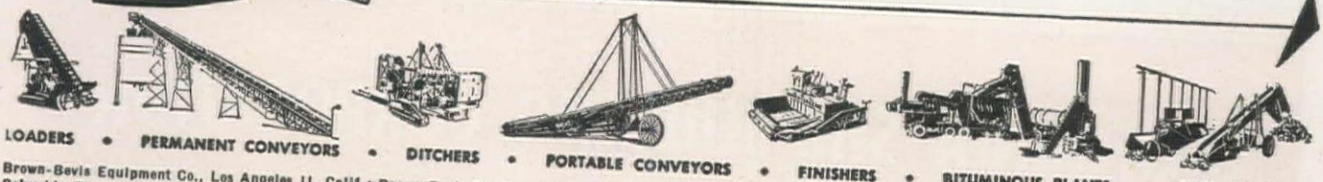
• Barber-Greene Bucket Loaders are designed specifically for picking up material from stock piles and loading to trucks or processing equipment faster and cheaper than any other method.

Continuous, powerful crowding speeds—plus spiral feeding on the front end—loads every bucket to the maximum, thus maintaining peak capacity throughout the day. There is no problem of operator efficiency; he merely keeps the machine to the working face. Clean pickup eliminates accessory equipment and excessive hand shoveling. Capacities of 1½ to 3 cubic yards per minute produce high tonnage per hour.

The Barber-Greene Catalog No. 82 illustrates and describes the various Bucket Loaders that will best meet your particular material handling problem. Barber-Greene Company, Aurora, Illinois.

49-4

BG Barber-Greene CONSTANT FLOW EQUIPMENT



LOADERS • PERMANENT CONVEYORS • DITCHERS • PORTABLE CONVEYORS • FINISHERS • BITUMINOUS PLANTS • COAL MACHINES

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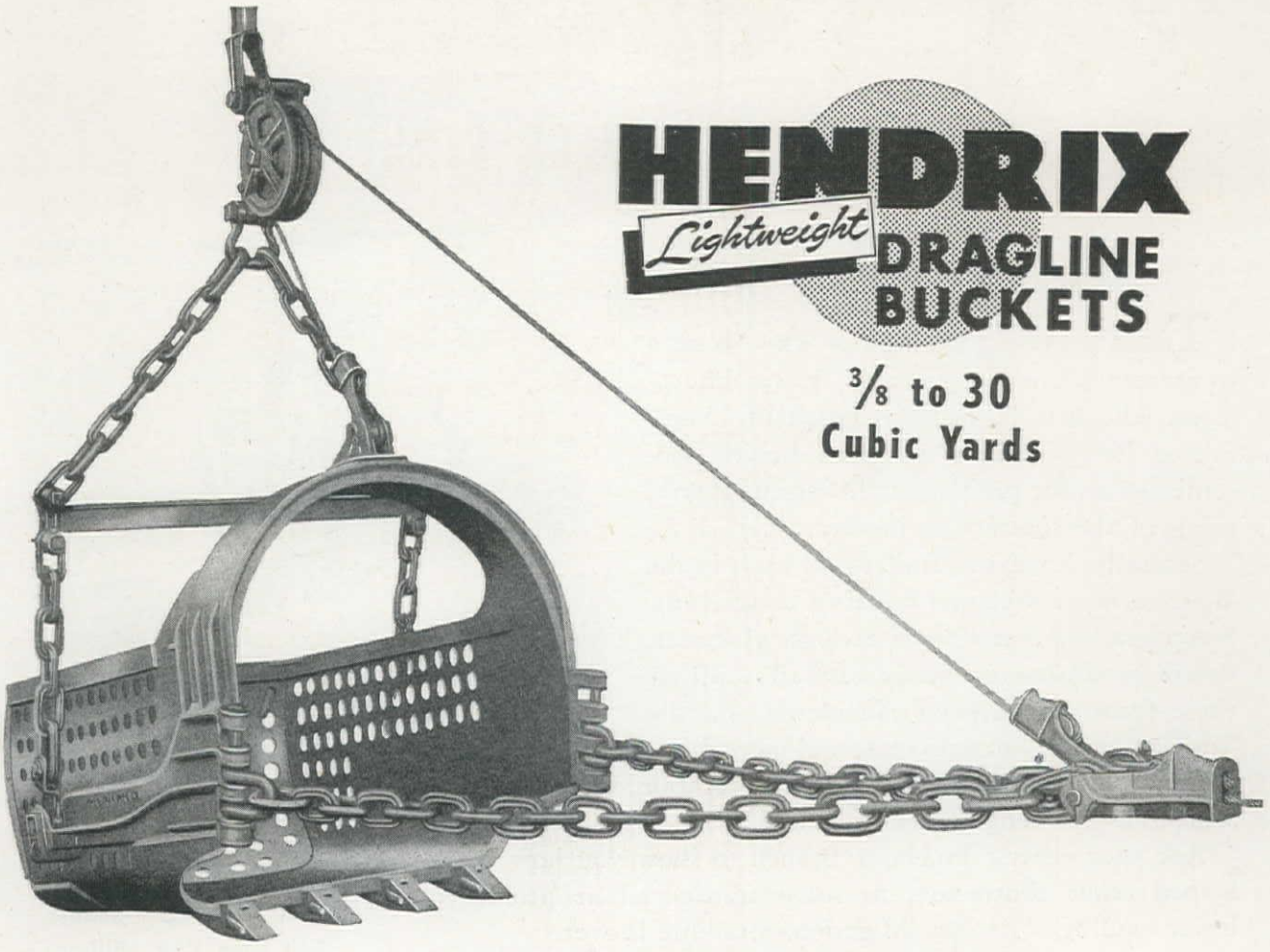
PEAK LOADS AT LOWER COSTS



HENDRIX
Lightweight
DRAGLINE BUCKETS

3/8 to 30 Cubic Yards

- ★ 20% to 40% lighter than other buckets, type for type.
- ★ All welded construction for greater strength and durability.
- ★ Manganese Steel chains, fittings, and reversible tooth points.
- ★ Full Pay Load every trip, even in wet diggings.
- ★ Perfect Balance; handles easier, fills faster, dumps cleaner.
- ★ Three Types; light, medium, and heavy duty. With or without perforations.

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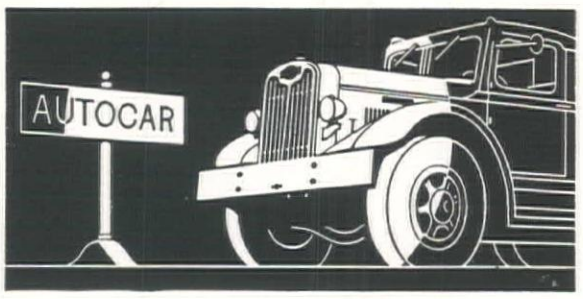

QUALITY COMES FIRST

First and foremost, Autocar Trucks have quality. In the heavy-duty field—Autocar's field—quality is basic. Heavy loads mean heavy strains, and only built-in quality can take it. So Autocar Trucks are superbly engineered by Autocar to carry all the law allows . . . safely, swiftly, dependably, and on time. Autocar Trucks cost more *because they're worth more*. Follow the leaders, for they know the way.

AUTOCAR TRUCKS

FOR HEAVY DUTY

SOLD AND SERVICED BY POINTER-WILLAMETTE CO.
IN OREGON, WASHINGTON, AND MONTANA

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SURPLUS STEEL

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Terms to fit your production budget

Over 50,000 tons of hot rolled and cold finished carbon and alloy steel bars in rounds, squares, flats and hexagons, priced downward—for substitute uses.

Budget priced, these 50,000 tons consist of 25,000 tons of carbon and 25,000 tons of alloy H.R. & C.F. bars, in sizes to meet your immediate requirements.

In addition, there are 60,000 tons of carbon and alloy billets, blooms and slabs. These semi-finished products are also priced for quick delivery in meeting the demands for substitute uses. If you qualify for credit, terms may be arranged. For detailed specifications, grades, sizes, deliveries and F.O.B. prices, simply write, wire or phone the nearest RFC Agency listed below.

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2. Reinforcing Bars . . . . . ☐
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6. Wire and Wire Products, Carbon and Alloy, Wire Rope, Reinforcing Wire Mesh . . . . . ☐
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RECONSTRUCTION FINANCE CORPORATION

A DISPOSAL AGENCY DESIGNATED BY THE SURPLUS PROPERTY ADMINISTRATION

Agencies located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver Detroit • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane

157-2

Speaking of POSITIONS

ADAMS Gives You ALL These with Blade Centered on Circle

AN EXTREMELY wide range of blade positions—*obtained without mechanical adjustments*—is one of the important operating advantages which has made Adams Motor Graders top favorites the world over.

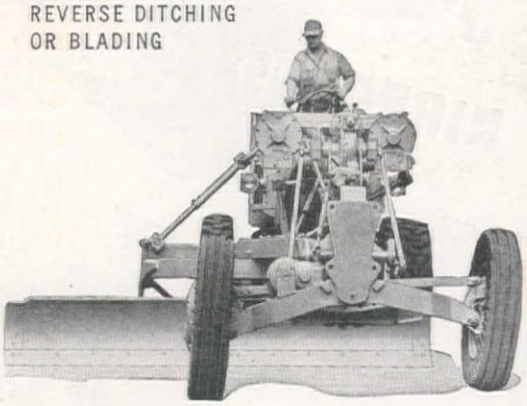
Quickly, easily, Adams fast power-operated blade controls—conveniently located at operator's finger tips—accurately position the blade for virtually all surface, ditch and bank work . . . *without shifting blade on circle or even adjusting blade lift links!*

Occasional cuts, which call for unusual blade positions, are easily handled through simple adjustment of telescopic lift links. Only where extreme blade positions are demanded is it ever necessary to shift blade on the circle.

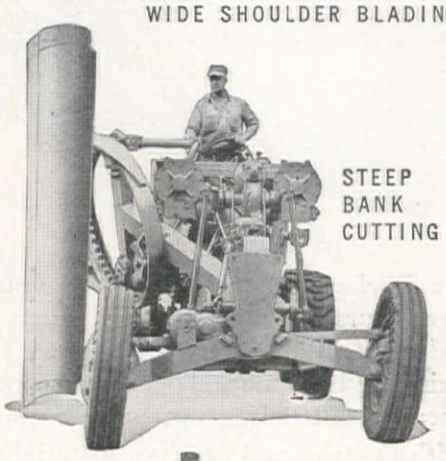
Discover how this, and other Adams' superiorities, will speed operations, increase efficiency and reduce costs . . . for you! For complete information visit or phone your near-by Adams dealer.

J. D. ADAMS MANUFACTURING CO., Indianapolis, Indiana

REVERSE DITCHING OR BLADING



WIDE SHOULDER BLADING



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Exeter Mercantile Co., Visalia
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COLORADO—McKelvy Machinery Co., Denver
IDAHO—Intermountain Equipment Co., Boise, Pocatello
MONTANA—Industrial Equip. Co., Billings, Missoula
NEVADA—Brown Motors, Reno
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OREGON—Howard-Cooper Corp., Portland, Eugene
UTAH—The Lang Company, Salt Lake City
WASHINGTON—Howard-Cooper Corp., Seattle
Intermountain Equipment Co., Spokane
WYOMING—Industrial Equip. Co., Billings, Mont.
The Lang Company, Salt Lake City, Utah

One Shot Spreading

Fast—Accurate—Low Cost

AIRPORTS

HIGHWAYS

With a Buckeye Material Spreader you can lay an even course of any material from sand to crushed stone in a "single pass." There's no need for raking or brooming. There are no patches to go over; edges to clean up; or low spots to fill.

Width of strips and depth of material are easily controlled. Strip can be spread tapered—thick at one side and thin at the other—or uniformly all the way across. The uniform flow of material is controlled by the spirally fluted feed roll which keeps a positive grip on the material, discharging it evenly in the desired quantities as the truck moves along. Any material—whether wet, dry or sticky—can be spread with absolute uniformity from a trickle to 1½" thicknesses (up to 6" with "Strike-Off" Attachment).

The Buckeye Material Spreader is a complete unit, not just an attachment for a truck. It rolls on its own dual rubber tires (steel wheels optional), and feed roll is transmission driven with adjustments for varying speeds. Users report savings of from 30% to 50% on material; accuracy within 2%; and tremendous savings in time.

Send for the Buckeye Spreader Bulletin today, and learn how you can increase your profits on highway and airport jobs.

BUCKEYE TRACTION DITCHER COMPANY
FINDLAY, OHIO

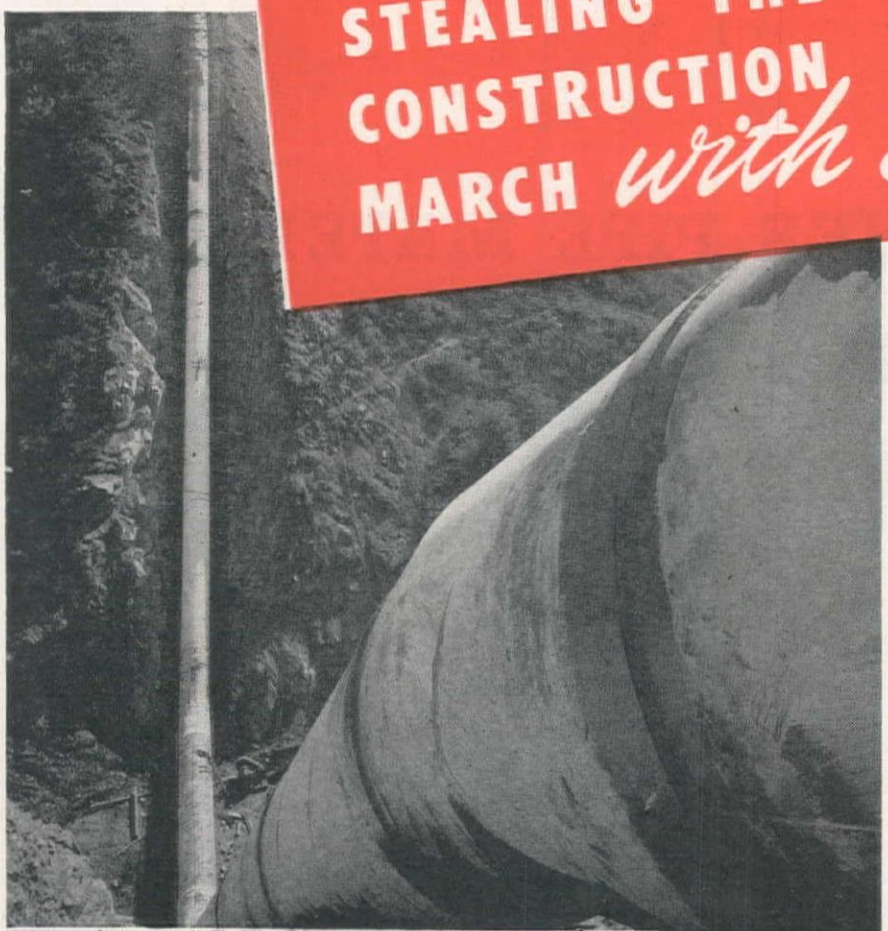
See Your Nearest Buckeye Dealer

Intermountain Equipment Co., Boise, Idaho
Wilson Equipment & Supply Co., Cheyenne, Wyo.
Liberty Trucks & Parts Co., Denver, Colo.
O. S. Stapley Co., Phoenix, Ariz.
Sanford Tractor & Equipment Co., Reno, Nev.
Lange Company, Salt Lake City, Utah
F. M. Viles Company, Spokane, Wash.
Lomen Commercial Co., Seattle, Wash.
Loggers & Contractors Machinery Co., Portland, Ore.
LeRoi-Rix Company, Los Angeles, Calif.
Industrial Equipment Co., Emeryville, Calif.
R. L. Harrison Co., Inc., Albuquerque, N. M.
Western Construction Equipment Co., Billings, Mont.
Western Construction Equipment Co., Missoula, Mont.
Howard Cooper Corp., Twin Falls, Idaho

built by Buckeye

CONVERTIBLE SHOVELS—BULLDOZERS—ROAD WIDENERS
TRENCHERS—MATERIAL SPREADERS—R-B FINEGRADERS

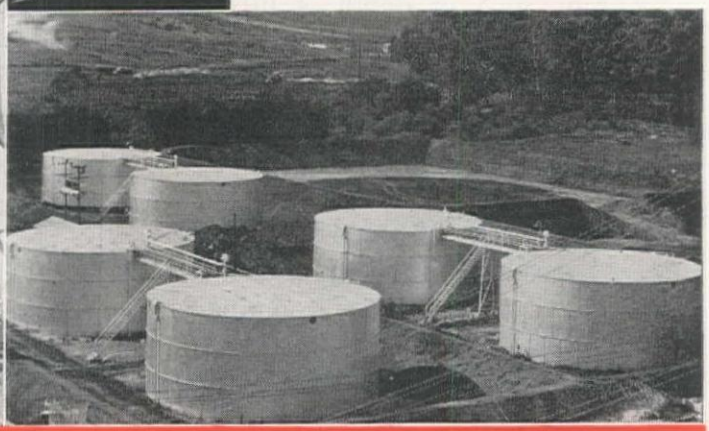
STEALING THE CONSTRUCTION MARCH *with steel!*



For endurance, potential strength in the building of pressure vessels, pipe lines, tanks, etc., steel has stolen the march in essential industry. Without it, much of the essential industrial growth of the past few years would have been impossible. Steel is a builder of industry.

Western Pipe & Steel for over 40 years has played a dominant part in the building of Western Industry. Municipal water facilities, penstocks, and modern refineries are only a few of the projects which we have fabricated and built.

When you plan steel construction, we will be glad to talk with you concerning your problems. Just write or call our nearest office



WESTERN BUILT PRODUCTS INCLUDE:

ABSORBERS
AGITATORS
BOILERS
CASINGS
OIL AND WATER
CULVERTS
GAS CLEANERS
GAS SEPARATORS
PIPE
- OIL
- GAS & WATER

PENSTOCKS, STEEL
REFINERY EQUIPMENT
TANKS
- BOLTED
- RIVETED
- WELDED
- GALVANIZED

WALKWAYS
STRUCTURAL

Western PIPE & STEEL COMPANY OF CALIFORNIA

Fabricators and Erectors

5717 Santa Fe Avenue
Box 2015, Terminal Annex
Los Angeles 54, California

200 Bush Street
San Francisco 6
California

Plants and Offices: FRESNO, BAKERSFIELD, TAFT, CALIFORNIA AND PHOENIX, ARIZONA

No other pipe material meets all these requirements

The one and only pressure pipe material that has proved its ability to meet all these requirements: service under ground for all pressures (any soil* or depth of fill)—service under water (salt or fresh)—service above ground (over a salt marsh, for instance)—service in a plant (water purification or sewage treatment)—is *good gray iron* of which cast iron pipe is made.

Because of its all-purpose adaptability, our members furnish cast iron pipe with joints for every service requirement, as shown on the page opposite.

What other pipe material offers you a comparable combination of long life, beam strength and impact strength, high resistance to internal and external pressure? Echo answers—none!

Cast iron pipe offers you, among other advantages—

(1) *A Century or more of useful life as a structure.* (The *proved* useful life of cast iron pipe is more than double the *estimated* life of other pressure pipe materials, under normal conditions.)

(2) *A Century or more of high capacity as a carrier.* (In locations where tuberculating waters are encountered, cement-lined cast iron pipe assures high carrying capacity for the life of the pipe.)

Does any other pressure pipe material offer you all the advantages of cast iron? Echo answers—no! Cast Iron Pipe Research Association, T. F. Wolfe, Research Engineer, Peoples Gas Bldg., Chicago 3.

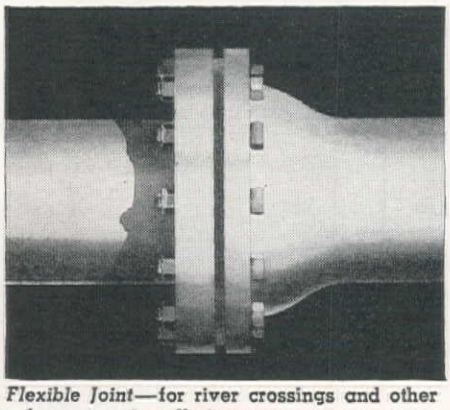
**For "super-hot" soils cast iron pipe is furnished with protective coatings.*

CAST IRON PIPE

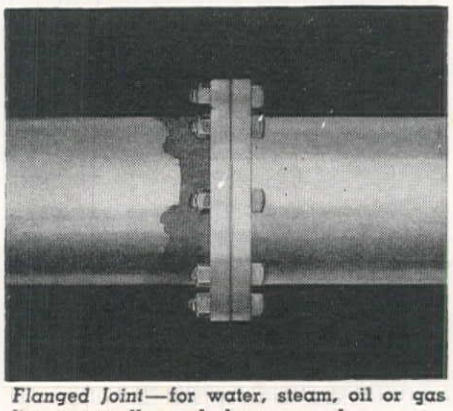
A JOINT FOR EVERY SERVICE NEED

Bell-and-spigot Joint—the time-tried and standard for water, gas and sewerage service.

Mechanical Joint—now standardized with interchangeable parts—for all pressures.



Flexible Joint—for river crossings and other sub-aqueous installations.



Flanged Joint—for water, steam, oil or gas lines generally used above ground.

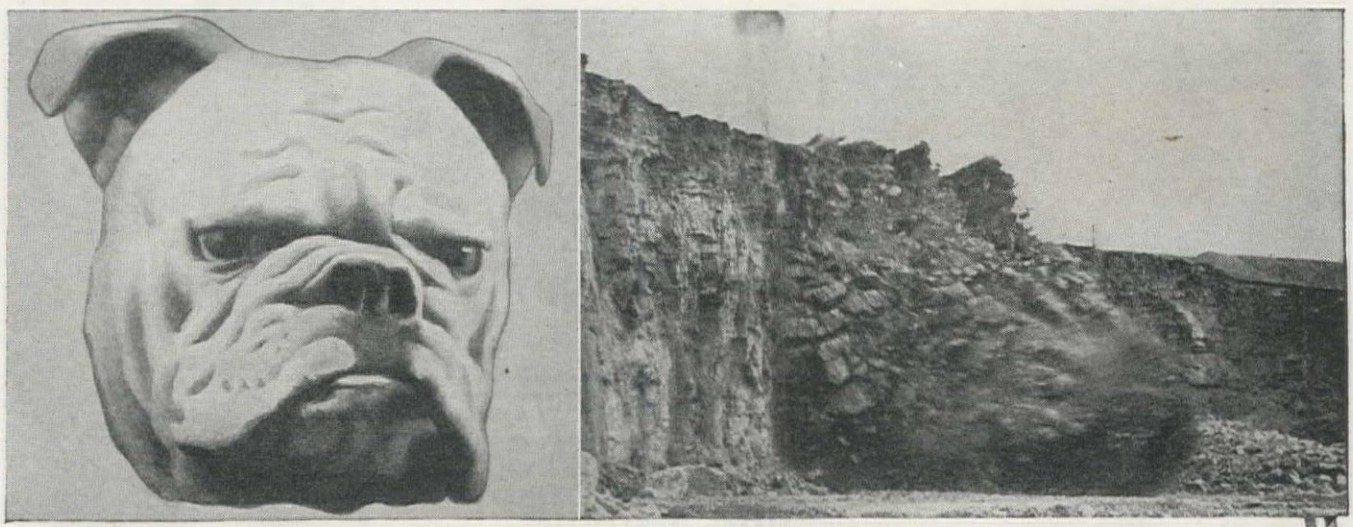
Other joints are available for special purposes

Serves for Centuries

The first new blasting development since the war

ATLAS ROCKMASTER

. . . less bark with more bite



THE Atlas Rockmaster is more than a different method of detonation. It's a *whole new system of blasting* —involving new methods of handling, use and loading—achieving results that are almost incredible.

Fragmentation—the "bite" that counts most to superintendents—is amazingly improved. Vibration—the "bark" that caused so many complaints—is greatly reduced. Back Break can be almost entirely eliminated. Any one of these advantages would mark the Rockmaster as an outstanding development. Combined, they make this System one of the really great advancements of the industry.

See your Atlas Representative about the Rockmaster Blasting System. Let him *demonstrate* how it saves time and money. Remember, too, that the Rockmaster gives you

Check these Features

- ✔ NOISE AND CONCUSSION are drastically cut down
- ✔ ROCK BREAKAGE is decidedly more complete
- ✔ SECONDARY BLASTING is reduced to a minimum
- ✔ BACK BREAK can be greatly reduced—more solid footage is assured

Identify the ROCKMASTER by the Blue Color

the greater safety of

ATLAS MANASITE DETONATORS

Gelodyn: Reg. U. S. Pat. Off.

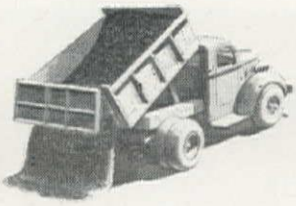
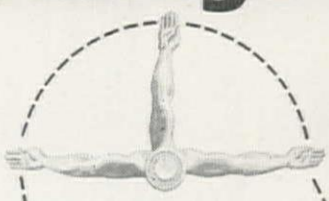
Offices in Principal Cities

ATLAS EXPLOSIVES

"Everything for Blasting"

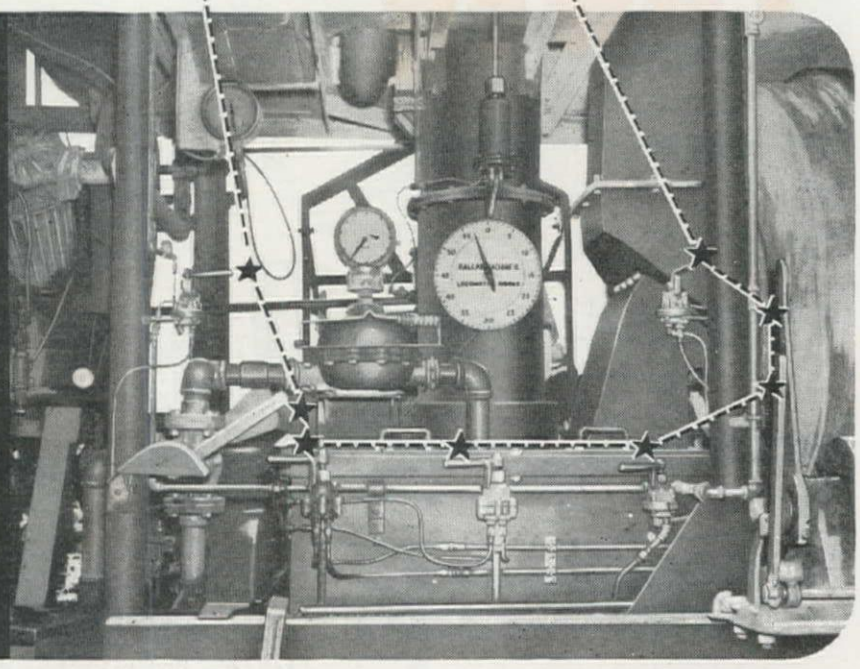
CHEMICALS ATLAS EXPLOSIVES

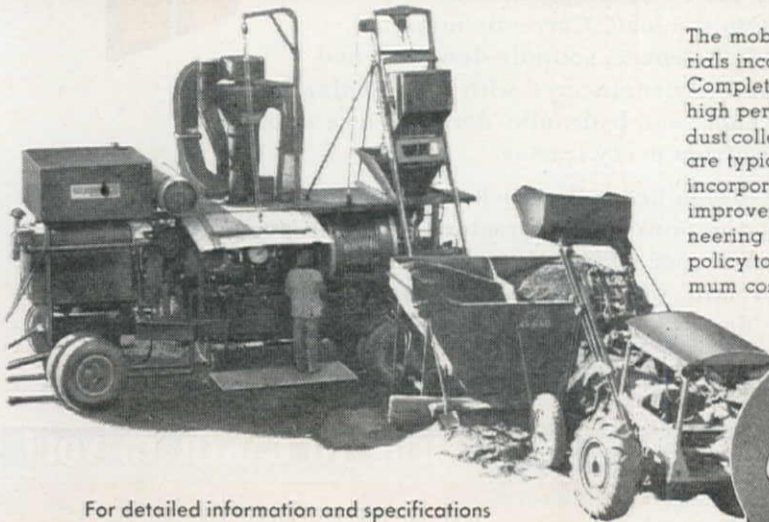
SAN FRANCISCO 4, CAL. ATLAS POWDER COMPANY SEATTLE 1, WASH.

Extra  Tonnage *through* Arm - Length  Control

There's a reason why Gerlinger Portable Paving Plants are invaluable members of the highway building team. They are capable of hoisting, drying, mixing and delivering to the truck not less than 270 tons of asphaltic concrete or hot mix every 24-hour shift! This feat has been made possible because the air valves for *each* operation are within *arm's length* and *under control* of one man! It enables him to produce top quality mix more economically and faster for highway and general maintenance work.

GERLINGER PORTABLE *Complete Unit* PAVING PLANT



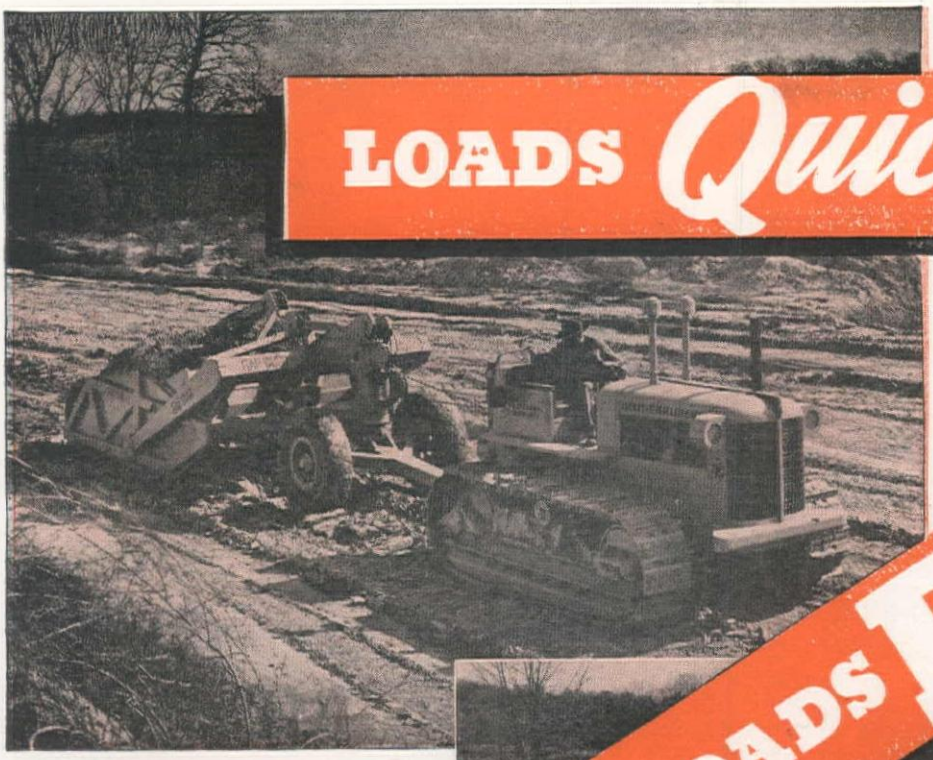


The mobility, compactness, quality of workmanship and materials incorporated in the construction of the Gerlinger Portable Complete Unit Paving Plant gives assurance of a consistently high performance record in transit and on the job. The Sirocco dust collector, American Roto-Clone and Niagara Asphalt meter are typical of the many scientific developments Gerlinger has incorporated under a constant program of improvement. Each improvement is an outgrowth of sound on-the-ground engineering research and development consistent with Gerlinger's policy to provide plants that give maximum production at minimum cost and effort.

For detailed information and specifications please phone or write . . . Department 7, Salem Iron Works, Salem, Oregon.

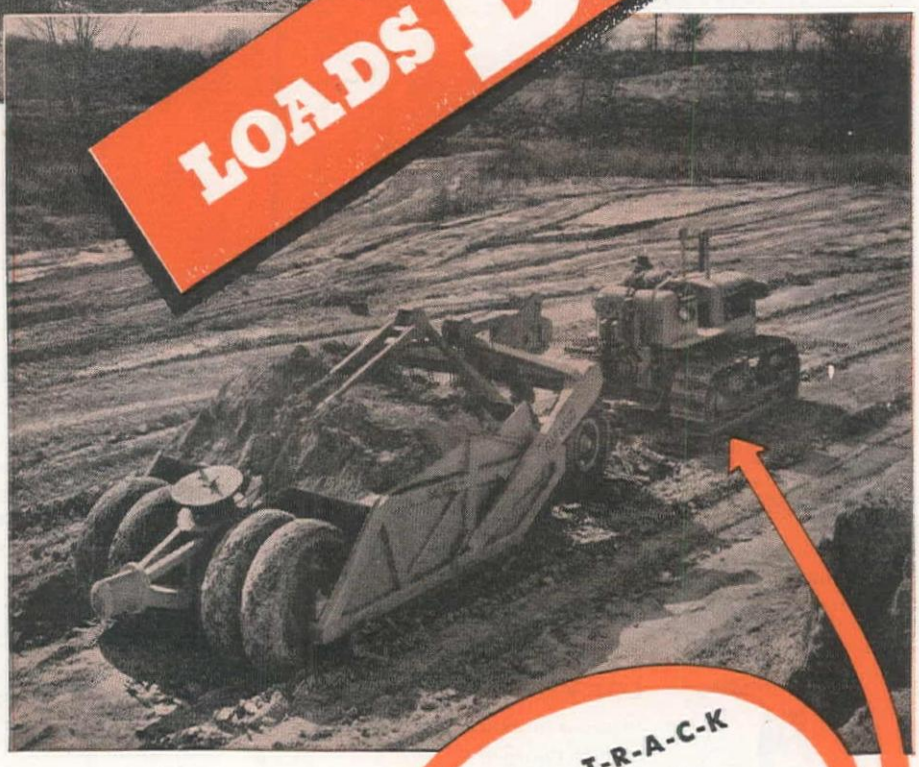
GERLINGER PRODUCTS

A PRODUCT OF SALEM IRON WORKS SALEM OREGON



LOADS Quick . . .

LOADS BIG!



PROPERLY BALANCED HD-10 INCREASES YARDAGE MOVED

There's more dirt on the move with an HD-10 on the scraper. You can get big loads quick with this properly balanced tractor. There's sure traction with the long tracks and heavy truck frame . . . operation is steady, smooth. These features plus addition of an extra heavy front spring makes it ideal, too, for operating front or engine mounted equipment.

Whatever the job — scraper work, bulldozing or hauling . . . you will get more done at less cost with the HD-10. Whatever the soil condition . . . this ground-gripping tractor will give you better footing. It will pay you to get all the facts from your Allis-Chalmers dealer.

L-O-N-G T-R-A-C-K
Gives you:
IMPROVED TRACTION
IMPROVED BALANCE
IMPROVED RIDING
IMPROVED PERFORMANCE!

ALLIS-CHALMERS
TRACTOR DIVISION • • MILWAUKEE 1, U. S. A.

FWD TRUCK-POWER FOR *ALL* JOBS

Plus + SNOW-CLEARING!

SPRING & SUMMER

FALL

WINTER

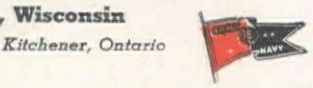
When winter comes, the same FWDs that handle a wide range of heavy-duty work throughout spring, summer and fall, are ready for the toughest snow-fighting duty. Put them back of any good plow and you have snow-bank-busting power that has no equal in speed, snow-clearing effectiveness and economy.

They slug their way through deepest drifts... through hardest packed, crystallized "sugar snow" that defies less rugged power . . . because their true four-wheel-drive principle, with center differential, puts properly balanced weight, traction and maximum driving power on all four wheels. They do ALL jobs, in ALL seasons, at lower cost because they are engineered to provide the most in four-wheel-drive hauling power and stamina.

THE FOUR WHEEL DRIVE AUTO CO.

Clintonville, Wisconsin

Canadian Factory: Kitchener, Ontario



FWD TRUCKS

THE ORIGINAL EXCLUSIVE BUILDERS OF FOUR-WHEEL-DRIVE TRUCKS

FWD Distributors: ARIZONA—Arizona-Cedar Rapids Co., 401 N. First St., Phoenix; CALIFORNIA—The Four Wheel Drive Auto Co., 1339 Santa Fe Ave., Los Angeles 21 and FWD Pacific Co., 469 Bryant St., San Francisco 7; COLORADO—Liberty Trucks & Parts Co., P. O. Box 1889, Denver 1; IDAHO—Intermountain Equipment Company, Broadway at Myrtle St., Boise; MONTANA—Steffeck Equipment Co., 11 E. Cutler St., Helena; NEVADA—Allied Equipment Co., Reno; NEW MEXICO—The Myers Company, Las Cruces; OKLAHOMA—Halliburton Oil Well Cementing Co., P. O. Drawer 471, Duncan; OREGON—Feenaughty Machinery Co., 112 S. E. Belmont St., Portland 14; UTAH—Cate Equipment Co., 49 E. 9th So., Salt Lake City; WASHINGTON—Fenaughty Machinery Co., 1028 6th Ave., So., Seattle 2, Glenn Carrington & Co., 91 Columbia St., Seattle, and Feenaughty Machinery Co., 715 N. Division St., Spokane; WYOMING—Wortham Machinery Co., 517 W. 17th St., Cheyenne; ALASKA—Glenn Carrington & Co., Nome, Fairbanks, Anchorage.

Introducing

"CATERPILLAR" SCRAPERS

WITH THESE DISTINCTIVE FEATURES FOR "LOWEST COSTS ON EARTH"

1 "COMPLETE PACKAGE" EARTHMOVER

Tractor and scraper built to work together • One high standard of material and workmanship • One service source—the best in the business.

2 OPEN-BOWL DESIGN FOR:

Greater stability • Good visibility • Loading with shovel or dragline.

3 OPTIONAL TIRE SIZES FOR:

Correct flotation • Tires matched to the job • Minimum rolling resistance • Bigger pay-loads • Longer tire life.

4 DOUBLE-CURVED, SELF-SHARPENING CUTTING EDGES FOR:

"Live loading" with longer boiling action • Digging hard material • Shorter loading distance • Less loading time.

5 HIGH APRON LIFT TO CLEAR THE STICKIEST MATERIALS

6 POSITIVE, CLEAN EJECTION

7 LONG CABLE LIFE FROM:

Correct reeving • Over-sized, precision-grooved sheaves.

ANOTHER IN THE GREAT NEW LINE OF "CATERPILLAR" EARTHMOVING EQUIPMENT

First the bulldozers (recently announced), and now the *open-bowl* scrapers have gone into production. "Caterpillar" research projected them. "Caterpillar" engineering designed them. "Caterpillar" proving has okehed them after every conceivable test of performance — for mechanical efficiency, for work capacity, for long-lived stamina, for operating ease and economy.

As in every product "Caterpillar" offers, you may be sure that these scrapers are tops in the field — with features, materials and workmanship that give the earthmover undisputed profit advantages — per job or per life of product.

To individual mechanical superiority, "Caterpillar" Scrapers give you the further advantage of *one service source* when teamed up with "Caterpillar" Diesel Tractors . . . both made by the same manufacturer and kept in working condition by a single dealer organization unequaled for completeness.

See your "Caterpillar" dealer about these new "Caterpillar" Scrapers; about the new "Caterpillar" Bulldozers — and how, with "Caterpillar" Diesel Tractors, the advantages of ideally matched earthmoving equipment can be realized for the first time in construction history.

CATERPILLAR TRACTOR CO., San Leandro, Calif.; Peoria, Ill.

THREE SIZES

STRUCK MEASURE

No. 80	13.8 YARDS
No. 70	8.7 YARDS
No. 60	6.0 YARDS

CATERPILLAR DIESEL

REG. U.S. PAT. OFF.

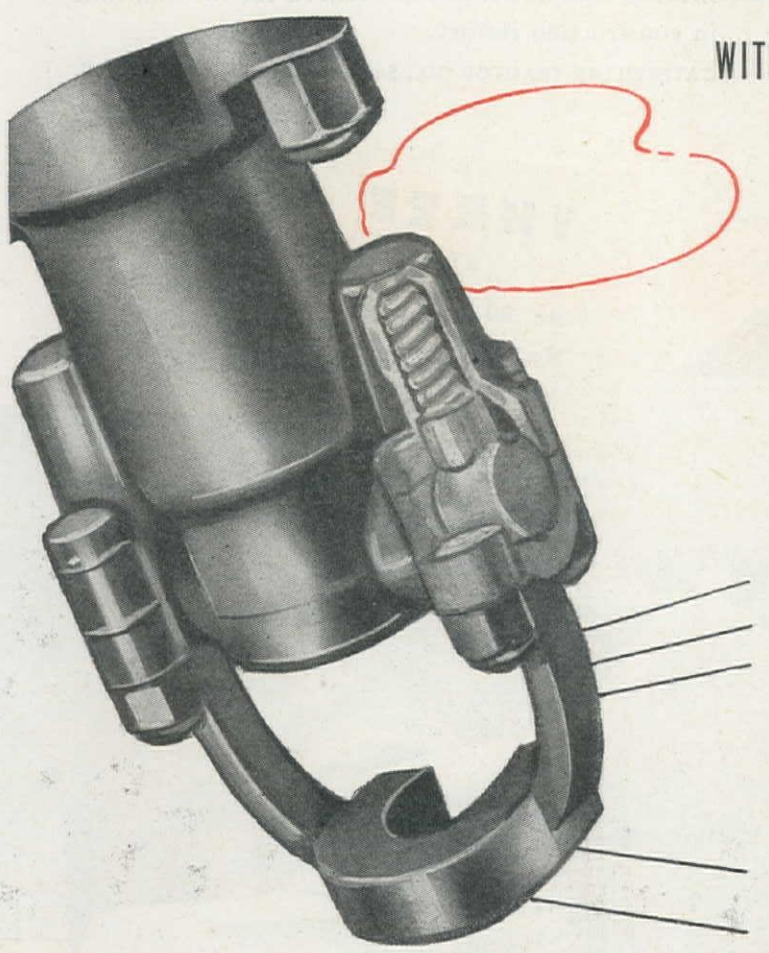
ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

The discharged veteran wears this emblem. Remember his service and honor him.

Why leading contractors

The DRILL RUNNER *knows that...*

STEEL CHANGES ARE QUICK AND EASY WITH THOR'S DIRT-PROOF, JAM PROOF STEEL RETAINER



You won't find an operator of a Thor Rock Drill carrying a hammer or pry-bar to pound the retainer free for steel changes . . . because the Thor retainer is easily opened by hand throughout the life of the tool. *Fully enclosed* to prevent jamming by dirt or rock, the tension spring in the Thor retainer cannot be over-tightened. Lubrication is done without dismantling the retainer so it *always* works easily to speed steel changes and reduce friction and wear.

This feature alone makes Thor Rock Drills *preferred* by operators. Add smooth performance and easy handling and you'll see why runners get more footage per shift—every shift—with Thor.

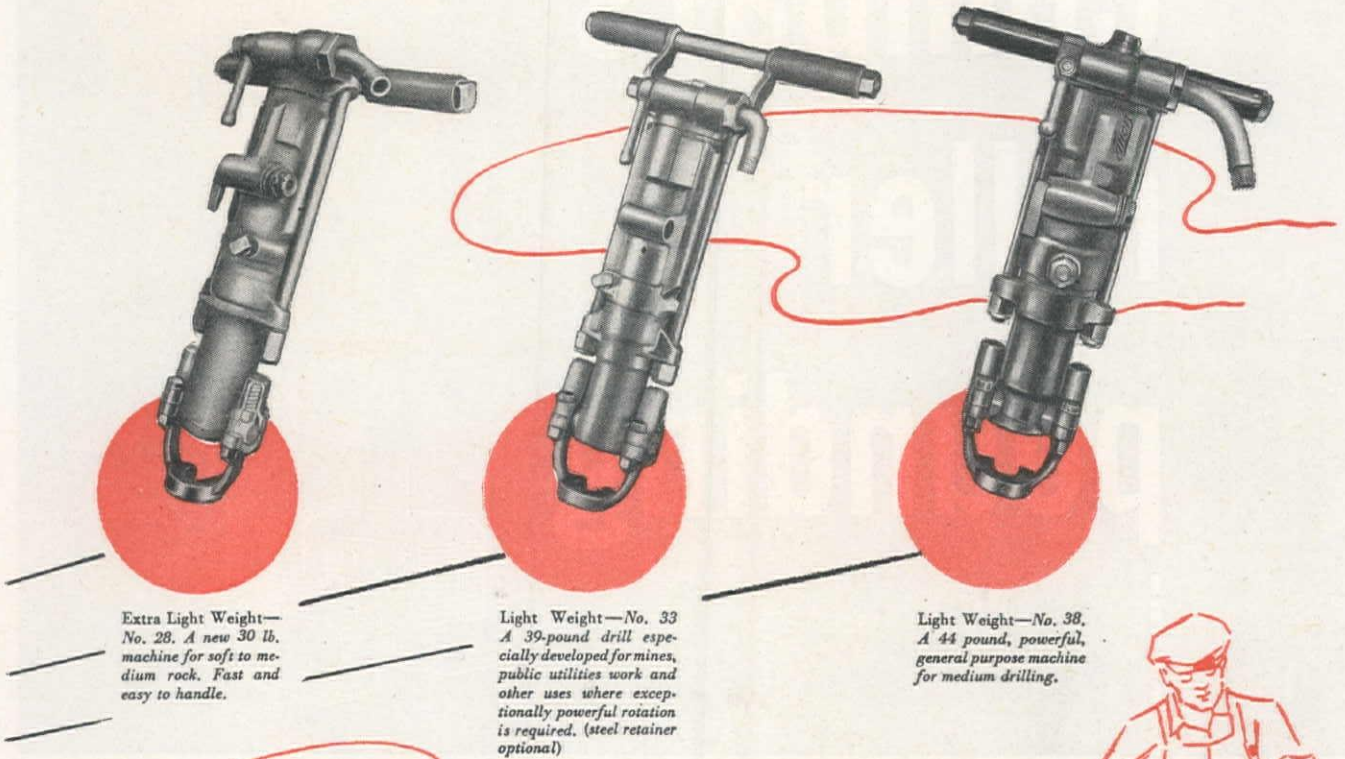
INDEPENDENT PNEUMATIC TOOL COMPANY
600 W. Jackson Boulevard, Chicago 6, Illinois

Birmingham Boston Buffalo Cleveland Detroit Los Angeles
Milwaukee New York Philadelphia Pittsburgh St. Louis
Salt Lake City San Francisco Toronto, Canada London, England

Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

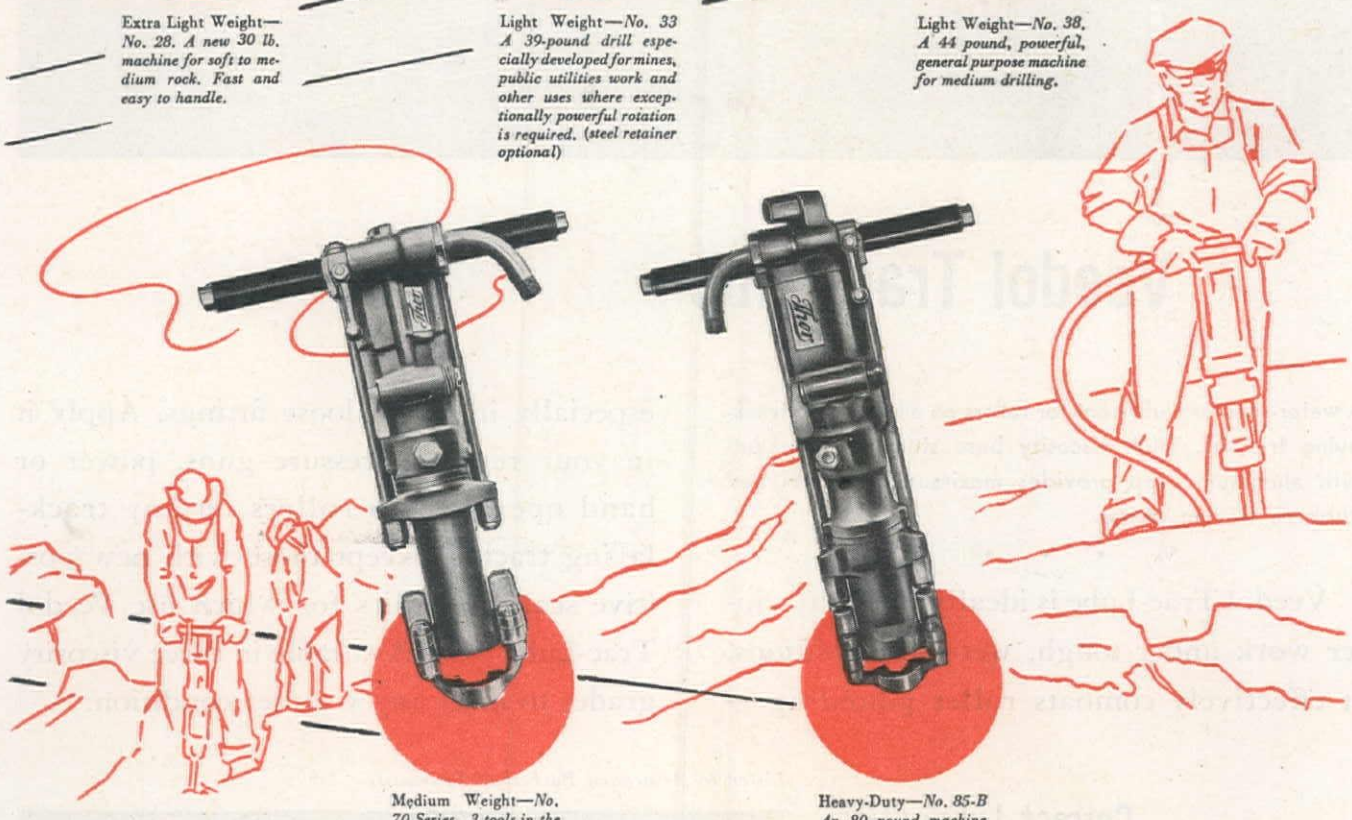
SPECIFY *Thor* ROCK DRILLS



Extra Light Weight—*No. 28. A new 30 lb. machine for soft to medium rock. Fast and easy to handle.*

Light Weight—*No. 33 A 39-pound drill especially developed for mines, public utilities work and other uses where exceptionally powerful rotation is required. (steel retainer optional)*

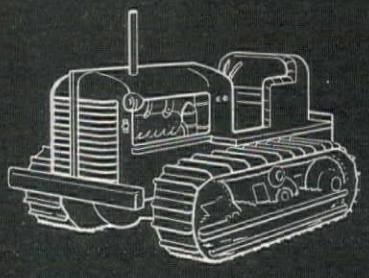
Light Weight—*No. 38. A 44 pound, powerful, general purpose machine for medium drilling.*



Medium Weight—*No. 70 Series. 3 tools in the 55 pound class—powerful and fast for deep-hole drilling in hard rock.*

Heavy-Duty—*No. 85-B An 80 pound machine for deep drilling in the hardest kind of rock formations.*

combats roller pounding



Veedol Trac-Lube

A water-resistant lubricant for rollers on all makes of track-laying tractors. High viscosity base stock compounded with aluminum soap provides maximum tackiness and stubborn staying power.

• • •

Veedol Trac-Lube is ideally suited to winter work under tough, wet-soil conditions. It effectively combats roller pounding—especially in worn, loose fittings. Apply it in your regular pressure guns, power or hand operated, to rollers on any track-laying tractor, except those with new positive seal assemblies for which use Veedol Trac-Lube "C." Available in three viscosity grades to meet any weather condition.

Correct Lubrication is Machinery's Most Vital Need

Listen to Associated Basketball Sportcasts

TIDE WATER ASSOCIATED OIL COMPANY

POWER TO BURN

on steep pulls—FULLY LOADED

The Terra-Cobra's massive articulated King-Pin coupling is employed to permit *flexible travel* over rough rocky or uneven ground, at all speeds and with full loads. This exclusive Wooldridge feature permits either or both units to tilt in *opposite* planes even on sharp turns. With maximum load balance on this single pivot there is never any tendency to sky or dip. Get acquainted with Wooldridge today . . . write for Bulletin TA-425 for full details.

WOOLDRIDGE
EARTHMOVING EQUIPMENT
Includes

★ **SCRAPERS**
Tractor-drawn for handling heaping yardages from 6 to 28 cu. yards.

★ **POWER CONTROL UNITS**
Single and multiple drum with universal or roller fairleads.

★ **BULLDOZERS**
Tough and rugged design for standard makes of tractors.

★ **TRAILBUILDERS**
Adjustable angle-blades for standard tractor mounting.

★ **RIPPERS**
Available in light, medium and heavy duty models with two sizes to each model.

DISTRIBUTOR SALES & SERVICE FACILITIES IN ALL PRINCIPAL AREAS & FOREIGN TERRITORIES

SPEED  TO SPARE

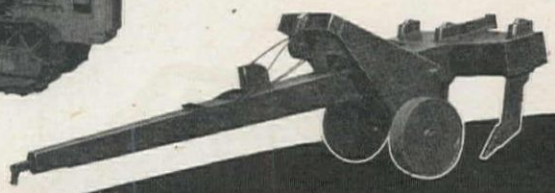
WOOLDRIDGE
MANUFACTURING COMPANY
SUNNYVALE · CALIFORNIA · U. S. A.

TERRA COBRA

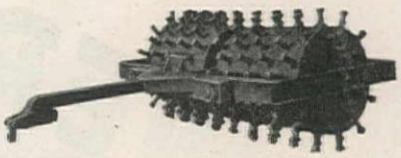
Hi-Speed Self-Propelled EARTHMOVERS

BULLDOZERS & TRAILBUILDERS

LOADERS



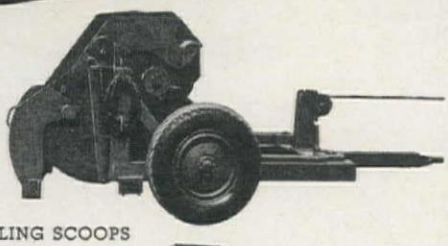
RIPPERS



TAMPERS

SOUTHWEST Construction Equipment *for every job!*

POWER CONTROL UNITS

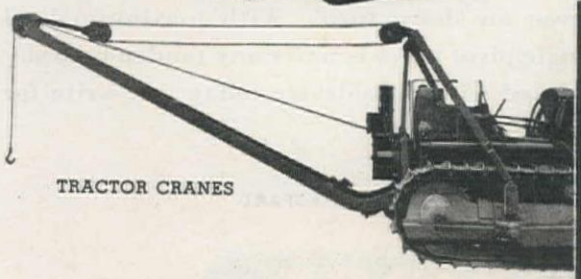


HAULING SCOOPS

DUMP BODIES

Southwest's complete, standardized line affords construction men an opportunity to fill their needs from one dependable source. From start to finish, no matter whether Allis-Chalmers, Caterpillar, International or Cletrac tractors are used, an economical Southwest unit is available to bring you increased profits.

In addition to the standard line, special Southwest Dump Wagons, Tampers, Heavy Duty Compaction Units, etc., are giving outstanding performance on out-of-the-ordinary jobs all over the country . . . Why not let Southwest help solve YOUR problems?



TRACTOR CRANES

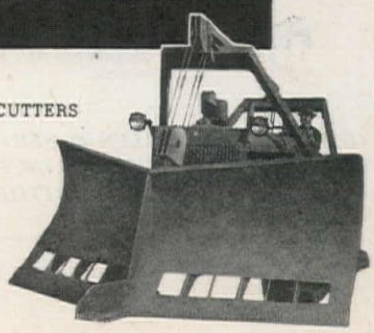
CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Company

ALHAMBRA, CALIFORNIA

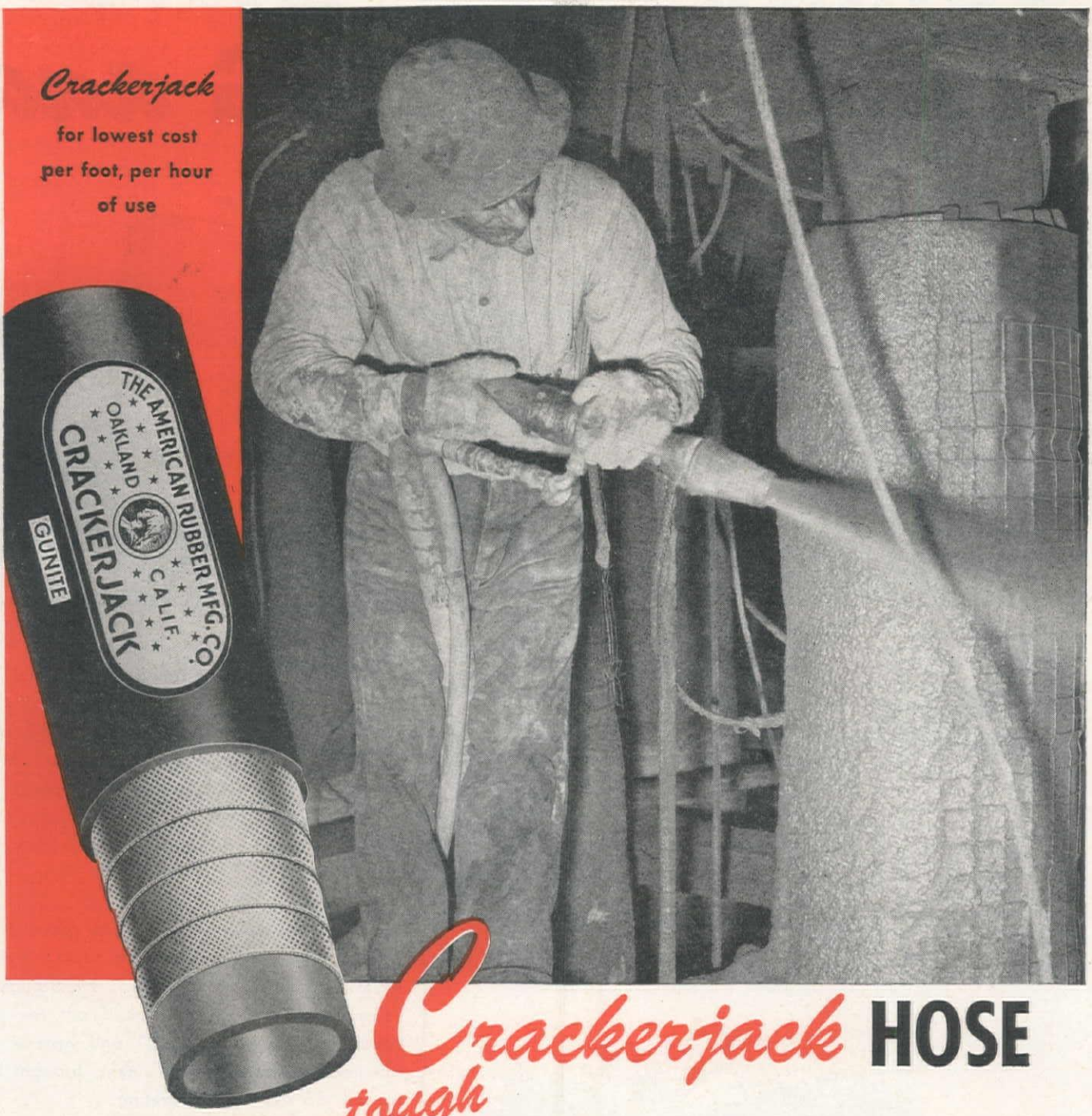
BOTTOM DUMP WAGONS

BRUSHCUTTERS



Crackerjack

for lowest cost per foot, per hour of use



Crackerjack HOSE

tough STAYS IN SERVICE LONGER

Know of a hose service that demands much more abrasion resistance than guniting? Cement and sharp, clear sand delivered under pressure are a combination hard to lick.

Yet, American's chemists have produced a compound used in Gunite hose that can—and does—take it, to cut concreting costs to a minimum. Experience gained on the toughest assignments help us produce hose that cuts costs for all services—whether air, water, steam or oil. If the hose carries the top brand name—*Crackerjack*—you can be sure it is the lowest cost hose per foot, per hour of use.

The AMERICAN RUBBER *Mfg. Co.*

OAKLAND, CALIFORNIA

MANUFACTURERS OF RUBBER PRODUCTS FOR INDUSTRY

TOURNAPULLS prove LANDLEVELING and

▲ *J. L. Vierhus* found Tournapulls to be the answer to light cuts and fills and varying haul lengths on this 160-acre, 42,000 cu. yd. landleveling job, near Holtville, Calif. Material was sandy loam . . . haul averaged approx. 1200' . . . cuts varied from .2' to 1'. On shallow .2' cuts, these rigs got heaped loads in 250' or less.

◀ *Dale Payne* had to remove gravel from an 80-acre field, near Glendale, Ariz., before it could be leveled for irrigation. He brought in 2 Tournapulls, with them, loaded out the gravel, hauled it 1000' to 2500' and spread it on ranchers' access roads . . . next, brought in and spread top soil before leveling.

◀ *Rand Construction Co.* used 3 Tournapulls on short 300' hauls to move sand from the high half to the low half of an 80-acre field, near Arvin, Calif. Project — to improve irrigation for potato acreage. Rand, an experienced Tournapull contractor, has used these rigs extensively to build sumps and roads for new oil well sites . . . takes advantage of their versatility.

◀ *L. F. Freeborn Co.* specializes on West Coast landleveling . . . here, used 3 Tournapulls to take out 1-to-2½' engineer stake rows. The job — leveling ½ section of land for irrigated crops for the Kern County Land Company, near Wasco, Calif.

ability to handle
IRRIGATION PROJECTS

▲ ***Harold Hawkins*** levelled 185 acres of fine, dry, dusty silt with his 3 Tournapulls to improve irrigation in Imperial County, Calif. Making 6" cuts, rigs snatch loaded 12 pay yards in 1 to 1½ min., in 120', hauled 2200'. Top performance in difficult material like this explains the wide-spread use of Tournapulls on landleveling and irrigation projects.

H. S. Giddings used 3 Tournapulls to build a series of reservoirs — each with levees 220' long, 30' base, 10' crown and 7' high — near Bakersfield, Calif. On 600' average hauls, Tournapulls made 2 trips while crawler-drawn scrapers made one. Later Giddings added 3 more Tournapulls to his fleet, used them for leveling and digging irrigation ditches on other West Coast projects.

Here are a few reasons why leveling contractors choose TOURNAPULLS . . . . .

1. They give high speed for quick completion.
2. Less weight per h.p. gives faster acceleration for higher average speed on both long and short hauls.
3. Two-wheel prime mover design gives ample traction in soft, loose footing or slick going.
4. They get heaped loads fast on shallow as well as deep cuts.
5. Cable-controlled cutting and spreading accuracy saves final finishing time.
6. They're adaptable to both large and small jobs.
7. Tournapull flexibility enables them to work anywhere on the job any time.
8. Ability to travel over pavement saves time and money on job-to-job moves.

You'll find these same Tournapull cost-cutting advantages will produce lowest net cost per yard on your leveling, airport, dam, levee, roadwork, stripping, railroad and other earth construction jobs. Let your LeTourneau distributor tell you more about Tournapull profit possibilities TODAY.

C41

E TOURNEAU
PEORIA, ILLINOIS • STOCKTON, CALIFORNIA

JOB-PROVED
Over 4100 Built and Shipped

TOURNAPULLS*

* Trade Mark Reg. U. S. Pat. Off.

FOR LOWEST NET COST PER YARD

Fifty Years of Wire Rope

BACK in 1896, wire rope was not the highly specialized product it is today—neither was the equipment on which it was used.

The past 50 years have brought amazing developments in methods and equipment. Huge excavators take 35 cubic yards of earth at a 'bite.' Well drillers go down 15,000 feet into the bowels of the earth in their quest for oil. Huge logs are 'snaked' out of the tall timber like so many match sticks. Elevators supply vertical transportation in skyscrapers reaching up to the clouds. Man flies in aircraft around-the-world in less time than once required to go a few hundred miles.

Wire rope as a part of this equipment has also changed. Through the years Macwhyte Company has continually kept pace with equipment progress by specializing in the drawing of wire and the making of wire rope and wire rope slings.

We shall continue every effort to merit your wire rope and wire rope sling business.

MACWHYTE COMPANY

Specializing in the manufacture of wire and wire rope, wire rope slings, aircraft cable, assemblies, terminals, and tie rods.

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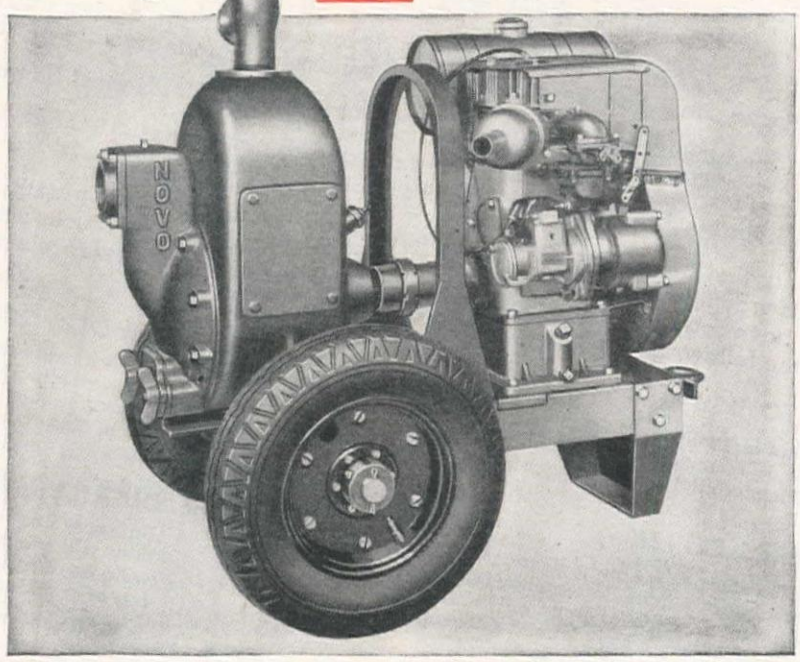
NOVO NEWS

FEBRUARY, 1946

CONTRACTORS: Here's the Self-Priming Centrifugal Pump You Asked For!



The new Novo "Pronto-Prime" Self-Priming Centrifugal Pump was literally designed to *your* specifications. We asked hundreds of contractors exactly what features they wanted in their new pumps. The Novo "Pronto-Prime" pump is the direct result of this survey; it includes every important feature that *you*, from actual experience, have found necessary to efficient, trouble-free operation.

Super Speed Positive Priming—new improved design.

Long-lived "Stout-Hearted" rotating Neoprene seal — self-aligning, self-adjusting, oil lubricated.

Self-Cleaning — turbulence through oversized, streamlined water passages prevents settling and clogging.

Independent Pump Unit — permits servicing pump without removing power unit.

Serviceability—all wearing parts quickly accessible.

Many Mechanical Advantages — Two roller bearings. Universal base. Line-bored pump case. Adjustable wear plate. Replaceable cut-off. Wear resistant Novite alloy parts. Raised suction. Large drains.

Guaranteed to Equal or Exceed AGC Standards. "Pronto-Prime" performance is second to none.

Your nearest Novo distributor will gladly furnish more details.

Allied Member of A.E.D.

NOVO ENGINE COMPANY
LANSING 5, MICH. U.S.A.
CONTRACTOR'S EQUIPMENT
· GRAY IRON CASTINGS ·
ENGINES

7
REASONS WHY
SOLAR
WELDING FLUX No. 16 GH
IS THE BEST FOR THE WELDING OF STAINLESS STEEL

why SOLAR FLUX was manufactured

For fifteen years Solar Aircraft Company has devoted itself to the design and fabrication of products made of stainless steel and similar alloys. Its principal business is the manufacture of airplane exhaust systems.

To withstand the intense heat of exhaust gases, airplane manifolds must be perfectly welded.

To accomplish these results with minimum time and application effort, the Research Department of Solar developed Solar Stainless Steel Welding Flux No. 16 GH.

This flux was first used and developed exclusively for Solar's own plants. It proved itself so successful that other plants which needed a specialized flux for the welding of stainless steels made arrangements to use it. They, too, have found that for better and speedier welding and fewer rejects SOLAR FLUX No. 16 GH has no equal for the following reasons:

1. EASY TO USE

Solar Flux is easily applied with a brush. It dries quickly because it is mixed with methanol—thus parts can be welded immediately after application.

2. ADHERES BETTER

Solar Flux sticks to the metal because of the use of Methanol and its mineral binder. So tenacious is it that it will adhere to the metal in spite of frequent handling. Parts can be fluxed and stacked days ahead of actual welding, thus facilitating faster production flow.

3. IT GOES FURTHER

Because SOLAR flux can be thinly spread over the weld area—it gives from 15% to 20% greater coverage.

4. NO BINDER—NO "ETCHING"

SOLAR flux requires no shellac or other binders that cause carbon pick-up by the metal being welded.

5. PREVENTS "BURNING" (Oxidation)

SOLAR flux prevents "burning" or oxidation of molten metal during welding because certain inhibitors have purposely been introduced into the flux to prohibit the penetration of oxygen. It prevents pinholes by better elimination of trapped gases.

6. DUCTILE WELDS

Unless welds remain ductile during forming and bending, they will crack or check. Army and Navy certification of welders require that welds must not show failure by checking or cracking when bent through an angle of 180°.

SOLAR research discovered that the presence of too much boron in flux contributes to cracking. In SOLAR FLUX the boron content is carefully controlled, thus ductile welds are uniformly obtained—there are fewer rejects on inspection.

7. NO TOXIC FUMES—WIDER APPLICATION

SOLAR FLUX can be used with oxy-acetylene, atomic hydrogen or metallic arc processes with equal ease and benefit. It gives off no toxic fumes—no special ventilation is needed in the welding room.

Solar Flux Complies with Army Air Force Specification No. 11314
and Navy Department Specification No. 51F3a

Try Solar Flux At Our Expense. See For Yourself How Easily It Can Be Applied. How It Improves Welding — How Much Time It Saves.

Manufactured by

SOLAR AIRCRAFT COMPANY

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VICTOR EQUIPMENT COMPANY

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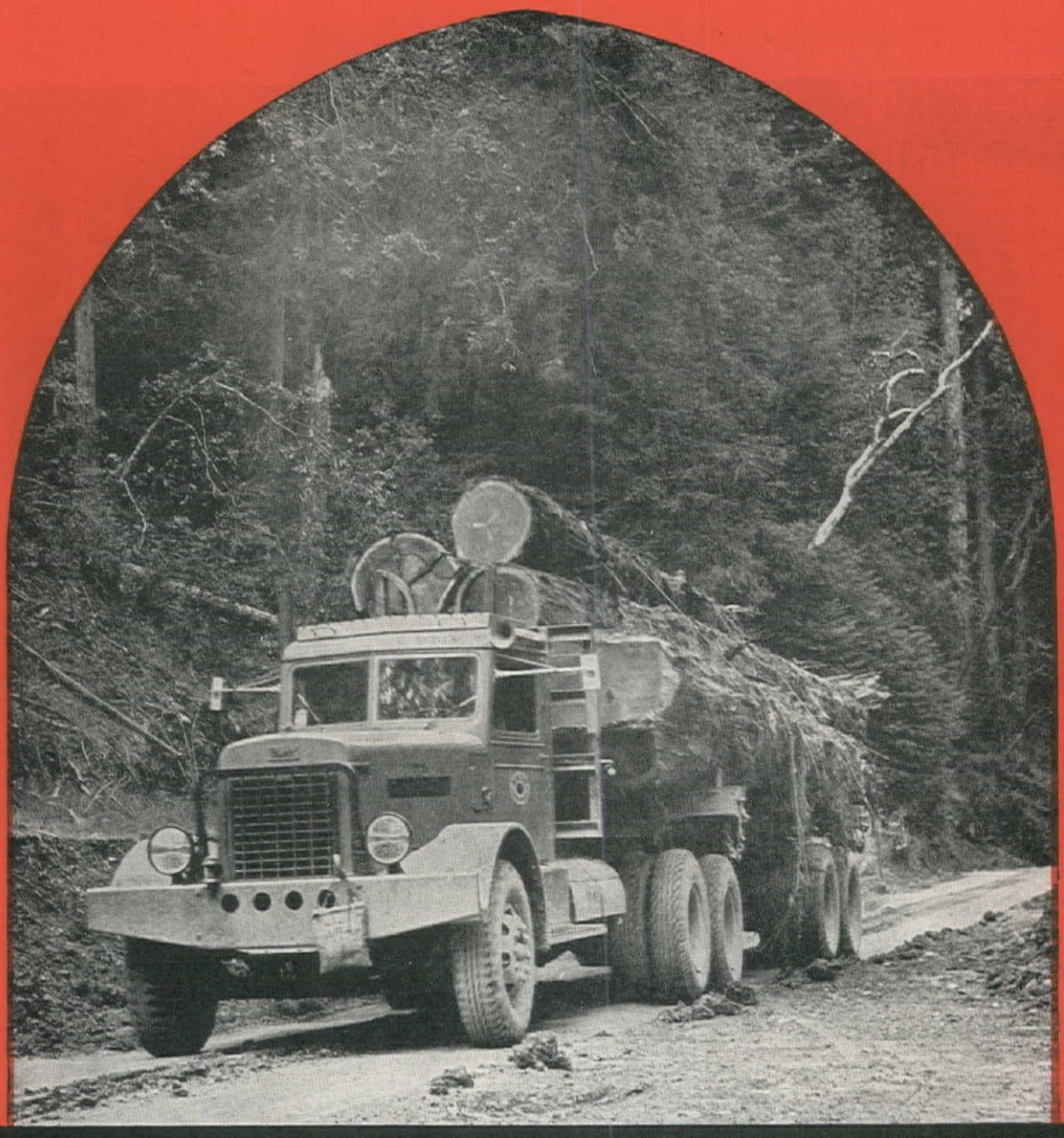

PETERBILTS BRING OUT THE REDWOOD!

In the redwood timberlands of Mendocino County, California, there seem to be just two directions—straight up and straight down. Added to the tendency to the perpendicular, loggers must contend with fifty inches of rainfall per year, which makes many a logging operation a summer show running from May to November.

The Sage Land & Lumber Co. of Willits have such an operation on Two Rock Creek. It's strictly a cat to truck side job. The haul from landing to the mill is 14 miles, 8 of which is adverse grade coming out of the canyon. Using three Diesel powered PETERBILT TRUCKS, they are hauling out 70M' per day minimum.

When you are confronted with a short season and adverse grades, that's when you want PETERBILT LOGGING TRUCKS to bring out the most footage in the shortest possible time.

Peterbilt Motors Company

107th AVENUE AND MacARTHUR BOULEVARD · OAKLAND · CALIFORNIA

Train Apprentices Right with faster-working SKILSAW

... the way they do in Cleveland, Ohio

Photographs from the Cleveland PRESS

● Apprentices learn modern building methods quicker . . . become productive for you at once when you train them with SKILSAW right from the start. One apprentice with a SKILSAW can keep 6 veteran carpenters busy laying-in and nailing. Ask your distributor to show you the many ways to save time and money with SKILSAW on every cut in construction work.

SKILSAW, INC.
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PORTABLE ELECTRIC

SKILTOOLS

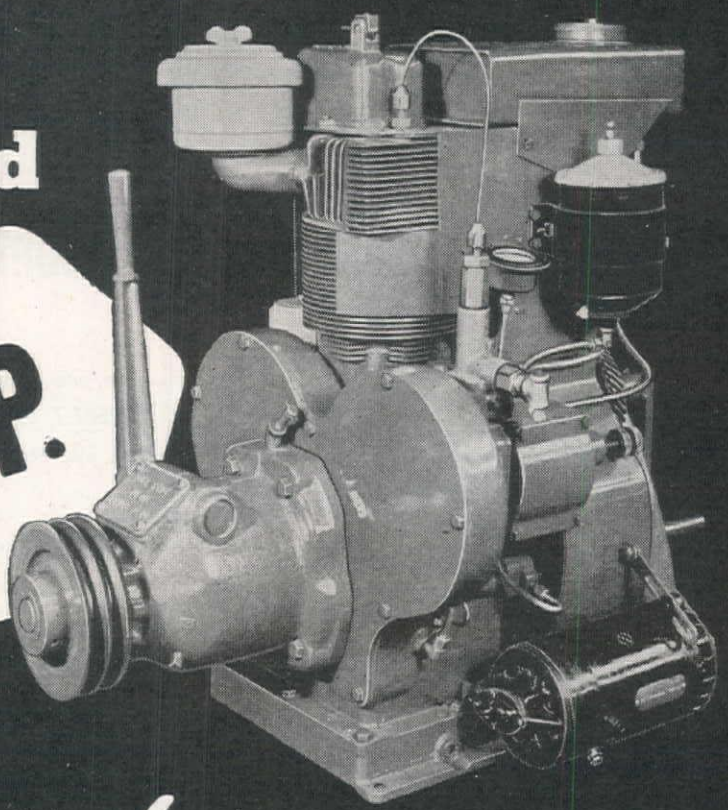
MADE BY SKILSAW, INC.

THESE MARION DISTRIBUTORS WANT TO HELP YOU SOLVE YOUR MATERIAL HANDLING PROBLEMS.

Edward R. Bacon Company, Folsom at 17th Street, San Francisco 10, Calif.; The Marion Steam Shovel Company, 571 Howard Street, San Francisco 5, Calif.; Joseph O. Reed, The Marion Steam Shovel Company, 603 Terminal Sales Bldg., Portland 5, Ore.; Star Machinery Co., 1741 First Ave., South, Seattle 4, Wash.; Shaw Sales & Service Co., 5100 Anaheim Telegraph Road, Los Angeles, Calif.; H. H. Nielson, 902 Boston Bldg., Salt Lake City, Utah.

MEET THE BANTAMWEIGHT OF THE HEAVYWEIGHTS!

The New Air-Cooled 3¾ H.P. Sheppard DIESEL



For the first time, Diesel economy and dependability are available in a small engine.

The new Model 14 Sheppard Diesel is not only the smallest Diesel (both in size and H.P. rating) ever built for commercial use... but it's also the *only* stationary Diesel that is *air-cooled.*

This absence of a liquid cooling system reduces the size and weight of the unit... and, more important, the time required for servicing and maintenance.

Overall the engine stands 28½" high, 20¾" wide, 22½" long with crank removed. It is a single cylinder, 4-cycle Diesel... developing 3¾ continuous horsepower at 1800 R.P.M. Standard equipment includes both hand and 12-volt electric starting. The engine—including power take-off and clutch—is complete, ready to operate, when shipped from the factory.

An indication of its economical operation is its fuel tank—it holds 9/10 of a gallon!

The Sheppard Model 14 is ideal for powering communication systems, auxiliary or standby lighting plants, pumps, conveyors and other power-driven equipment that requires a steady, dependable power source.

If you need a small engine you can install and forget—the new 3¾ H.P. air-cooled Sheppard Diesel is the one to remember. For complete information about this revolutionary new engine—mail the coupon today.

Available direct-connected to a 2 KW generator.

POWER UNITS, 3¾ to 56 HP • GENERATING SETS, 2 to 36 KW

R. H. Sheppard Company
133 Middle Street, Hanover, Pa.

Please send complete information about the new air-cooled Sheppard Diesel Power Unit ☐ Generating Set ☐.

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DIESEL'S THE POWER... Sheppard's THE DIESEL!

QUICK QUIZ

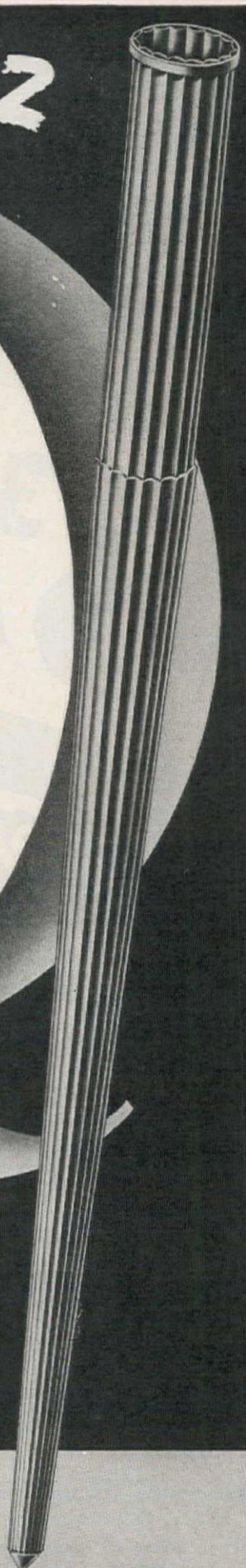
FOR

Cost Conscious Contractors

1 *What steel foundation pile is noted for its exclusive FLUTED, TAPERED design that makes driving with average job equipment possible and profitable?*

2 *What steel foundation pile has a special EXTENDIBLE feature permitting quick and simple field extensions with either uniform or tapered sections?*

3 *What steel foundation pile combines these two cost-cutting, labor-saving benefits with a HOLLOW, TUBULAR construction that makes top-to-toe inspection quick and thorough?*



THE RIGHT ANSWER

Monotubes... enthusiastically favored by job experienced engineers and contractors for cast-in-place foundations for buildings, bridges, airports, highways and marine construction. Available in gauge, size and taper to meet requirements of varying soil conditions. For catalog or engineering aid, write The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

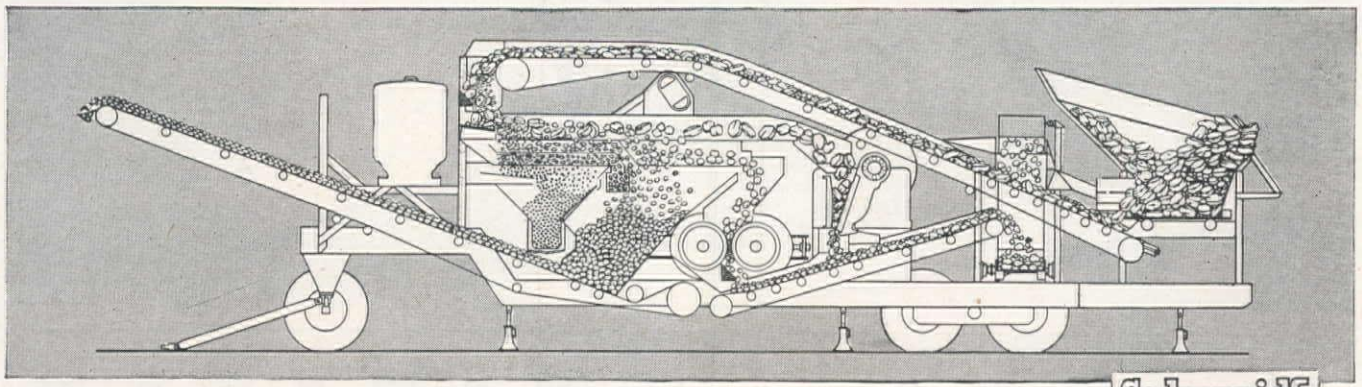
Monotube Tapered Piles

the new Cedarapids junior tandem

Get a copy of the brand new bulletin describing Iowa's newest portable straightline crushing plant, and you'll see why Junior Tandems are already setting records for high production at very low cost. Look how the material flows in a steady stream from the feeder through the plant taking full advantage of the high capacity of each unit with no waste motion. You never saw so much built-in flexibility arranged so effectively. Chip attachment and sand eliminator can be used as desired. Hopper and feeder are interchangeable with swivel feed conveyor to fit different loading conditions. Horizontal vibrating screen assures greater capacity, closer grading, higher efficiency and requires less head room. Choice of 10″ x 24″ or 10″ x 36″ roller bearing jaw crusher. V-belts and universal drives eliminate chains and sprockets. Fast, easy set-up and takedown minimize lost time between jobs. No belts to put on and take off. No drives to connect. Conveyors swing easily into position. These are only a few of the many advantages that give the Junior Tandem such high capacity and such low operating and maintenance costs.

See your nearest Cedarapids distributor right away for full details.

Iowa Manufacturing Company, Cedar Rapids, Iowa



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Built by IOWA

THE IOWA LINE *of Material Handling Equipment is Distributed by*

HOWARD-COOPER CORP.
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ARIZONA-CEDAR RAPIDS CO.
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R. L. HARRISON CO., INC.
Albuquerque, New Mexico

SIERRA MACHINERY CO.
Reno, Nevada

STEEL GOES UP F-A-S-T-E-R

WITH A MICHIGAN MOBILE CRANE....

To "make time" on steel-setting jobs you need a crane that can ease cumbersome girders and structural sections into position with speed, accuracy and safety. . . MICHIGAN Mobile CRANES are outstanding for operating ease, stability for handling heavy loads with maximum safety, truck mobility, and many other profit-earning features . . . . Construction activity is due to greatly increase in the near future—have ***you*** modern, cost-cutting equipment which will enable you to ***profitably*** handle ***your*** share? It will pay you to seriously consider MICHIGAN Mobile CRANES and SHOVELS—available in 6 to 12 ton and 3/8 and 1/2 yard capacities, convertible to all standard attachments. . . . Get the facts—write for Bulletin W-26.

MICHIGAN

POWER SHOVEL COMPANY

BENTON HARBOR, MICHIGAN

78,000 GALLONS PER MINUTE

The five neat, space saving G-E synchronous motors in this chemical-plant pumping station have set a record for dependable, low-cost service.

. . . with motors that have plenty of style!

The plant engineers who laid out this new Kentucky pumping station wanted motors with two distinct features—dependable, economical operation and sleek, modern appearance.

Municipalities aren't the only ones who must depend completely on reliable, large-scale water-pumping service. Many process industries rely on a continuous supply of water to keep output at peak level. This industrial plant, for example, required a flow of 78,000 gpm, pumped against a head of 180 feet. Most of the water was to be used for chemical processing on a continuous basis. Any lengthy interruption in service would jam production disastrously. In addition to getting the utmost reliability, the plant engineers wanted motors that would look as well as they behaved.

We were asked to help in preparing motor specifications. The heavy pumping load involved, plus the need for power-factor correction, pointed to the use of synchronous motors. G-E engineers recommended a 900-hp, 900-rpm, hollow-shaft synchronous motor for each of the five pumps. To meet an external thrust of 40,000 lb, two special angular-contact, ball-type thrust bearings were furnished with each motor. An important safety feature was the addition of non-reverse ratchets to prevent reverse rotation of the pumps, caused by turbine action, when the motors were shut down.

MOTORS GIVE TOP PERFORMANCE

Two years after installation, we checked on the motors' performance. During this period, there were no shutdowns for major repairs. Very little regular maintenance had been required. Eye appeal of the installation was strong, too. The motor lines were neat and uncluttered, making the pumping station's general appearance highly attractive.

Here is a typical example of G-E engineering experience teamed up with G-E design techniques to produce synchronous motors that meet the highest standards of appearance and performance. If your pumping requirements call for an unusual combination of motor characteristics, you will do well to consider G-E synchronous motors. Ask your nearest office for complete details. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

750-256-8030

SYNCHRONOUS MOTORS

THIS MULTIFOOTE 34-E

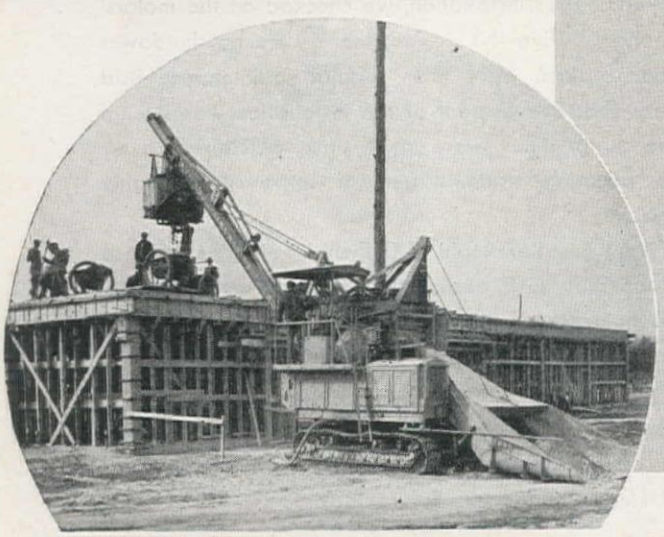
traveled 120 miles in one season

120 Miles traveled during the 1945 season! That's the record hung up by one of the MultiFoote 34-E's owned by the Bontrager Construction Company, Elkhart, Indiana.

Think what 120 miles traveled on paving jobs means in terms of paver dependability and profit possibilities on your contracts! This is *working* mileage with a machine that can handle the heaviest paving schedules, season after season, at lowest operating and maintenance costs and without expensive delays for overhaul and repairs.

Let's take a closer look at the rugged, simple MultiFoote traveling mechanism: The drive is from the single, special chrome molybdenum steel main shaft. Gears are fully enclosed and run in oil... giving two speeds—forward and reverse. Crawlers are long and wide for low ground bearing pressure, and are tapered at discharge end for plenty of bucket clearance when boom is swung. Crawler rollers are solid chilled steel—on 3-inch, high-carbon steel shafts that are mounted directly in the crawler side frame to provide maximum strength and simplicity. Extra-strength treads wear longer, will not "dish in."

Add the many other MultiFoote advantages that have put more of them on the world's jobs than any other paver, and you have the ideal machine for a big-profit 1946. Call or write your MultiFoote distributor for complete information.



THE FOOTE COMPANY, Inc., 1940 State St., Nunda, N. Y.

MultiFoote Elevating Boom

With the MultiFoote Elevating Boom, you can put full loads 18 feet above ground level—get those building and construction jobs that mean extra profits with your MultiFoote 34-E.

MULTIFOOTE

CONCRETE PAVERS

Three Army-Navy "E" Awards for The Foote Company!

Smith Booth Usher Co.
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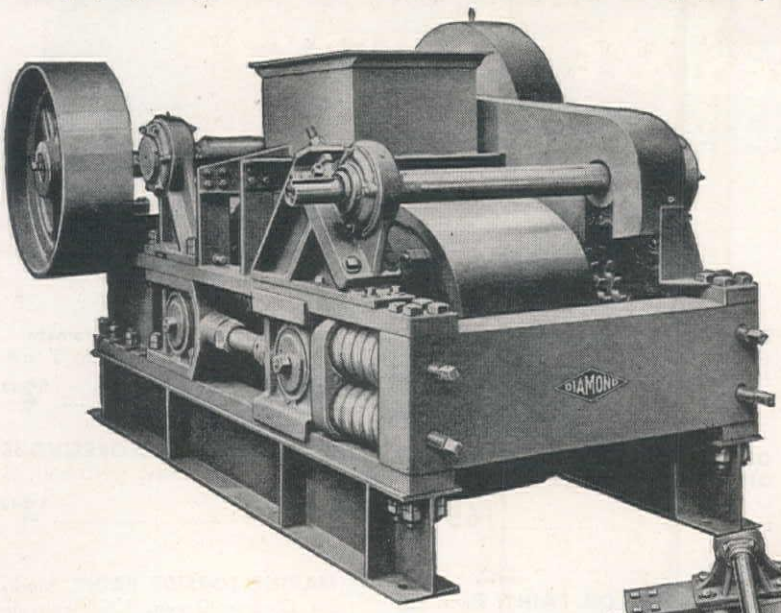
Lively Equipment Co.
P. O. Box 784
Albuquerque, N. Mex.

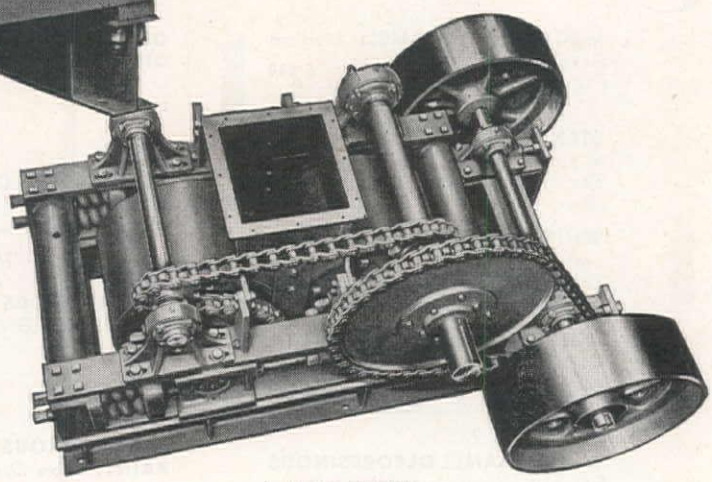
The Lang Company
267 West First St.
Salt Lake City 9, Utah

Feenaughty Machinery Co.
715 N. Division St.
Spokane 2, Washington

For Profitable Secondary Crushing
SELECT THE RUGGED
DIAMOND ROLL CRUSHER



THERE'S NOTHING TOUGHER THAN A DIAMOND



TOP VIEW

Here's the "NO SHUT-DOWN" Staying Power You Want— Ask any DIAMOND OWNER

With a DIAMOND Roll Crusher you can often double or triple your net profits on finely crushed aggregate. DIAMOND Roll Crushers are brutes for punishment—they stay on the job and roll out high tonnage month after month, year after year. There isn't a weak spot in the whole crusher—every part is extra strong. Each size has ample margin over its rated capacity. We repeat—ask any DIAMOND Owner! Six sizes roller bearing—four sizes plain bearing. Ask your DIAMOND Dealer, or write us for Bulletin D-45C.

OTHER DIAMOND PRODUCTS

- Portable Crushing & Screening Plants
- Portable Primary Crushing Plants
- Portable Screening & Washing Plants
- "DUAL-ACTION" Crushers
- Jaw Crushers
- Hammermills
- Conveyors
- Vibrating Screens
- Scalping Screens
- Drag Washers
- Feeders
- Bins—Hoppers
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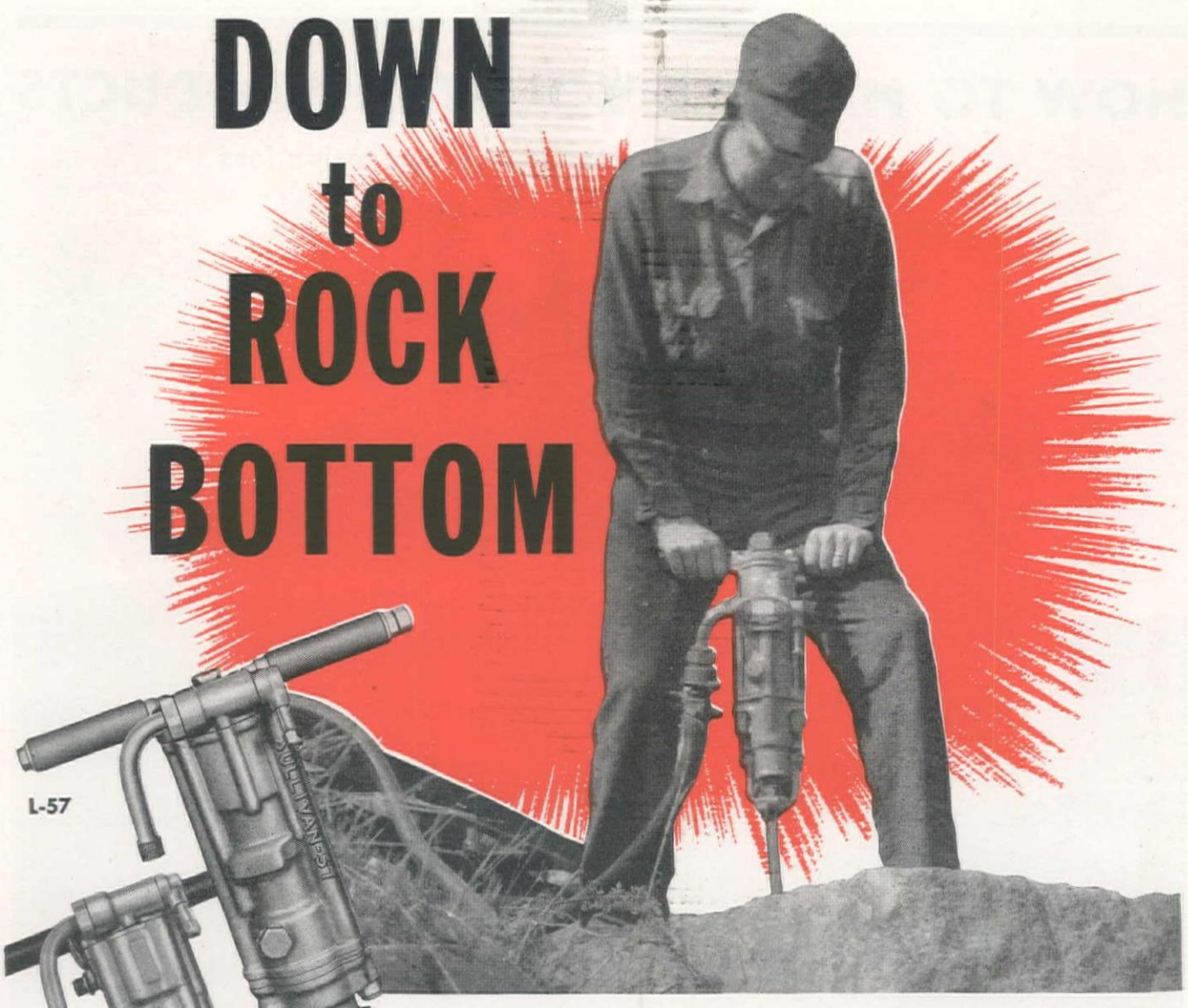
DOWN to ROCK BOTTOM



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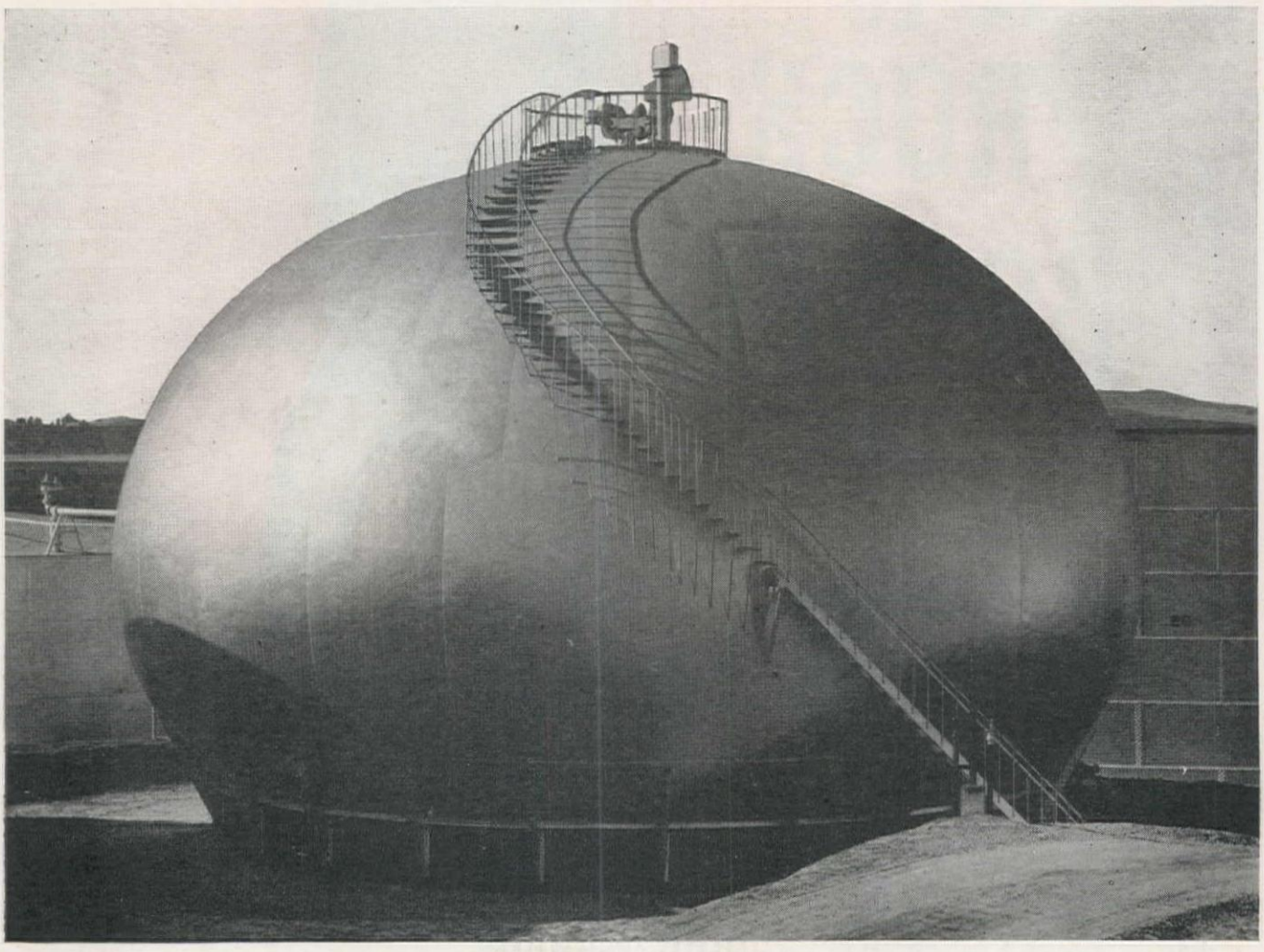

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WESTERN CONSTRUCTION NEWS
WITH WHICH IS CONSOLIDATED WESTERN HIGHWAYS BUILDER
February, 1946 Vol. 21, No. 2

Start Now, Mr. Truman!!

PRESIDENT TRUMAN was warmly supported by this magazine in two editorials written soon after his elevation into office. We were criticized in some quarters for such outright support, but we held to the hope that he'd remedy the deplorable situation left him by his power-mad predecessor.

Ten months have gone by now, and conditions have steadily worsened. With regret we are compelled to call attention to a great variety of ills which Mr. Truman has either failed to correct or has deliberately fostered. Today we call attention; if by the end of a year in office, he has made no strong moves to correct them, this magazine must join the daily growing ranks of publications dedicated to seeing him defeated personally in 1948, and in effect at the Congressional election of 1946. The country has been brought frighteningly near to ruin, to bankruptcy, to Russian fascism, and to complete moral dissolution.

Labor strife

Having been elected with the advice and consent of Russian-born Sidney Hillman, Mr. Truman obviously is averse to doing anything which might hamper Labor (with a capital L, referring to the bigshots of organized labor and not to the poor duped laboring man) from fostering the Russian-inspired program of fomenting strife, unrest, and discord. He is obviously parroting someone else when he publicly announces that wages can go up and prices down at one and the same time. Any babe old enough to count his fingers and toes knows this to be a physical impossibility.

By supporting the utterly unjust Wagner labor law, which permits one side of a dispute to act with violence, while prohibiting such action to the other, and failing to offer constructive suggestions for remedial action against unions which break contracts at will, and prevent thousands of willing workers from earning their daily bread, Mr. Truman has led, or at least permitted the nation to roll, to the very brink of disaster.

He fails to realize, apparently, and so do most of the men on the picket lines (though not the communist-inspired leadership, you may safely bet) that they strike not against General Motors, or U. S. Steel, or the shipyards, but against reconversion, against the rehabilitation of a war-torn nation, against prosperity. By the time this editorial reaches the reader, the steel strike may be ended. If it is not, the nation is in for the greatest depression the world has ever seen, steel being the very foundation and sinew of our growth and strength. When no steel is produced, construction halts, no autos or household furnishings are made, transportation, communication, farming, and all industry soon must cease.

As one man recently expressed it, "Roosevelt would have done something—it might have been wrong, but he'd have done **something**—Truman just sits there!"

OPA

Surely no one outside the employed personnel of the Office of Price Administration wants to see that organization continued—that is, no one else but Mr. Truman. In his delayed State-of-the-Nation speech, he advocated its extension, in spite of the fact that because of its benevolent operations butter, sugar, rentals, many steel and ceramic products, stockings, meat, men's clothing, and a host of other products are almost entirely gone from the market.

To cap the climax, OPA has effectively delayed an absolutely essential fare increase for San Francisco street car lines. As discussed here before, these lines are in the poorest state of repair and most dangerous of any comparable system in the country. Yet the sincere effort of the city to correct these conditions by raising fares to the level of those in practically every other city, is hampered and may even be stopped by an agency whose interference in such matters was never once contemplated by the Congress.

States' rights

Both Harold Ickes and David Lilienthal, each a Roosevelt appointee held over by Mr. Truman, have said they hope for radical changes in the form of government in the United States, and each, in his own way, has taken steps to destroy the old and proven system.

Lilienthal would substitute for the 48 states, nine or ten regional Authorities, in which of course he would be czar, and in which no one could use water, electricity, or land, without the express permission of a board of directors, responsible only loosely even to Congress. Personal freedom would be unknown.

And Ickes—the list is too long! The use of public power to destroy private initiative in the electrical field, charging even cost of plant to the taxpayers, and requiring only a return of 3 per cent annually on the investment; the limitation of land use to 160 acres, rendering it impossible to farm large areas efficiently, and forever limiting the anticipated worldly progress of anyone who enters farming as a business; and now, an attack against every state in the Union having ocean, lake, or navigable river waterfront, by claiming that all submerged land is federally, and not state-owned, and that all reclaimed land is an encroachment on federal property. Huge sections of immensely valuable land in Seattle, San Francisco, Los Angeles, Boston, New Orleans, and countless other cities would thus be owned fraudulently and peopled by trespassers. This is one of the most destructive of Mr. Ickes' curmudgeon attempts to destroy American custom, solidarity, and prosperity.

Foreign affairs

True, Mr. Truman entered office with a heritage of the most ineptly handled foreign policy in our long history of bungling. His predecessor, we now learn, had given a free hand to Russia in Europe and donated to her the Kurile Islands, a dagger at the heart of America's Aleutian defenses; laughingly agreed with Mr. Churchill to make the idealistic Atlantic Charter a document of "double talk"; and plunged the country into what was actually a "shooting war" while piously proclaiming for purposes of election that American boys would never be sent into a foreign war.

But in spite of this inexcusably corrupt background, Mr. Truman could have established a strong front against the craven demands of Great Britain for charity, the appeasement of Russia, and the continuation of a "Good Neighbor Policy" which seeks to buy with money what only sincerity of intention and "a good heart" can secure. But he didn't.

Well, so what?

That has been the attitude of American people for a long time—"so what?" *Western Construction News* is but one voice, but it is, as stated above, representative of a swiftly growing section of the nation which looked to Mr. Truman at the time of his inauguration with hope and trust and confidence. We're still willing to "go along" with him if he will **do something,** but the time is too short, the urgency too great, for further dilly-dallying and playing politics, either nationally or internationally. Mr. Truman and the whole people must face the world and themselves with strength, determination, honesty, and courage.

Mr. Truman, you've got to start today!!

Making little ones out of *big* ones

• Key to the successful and profitable operation of any plant is the crusher itself . . . reason enough for the painstaking engineering behind every Austin-Western jaw and roll model.

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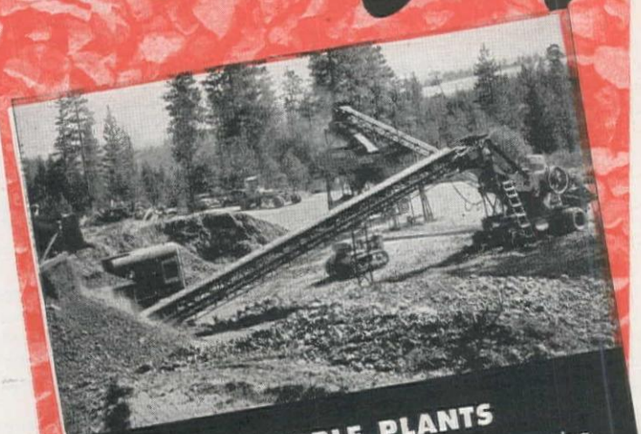

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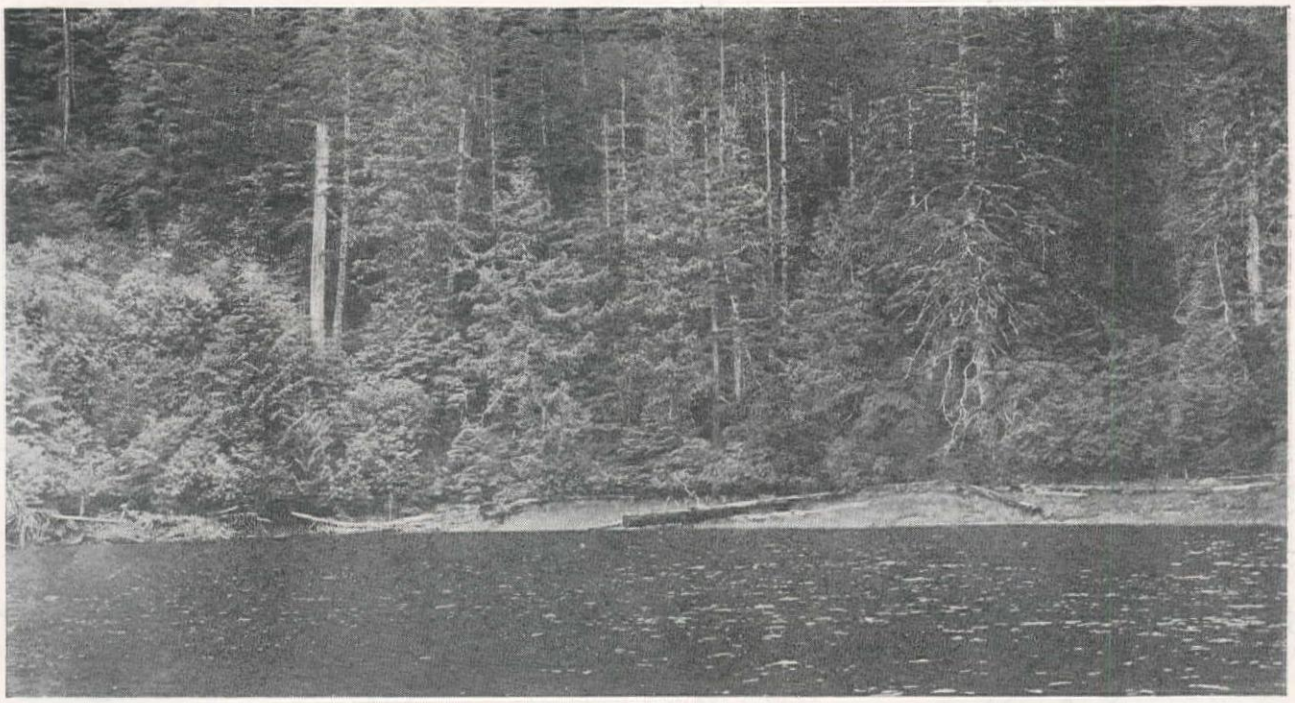
WESTERN CONSTRUCTION NEWS
FEBRUARY • 1946



THICKLY WOODED Alaskan beach is site of new Ketchikan power house and dock being installed at Beaver Falls Creek.

Ketchikan Power—
Deep Tunnel Provides Winter Flow

Alaska city to supplement its hydroelectric plant with two additional generators, and to secure water to operate them after the seasonal freeze-up by driving a 1,000-ft. diversion tunnel which will hole through 70 ft. below surface of Upper Silvis Lake

By AL JACOBSON
Seattle, Washington

DESPITE A SHORTAGE of skilled labor, treacherous "muskeg" and severe, early winter weather, the auxiliary municipal power plant under construction at Ketchikan, Alaska, is more than half finished. The project will generate electricity from the waters of a small drainage area which has an annual rainfall of about 200 in., natural storage being provided by Upper and Lower Silvis lakes.

Built to supplement the present electrical generating system, particularly during the winter months when the run-off of the streams is at a minimum and water sources are frozen, the new plant is expected to more than take care of the increased demand for power. It will do away with curtailing of street lighting, the reduction of industrial power loads, and make it unnecessary to ever again reconvert from electrical to oil home heating in the city of Ketchikan, as was the case during the war.

In addition to compensating for the seasonal variation of the water supply for power, the need for such a plant has been made increasingly pressing due to greater demands resulting from growth of the community, enlargement of 17th Naval district headquarters of the Coast Guard, and wider use of electricity for home heating.

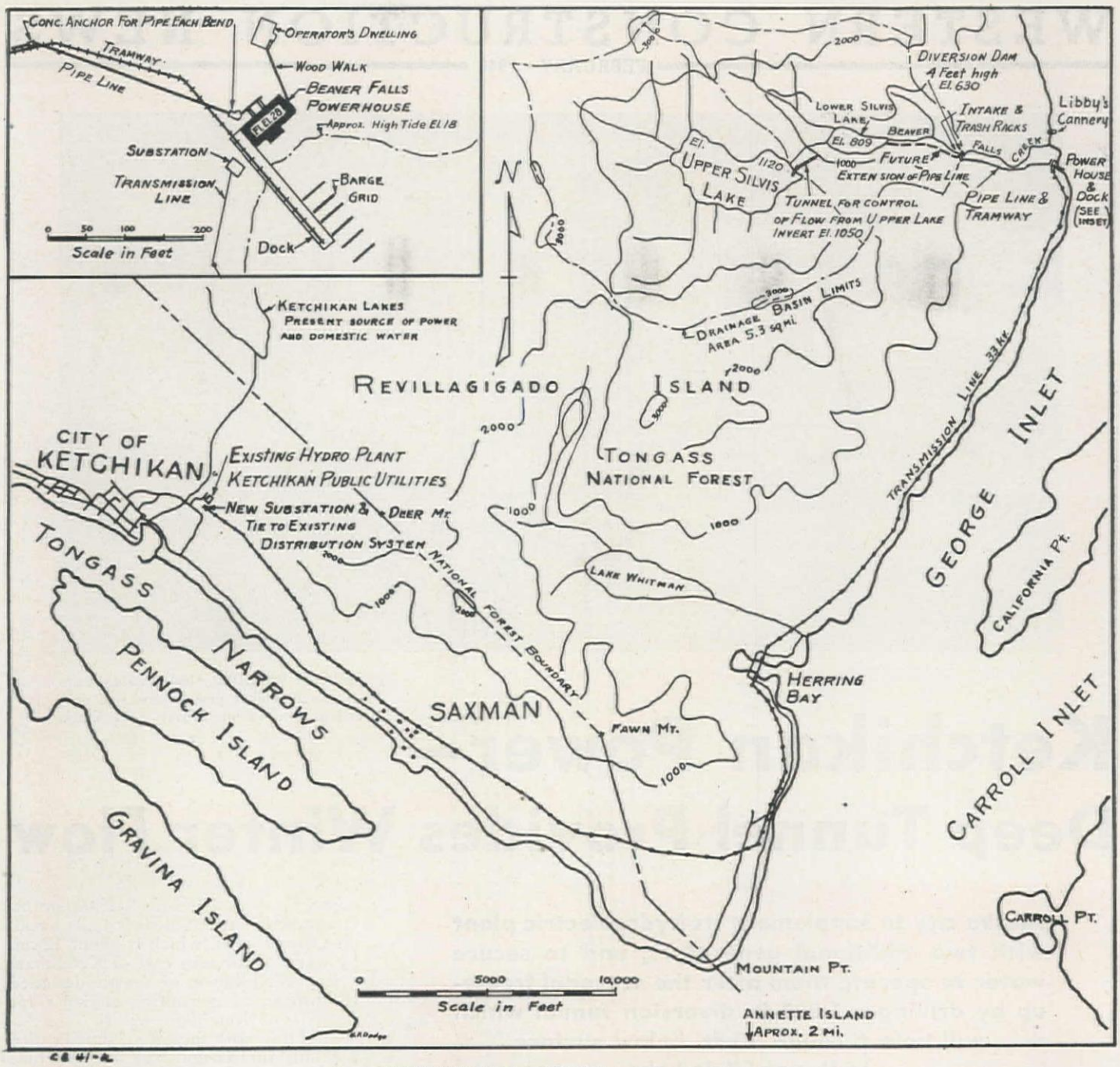
Construction contract

The completed project will cost $499,000 and is sponsored by the city of Ketchikan (Ketchikan Public Utilities), with participation of the Federal Works Agency to the extent of a $125,000 grant. It will be located at Beaver Falls Creek on George Inlet, which is about 12 mi. by water (7 air mi.) east of Ketchikan.

Roy W. Johnson of Seattle designed the project as consulting engineer for the city of Ketchikan. At the conclusion of this work the City Council called for bids for its construction. All bids submitted were in excess of the money available for the job, making it necessary to reject them. An attempt was then made by the city to negotiate satisfactory contracts with the original bidders, using the funds available. This was unsuccessful and Johnson was asked to submit figures for the work. His proposal, showing a substantial saving, was accepted and a satisfactory contract agreed upon.

The contract as finally negotiated includes: all general construction work called for by the original bids; transporting generators from the Cedar Falls plant of the Seattle City Light department; rebuilding and installing the generators in the new plant; furnishing about $26,000 worth of electrical equipment; and supplying all field engineering, details and maps.

Present construction includes the following facilities: 4,200 lin. ft. of 30-in. penstock, and intake trashracks; two 1,500-kw., 2,300-volt generators removed



VICINITY MAP of Ketchikan power project, with outline of watershed. Small area is equalized by extremely heavy rainfall.

from Seattle's Cedar Falls plant, to be installed in the new concrete power house at Beaver Falls; General Electric Metalclad switch gear and air breakers; 1,500 kva, 3-phase transformers in delta connection for stepping the current up to 33,000 volts in the transmission lines (higher than usual voltage for the length of the line is being used to provide for future extension to other generating sites); 11.5 mi. of wood pole transmission lines with conductors arranged for triangular spacing; a new sub-station at the Ketchikan power house (where 4,450-kva generating capacity is now installed); a five-room dwelling for the operator at the Beaver Falls plant; and a 1,000-ft. tunnel which will tap Upper Silvis lake for the purpose of regulating the flow.

Electrical facilities

The approximately 11.5 mi. of 33-kv transmission lines are being constructed following as nearly as possible the beach line of Revillagigedo Island from Beaver Falls to the existing municipal plant at Ketchikan. The line is built on native Alaska red and yellow cedar poles with creosoted fir arms, pole topping, and 45-kv pin insulators arranged for 5-ft. triangular spacing. No. 4 hand drawn copper wire is used and a pair of No. 10 copperweld telephone wires are placed 10 ft. below the high line. The transmission line capacity is at least 10,000 kva. The average span is approximately 250 ft., the maximum approximately 650 ft.

Each generator was originally rated 1,500 kw., at a 40-deg. C. temperature rise but has been continuously operated at 1,800 kva without overheating in the former setting at the Seattle Cedar Falls plant. They were originally designed and built in 1903 and 1904 by the Bullock Electric Manufacturing Co., which was later merged with Allis-Chalmers. The original turbines were built by the Pelton Waterwheel Co. The runners were changed to the Dobble type about 1916 or 1918 and had two 3-in. jets on each, or a total of four jets and two runners per generator. The design head was 500 ft. and operated on 550 ft. The expected use of 800 ft. head in the new location required redesign by the contractor. The pitch diameter of the runners was altered from 42 in. to 54 in. and the setting changed in order to have one 4-in. jet per runner. Fortunately, the cases were large enough to take the larger size. The number of buckets remained the same, at 17.

Diversion works

The diversion dam will be of concrete, anchored into the granite creek bed by steel dowels. The dam is only about 4

ft. high, with a standard OG section and a 6-in. sluice pipe to pass heavy debris that collects in front of the trash-racks.

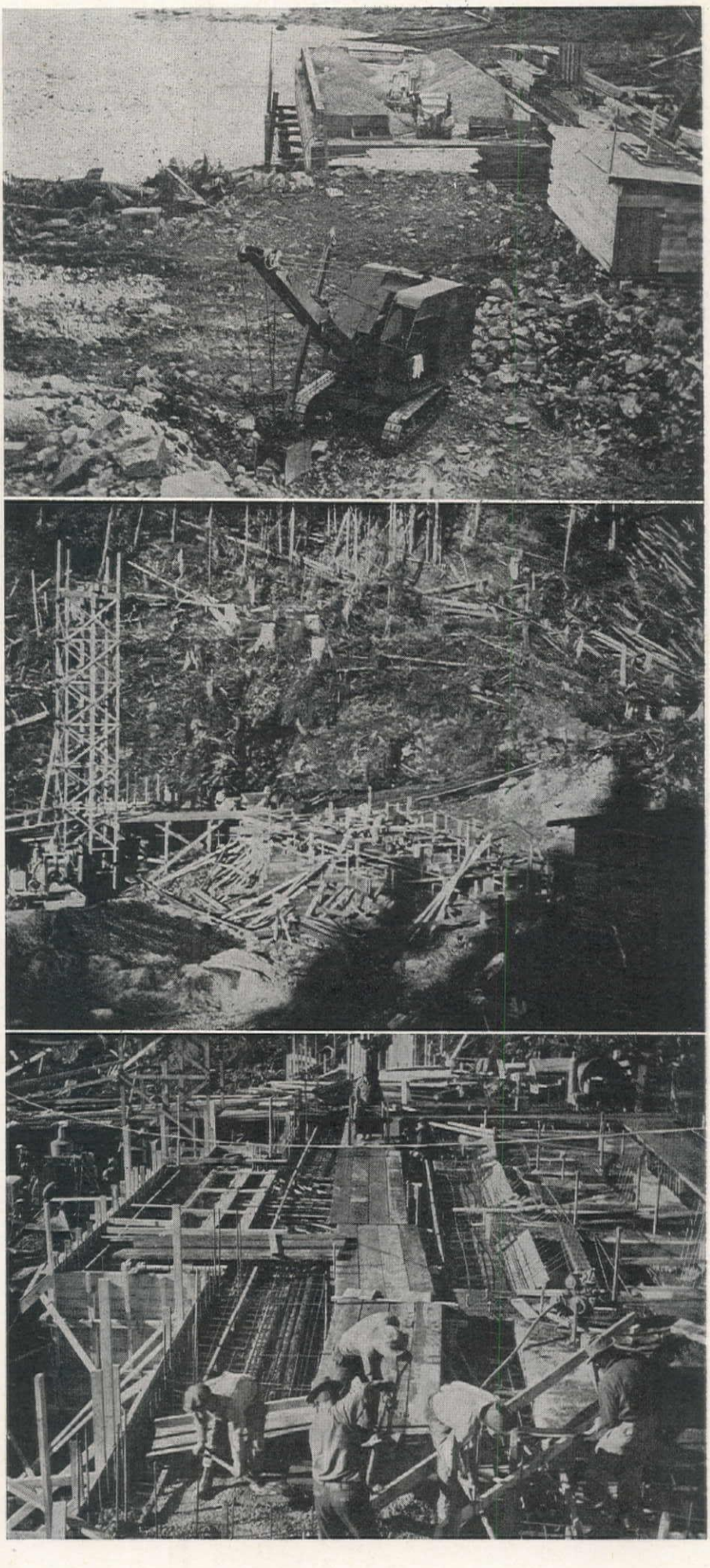
The pipeline is of welded steel of varying thickness, depending upon the head. It is manufactured by the Steel Tank & Pipe Co. of Portland, Ore., and is shipped by rail to Seattle and thence by barge to the job site. Its present length is 4,200 ft., with provision for future extension to approximately 7,400 ft. The present head is 630 ft., with a future head of 800 ft. The pipe has a diameter of 28 in. for the first 2,100 ft. and a 30-in. diameter for the remaining distance. The header at the powerhouse has four 18-in. connecting pipes which carry the water to the gate valves and nozzles. There will be one nozzle for each Dobble runner and two runners side by side will drive each generator. Friction losses are estimated to be $38 \frac{V^2}{2G}$ in the main penstock installation where V is the velocity in the 30-in. pipes, and $0.69 \frac{V^2}{2G}$ in each connecting pipe and nozzle where V is the velocity in the 18-in. connecting pipes.

The pipeline, to be placed in the spring, is constructed with Dresser couplings and a concrete anchor at each bend. Anchors will be placed at each connecting pipe to resist the thrust of the jet. No special clips or lugs are required for anchoring except on the connecting pipes at the power house, where otherwise the thrust would be restrained entirely by bond between the pipe and the concrete. The pipe is supported partly on timber bents and is partly laid in rock cut ditch. Handling from the tram cars will be by gin pole or A-frame, a section at a time being welded in place. The terrain is especially steep, with grades up to 70 per cent along the pipes. The pipe is full fillet welded both inside and outside with 1.5-in. lap joint.

Air pressure will be introduced into the space of the lap for testing of field joints. Each section of pipe is hydraulically tested in the shop before installation. Flanged outlets for air relief or vacuum relief are placed at intervals along the line. No pressure relief valves are used. Two-inch threaded outlets are placed at convenient intervals to allow entrance of welding cables, air lines, electric light cords or for pouring in hot coating materials to patch-coat the weld. These outlets will be plugged when the pipe is complete. All materials for the project are hauled to the site by boat or barge except those for the tunnel, which are flown by plane to Upper and Lower Silvis lakes and then carried to the tunnel or camp.

Access by tramway

A cable operated tramway runs the



POWER HOUSE ERECTION starts with excavation and aggregate dock; next, initial form work; finally, concrete pouring.

full length of the pipeline for construction purposes and it is expected the operators will also use it when going to and from the intake for the purpose of cleaning trashracks. A cable is laid between the tracks and counterweights are attached to keep it tight. This will allow for temperature expansion and stretch due to variable loading. An engine which has a transmission and differential, plus a capstan-like gypsy spool is mounted on one car. The cable passes around the spool a sufficient number of times to obtain the desired traction and then is laid into position between the tracks after the car passes. Due to sharp curves, both horizontally and vertically, difficulty has been encountered in keeping the cable in place. This has been overcome by using hooks.

Another difficulty in connection with transportation and travel was presented by the presence of "muskeg," which is quite prevalent in the area. Because of extremely high precipitation there is practically no top soil over bed rock. Decomposed rock and plant debris are washed into low areas, filling them up with this soggy, peat material known as "muskeg," which is very unstable. A section of the pipeline in crossing a sizable "muskeg" area must be supported on bents of driven piles.

Inter-lake tunnel

The tunnel taps Upper Silvis lake about 70 ft. below the surface in order to regulate the winter storage and flow of the water. During freezing weather or dry periods the surface runoff will not be sufficient to operate the plant. To overcome this, water stored in Upper Silvis lake will be drawn down through the tunnel, which is equipped with a sluice gate control, and below the lower portal allowed to run in the open down the hillside approximately 230 ft. to the lower lake, where it will flow over the ice and into the penstock. A sufficient supply of water can be passed at all times to meet maximum load requirements.

In deciding upon a tunnel to pierce the granite ridge that retains the upper lake, instead of a storage dam, the principal factor considered was cost. It was found that a tunnel would be much cheaper and more easily constructed. This is due principally to the fact that the lake is very deep, with extremely steep side walls. Its area is nearly as large at 100 ft. below its surface as at its natural level. This condition is characteristic of lakes in southeastern Alaska.

The tunnel section is 5 by 7 ft., through solid granite, with a 5 by 5-ft. riser 70 ft. high to accommodate the gate operating stem. The gate is a Chapman sluice gate designed for 100 ft. of static head seating pressure with a 36 by 48-in. opening and has a 3.5-in. stem from a hand operated floor stand at the ground level. The tunnel outlet is at a site suitable for constructing a future penstock down the hill to a power house which could be built on the shore of Lower Silvis lake. Such a plant could utilize the head between the two lakes. About 1,000 kva firm power could be generated at this site.

The tunnel construction is under subcontract to Murray Pond & Deemer of Ketchikan and Seattle. They have a small camp on the shore of Lower Silvis lake near which is stationed the gasoline driven compressor. The bore is being driven from the lower portal. One shift of men is employed and they average a daily round of about 5 ft. The breakthrough into the lake will be the most critical part of the bore, but accurate soundings to the vertical rock face as well as exploratory drilling ahead of the main face is expected to solve the problem and prevent any accidents. It is hoped that seepage through fault planes will not present a hazard too difficult to overcome. In the first 600 ft. of tunnel fault planes have not required lining or cribbing.

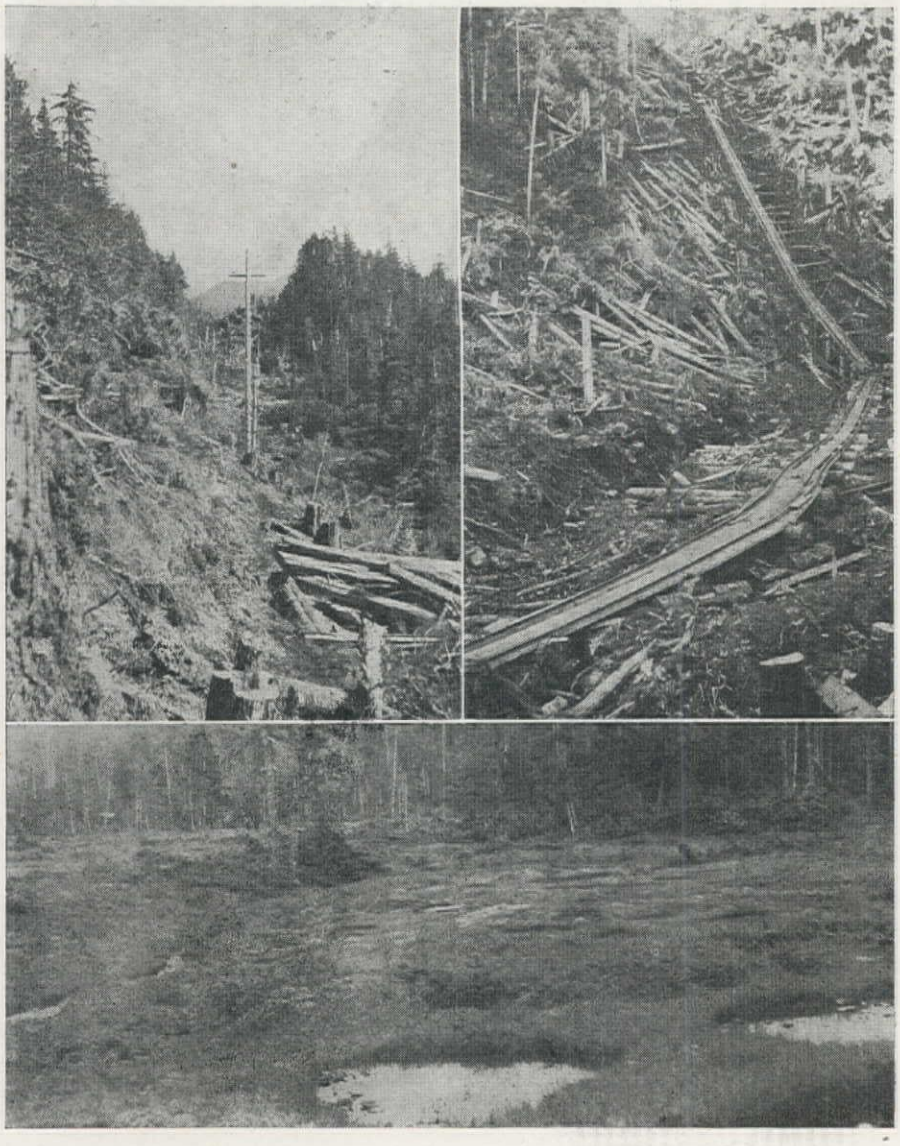
As the final wall is approached, long drill holes will be advanced into the face and heavily loaded, so that the final blast will open the drift. Inasmuch as water pressure at 70-ft. depth will prevent expansion in that direction, all the broken material will fall back into the tunnel.

A sump constructed in the tunnel floor a short distance back from the breakthrough is expected to receive much if not all the debris carried into the tunnel as a result of the final blast.

Organization.

Work on the project was stopped Nov. 7 and the camp closed on the 20th, due to early and unusually severe winter weather. Transmission line work will continue in order to transport materials to the right of way and distribute them so erection can get under way as soon as snow is off the ground in the spring. This is expected to be in April. Approximately 50 per cent of the project work remains to be done and will be completed at that time. The contractor will continue to accept applications for employment from skilled and common labor when work is resumed.

All work on the project has been under the direct supervision of Roy W. Johnson. E. F. Dodge, Seattle, is engineer in charge of purchasing and inspection and electrical design. Chris Spokely is construction superintendent. The city of Ketchikan is represented by Curt Howard, project supervisor. The Federal Works Agency is represented in Ketchikan by William Salt, construction engineer.



TRANSMISSION LINE route clearing, top left; tramway and location of penstock, which will parallel it, top right. At bottom is typical muskeg, across which it is necessary to support pipe on piles.

Monolithic Irrigation Pipe

Turlock Irrigation District uses sub-surface pipe to distribute water economically, by using equipment designed to keep the cost of a 30-in. monolithic concrete pipe equal to a lined open ditch, and with the marked advantage of saving 0.6 acre per 1,000 ft. of line for useful crops

THE TURLOCK Irrigation District, one of the oldest and most efficiently managed systems in California, has developed the use and construction of monolithic concrete pipe for water distribution so that a 30-in. pipe line can be installed for the same price as a 15-sec. ft., concrete lined, open ditch. R. V. Meikle, Chief Engineer for this District, states that much of the 155,000 acres of land served by the District is Fresno Sandy Loam, requiring for successful irrigation the rapid application of water, that is a large head of water for a short period of time. The average application time is from 15 to 30 minutes per acre.

To meet this condition, the Turlock system has been designed to distribute a uniform irrigation head of 15 sec. ft. to its water users.

The community ditch lines comprising approximately 1,600 miles are designed to deliver a minimum of 15 second feet. The main canal and the laterals have a total length of 250 miles. The capacity of the main canal where it takes out of the Tuolumne River near La Grange is 2,250 second feet. One hundred twenty-five miles of the main system is concrete lined and all concrete lining is two inches thick regardless of size of canal.

Much of the main canal lining is on the levees only and water velocity is about 3½ feet per second. The District follows a practice established by past experience of gradually improving the irrigation system during each interim season as funds are available to finance the work.

Organization

The District was organized in 1887 under the Wright Act, the same year that act was passed to provide means for the land owners of California to bond their holdings for the purpose of establishing irrigation districts. The Wright Act further provides that these districts shall be administered by a Board of Directors elected by the water users. Subsequent amendments passed have augmented the act to enable the districts to develop and distribute electric energy and, in 1928, to organize improvement districts within the parent system by a two-thirds vote of the interested land owners. Originally the carrying charges on these improvements were 7 per cent but the District now carries the bonded indebtedness for a period of 10 years at 4 per cent on deferred payments.

CANAL LININGS of 2½-in. thickness are economical and satisfactory due to the excellent support given by the sandy loam soils inherent to the district and the low velocity maintained in the canal system.

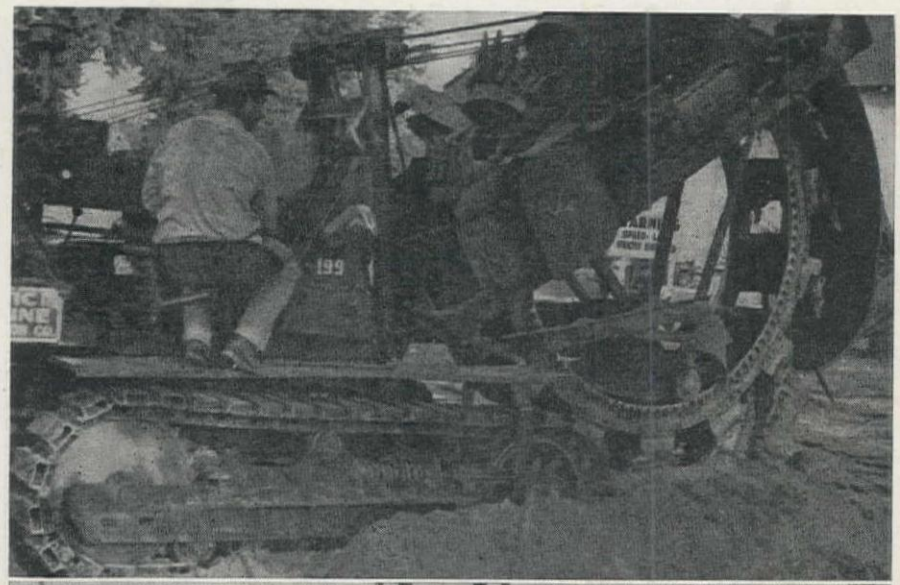
Low water rates

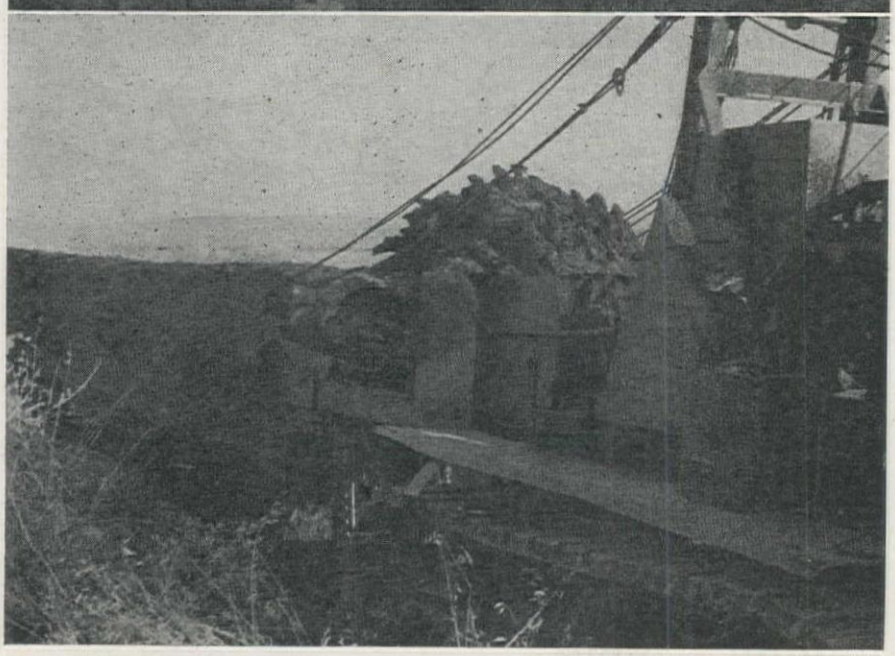
Turlock Irrigation District, through a long period of efficient operation, is now able to furnish water to the land owners for the amazingly low figure of $1 per average acre served by the system. Revenue is collected on the basis of $1 per $100 of land valuation. Land appraisals are conservatively placed between $40 and $125 per acre with the average for the District about $80 per acre. At this rate approximately $140,000 is collected annually for the administration of the Irrigation District.

The District-owned power system is not only a convenient and economical service to the water users, but also is an important factor in controlling the water table in some of the low areas. The power lines cover the district, making it easy to establish electric-driven turbine pumps in wells located in the areas where the rise of ground water has been a problem. In this way the ground water is controlled and held at a safe level and excess water raised to the surface from the wells is returned to the canal system to be re-used in other areas of the District.

Irrigation practice

Any irrigation system imposes a toll on the land it serves in the form of space required for the distribution works, but the monolithic pipe used by the Turlock Irrigation District deprives the land owner of little of his arable land. Where the land slope will allow a flow of 15 cu. ft. per sec. in a 30-in. diameter pipe the monolithic line is used, since the cost is the same as for a 15-sec. ft. concrete-lined open ditch. Where the sub-surface





SPECIAL ROUND-NOSED follower attached to trencher digs semi-circular ditch to be used as outside form of pipe. Machine digs effectively through heavy adobe soil, producing smooth-bottomed trench.

pipe is substituted for open ditch, 0.6 of an acre per 1,000 ft. of line is conserved for productive cultivation. Not only is the underground line permanent but it frees the surface for more advantageous cultivation and equipment movement. Furthermore, the pipe installation offers a capacity to disregard grade within reasonable limits, providing a direct traverse over ridges or swales not afforded by ditches. The economic advantages diminish where the flatter slopes necessitate the use of a 36-in. diameter pipe to carry the customary head, because the larger pipe costs an additional 50c per foot to install. However, much 36-in. diameter pipe is used and some of 42-in. diameter.

Comparative construction cost for the monolithic pipe and concrete lined open ditch for the current contracts are as follows:

30-in. diameter monolithic pipe—$1.55 per lin. ft.

36-in. diameter monolithic pipe—$2.00 per lin. ft.

24-in. bottom width, concrete lined, open ditch—$1.55 per lin. ft.

In spite of the greater cost of the larger pipe, its use allows the planting of an extra row of fruit trees in an orchard that would otherwise be occupied by the sprawling ditch bank. Frequently a weed breeding area, due to its inaccessibility to power cultivation, results in infestation of other areas by water transportation. As installed, the non-reinforced monolithic pipe will successfully operate under hydraulic heads up to 8 ft.

Canal system

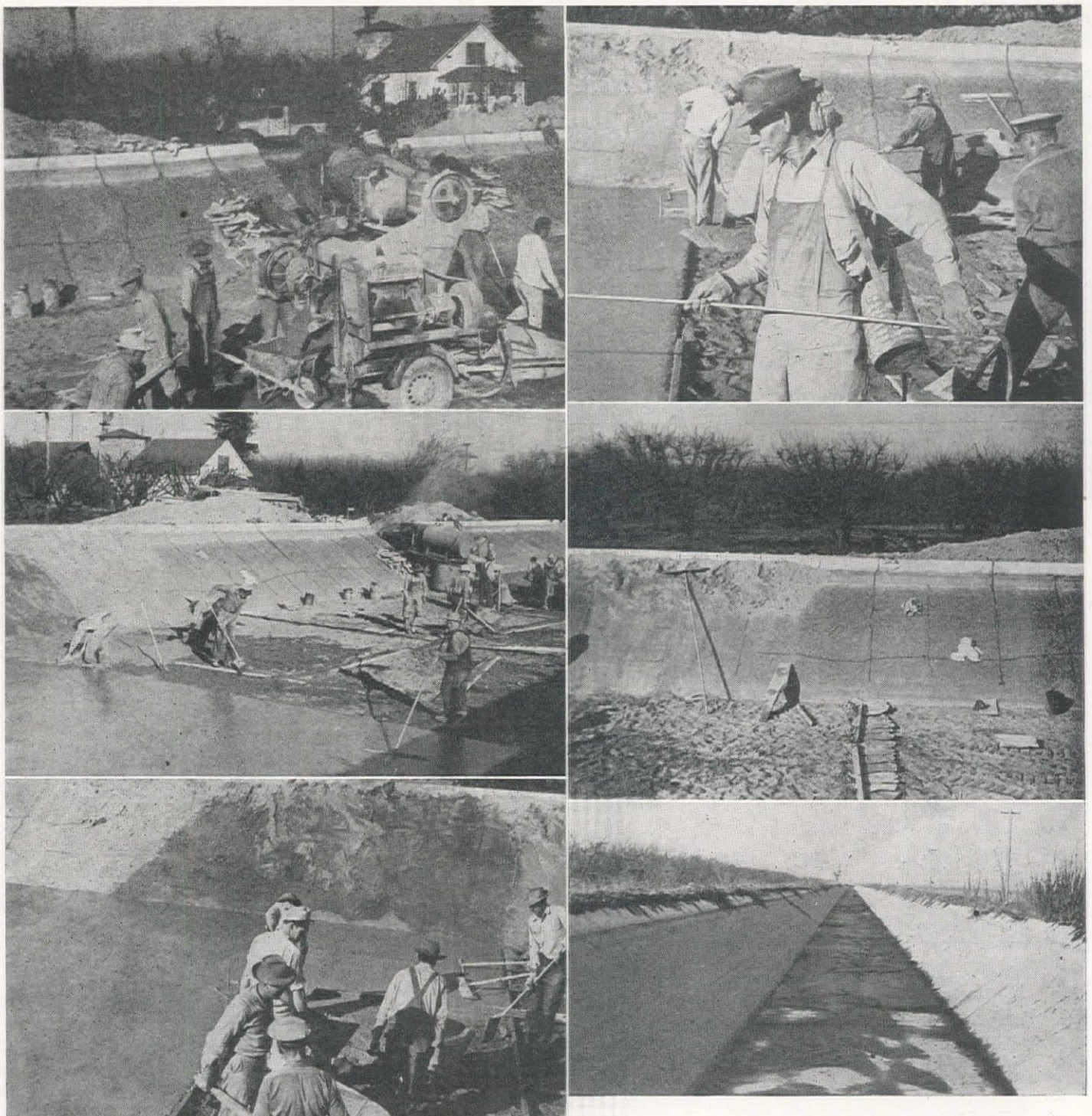
During the early life of the District, when of economic necessity the improvement work had to be accomplished with limited funds, the walls of some canals were gunited, using clean sand from the canal bottom for aggregate material. These 2-in. wall linings proved both economical and enduring to a remarkable degree, due to the very low velocity maintained in the canals and to the excellent support afforded by the sandy soil inherent to the district. The original cost of this lining was as low as 4 or 5c per sq. ft. The bottom lining currently being constructed in the Ceres Main canal will be 2.5 in. thick, poured with a 5.5-sack per cu. yd. mix.

Developed nearly to its ultimate capacity the Irrigation District is a stabilizing influence for the community. The annual improvement program dispenses ready cash and employment during the slack period for agriculture and local industry, providing at this time an economic stimulus for local business.

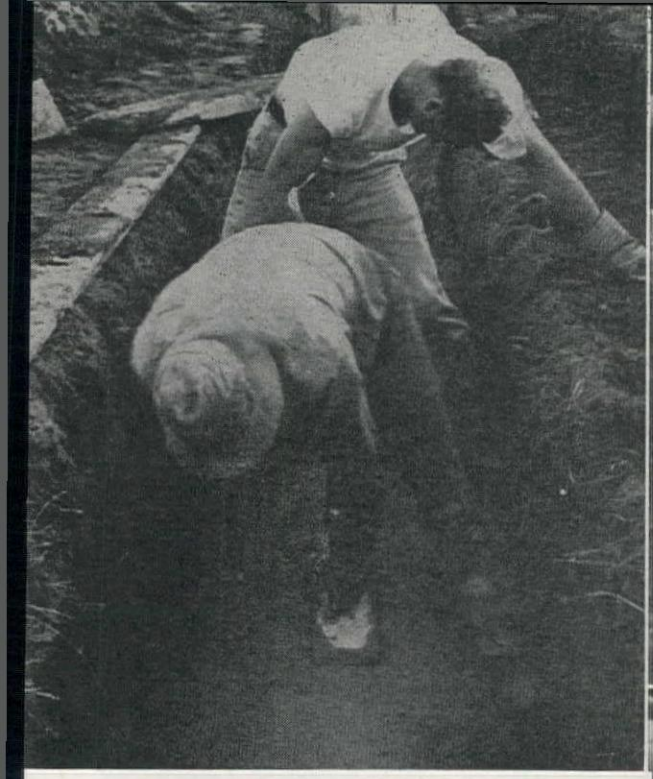
Postwar planning is more than a blueprint in the District, where the current improvement construction will total over $390,000 in contracts for necessary work. Main District contracts for canal lining, bridges and structures will total $100,000; construction for the various improvement districts within the area for community monolithic pipe installation and control works will account for $250,000. New equipment for the plant will total another $40,000.

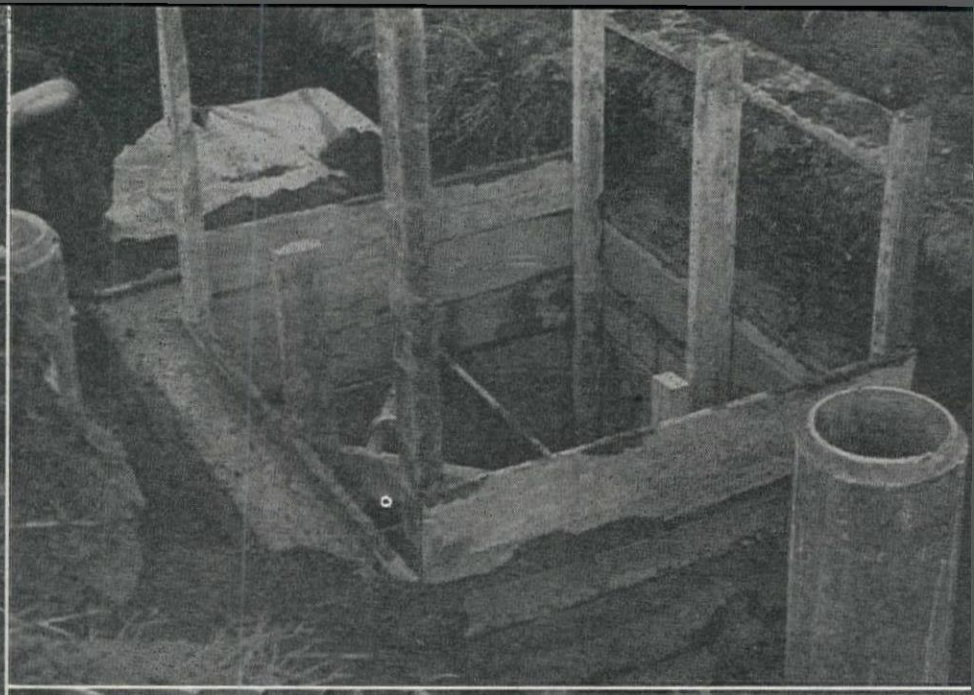
Monolithic pipe

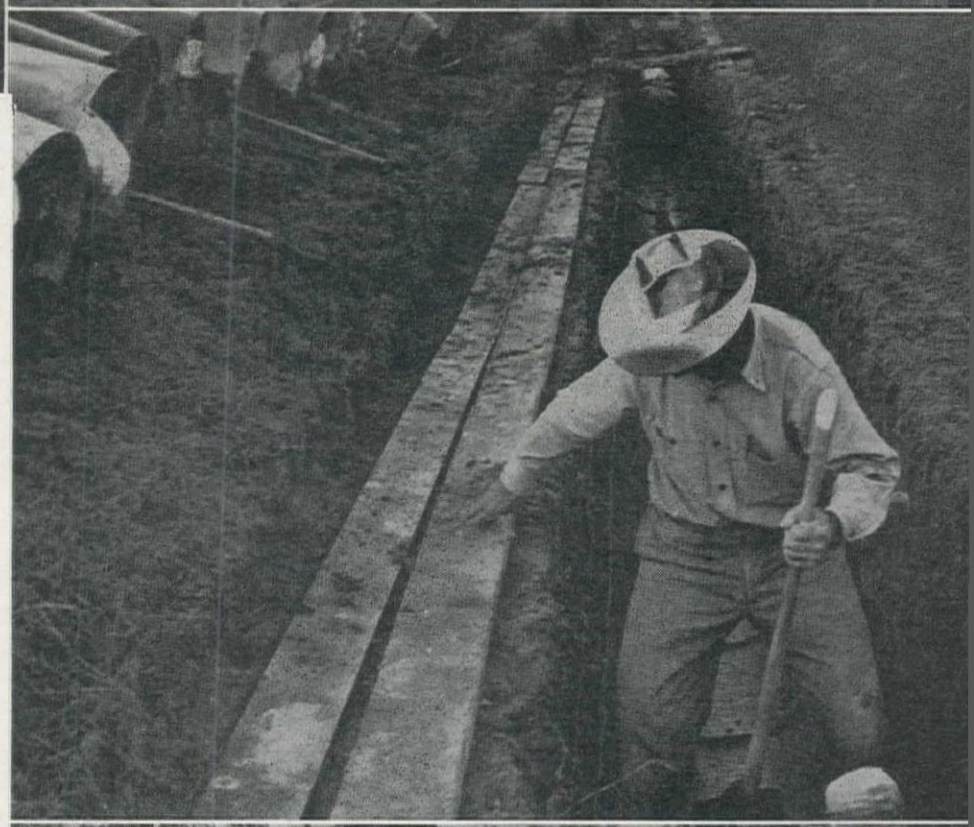
The advantages of a sub-surface irrigation system on highly productive land are obvious but the development that makes it an economic possibility is the construction method used whereby a round bottomed trench is used as the



CANAL LINING and bank are broken to admit machinery and aggregates for construction of concrete bottom, upper left. Next two pictures on the left show placing and finishing the bottom of the Ceres Main canal. Simon Marklund, left, is superintendent for Marklund and Harve, concrete contractors, lower left. Top right, applying a chemical membrane fluid to the finished concrete lining with hand sprayer to assure slow curing and to protect the lining from mild frost. Covered by a row of cement sacks in center right picture, is a newly-poured footing which will support the free edges of the lining at the construction joint. Later the joint is primed with special paint and filled with bituminous compound. Bottom right, one of the concrete-lined canals serving Turlock area.







outside form for pouring the monolithic pipe. Formerly square bottomed trenches were dug with conventional equipment and the rounding completed by hand. This method was necessarily abandoned as too costly and the District experimented with several machine trenchers, among which was a converted Cleveland trencher developed by Frank Roe and Volney Janes, foremen for the Pacific Pipe Line Construction Co. of Los Angeles, Calif. This machine was equipped with a special rounded follower shoe to finish the semi-circular bottom cut made by offset and crown-arranged teeth on the buckets of the wheel excavator.

The trencher was set to dig a 35-in. trench generally between 4.5 and 5 ft. deep. This depth allows the finished 30-in. pipe an 18-in. clearance below the surface. Even in the heavy ground on the northern border of the District this machine was able to make good progress and produced an excellent ditch for pipe forming. One good run netted the contractors 4,000 ft. of trench in 6 hours. However, it must be remembered that considerable time was spent in rigging up and adjusting the machine to turn out the trench to required specifications.

Pipe contractors follow the trenchers with some unique equipment used to form the monolithic pipe, and the usual portable 2 or 3-bag mixer. Because of the variable character of the ground and obstacles encountered, such as vines and deciduous fruit trees, the small mobile units are preferred in order to more easily reach all portions of the pipe lines as they traverse the farms.

Aggregates used are approximately 60 per cent .75-in. or less rock and 40 per cent No. 4 or less sand in a 6-sack per

JUNCTION BOX in irrigation line, where control valves will be set, upper right. Lawrence Nielson, contractor's foreman, "rides the boat" to shape pipe invert in the preformed, round-bottomed trench. Pouring walls and top of pipe, bottom; top, troweling arch section of monolithic pipe.

cu. yd. mix. A low water-cement ratio is used throughout the pour, but the lower and upper sections are barely moistened so as to obtain early strength and to facilitate troweling and finishing.

The monolithic pipe is commonly laid in 100-ft. runs or between control and distribution valves. First the lower section of pipe is floated into place with a so-called boat. With the mixer ready, a semi-circular sheet metal boat about 4 ft. long and having the same diameter as the pipe to be cast is placed in the ditch, over freshly poured concrete. Two men operate the boat. One stands on its flat upper deck and trowels the concrete by rocking the boat from side to side by shifting his weight from one foot to the other while at the same time the assistant advances the boat along the trench. As it advances more concrete is dumped on the boat deck and shoveled to the bottom and sides of the trench as required to maintain a 2.5-in. pipe-wall thickness.

When approximately 100 ft. of the ditch invert has been formed, the crew returns to the initial point and lays a 1x8-in. foot board along the bottom of the concrete previously poured. Next, 3-ft. sections of 16-gauge steel, shaped to conform with the inside diameter of the pipe, are placed in the ditch. A section of the sheet steel inside form is cut out to admit the 8-in. width of the foot board. Normally, the inside form springs in to less than the pipe diameter and must be sprung out and held in place by a pair of 1x3-in. boards 30 in. long. The boards are pivoted at the center on a nail driven through them, thus forming a cross brace, the vertical member resting on the foot board and supporting the top of the cylindrical form, and the horizontal member bracing the sides of the form in place. Once the form is started, only one cross brace per section is needed, as the other end telescopes over the preceding form—stovepipe fashion.

When the inside forms are in place, sufficient concrete is poured into the trench to bring the sides of the pipe well above mid point. This pour is thoroughly tamped and spaded to remove air pockets and to assure a good bond with the lower section. The remaining arch section is then poured with concrete of low water-cement ratio so that the outer surface can be readily troweled into shape.

At valve riser junctions a circular collar, made to conform to the back of the form, is placed over it and extra mortar troweled around the collar to strengthen this bonding point. The collar is removed as soon as the initial set stabilizes the mortar and the riser form moved ahead to the next junction point. A light covering of soil is then placed over the completed pipe to retard curing.

The inside forms are removed the next morning after a setting period of 16 to 20 hours. This is the part of the job that the crew all detest, since it calls for crawling into the pipe, removing the cross braces to release the steel sections and then carrying two of them out at a time, pickaback. Various mechanical methods of removing the forms have proven unsatisfactory and detrimental to the green concrete. The method in use seems awkward but is the most practical means of removing the forms from the limited working space.

The contractors leave the valve and stand pipe installation along the line until the pipe has cured sufficiently to protect it from damage. The pipe is fitted with check gates approximately every 600 to 1,000 ft. to assure rapid rise of water from the valves placed conveniently to distribute water in checks or rows.

The valves are horizontal metal disks, fitted with a rubber seat and controlled by a worm gear actuated by a hand wheel.

Canal lining

Through past experience the management of the District has settled on thin concrete canal lining as most economical and satisfactory. They have found that bituminous lining costs nearly as much as concrete, but requires more maintenance, since vegetation often penetrates through the bituminous material to destroy its usefulness and retard canal flow.

In the main canals a policy of progressive improvement has been followed, in which the sides are first protected with concrete and later, as funds are available for additional betterment, concrete bottoms are laid. Construction joints are placed approximately every 500 ft. in the bottom lining. These consist of a wedge shaped opening supported by a small footing of concrete supporting the regular lining and separated from it by a strip of construction paper. The wedge space remaining in the lining is .75-in. at the bottom and 1.25-in. at the upper surface. When the concrete is cured the joint is primed with bituminous primer paint and later filled with joint compound. The priming is important, since it prevents the compound fluids from penetrating into the concrete and thus prolongs the life of the joint material.

Personnel

The improvement program for the irrigation system is accomplished by the contract system and planned in the District office under the supervision of R. V. Meikle, chief engineer. Contracts now in progress were awarded as follows:

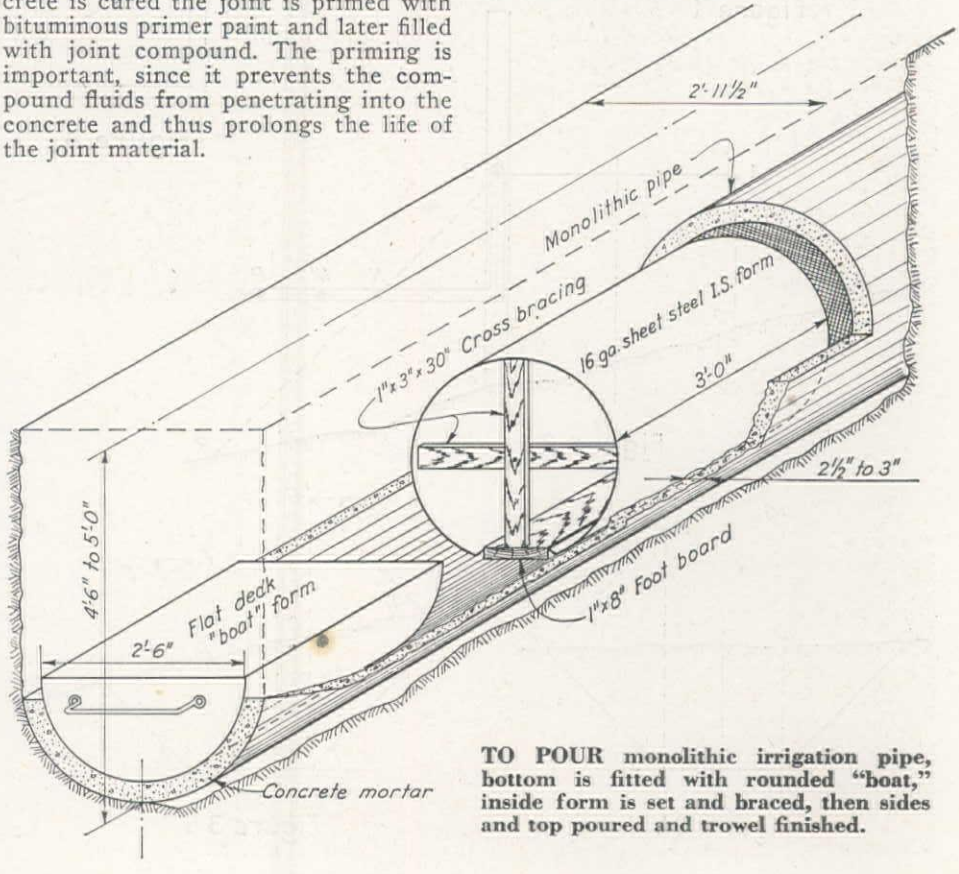
Trenching for the Hickman and McHenry monolithic pipe lines to the Pacific Pipe Line Construction Co. of Visalia and Los Angeles, Calif. This work is under the direction of Pete Price, superintendent; Frank Roe, foreman; and Volney Janes, chief operator.

Marklund & Harve, Turlock, Calif., were awarded the $35,000 contract to construct a concrete bottom in the Ceres Main canal and other structures. Simon Marklund, superintendent, is in charge of the construction.

McMillan & Norseen, Turlock, Calif., were awarded the contract to install monolithic pipe to replace the McHenry lateral through the Zimmer farm and adjacent properties along the Mountain View road.

Ed Erickson, Turlock, Calif., has the contract to install a 30-in. monolithic pipe line to serve the Ceres, north central area, for which Lawrence Nielsen is foreman in charge of construction.

These contractors have worked with the District management for many years establishing a record of accord and cooperation mutually appreciated. While the work is carried out with independent contracts the District often assists the contractor in emergencies or inclement weather with the use of heavy equipment owned by the District. Likewise, in case of emergency breaks in the canal system or other urgent need for repair work, the contractors reciprocate this cooperation by immediately coming to the aid of the irrigation system.



TO POUR monolithic irrigation pipe, bottom is fitted with rounded "boat," inside form is set and braced, then sides and top poured and trowel finished.

Slope Stakes Set by Nomograph Aid

Designed to eliminate trial and error "fishing" for slope stake points, the nomograph shown here is intended to save much time for location crews, particularly when the field men involved are infrequently called upon to set up slope stakes—It can also be used by regular highway location parties to set slope stakes in mass production

By SYDNEY A. ZUCKER, B. S.
Oakland, Calif.

MANY SURVEYORS, especially those working for State highway departments, experience no unusual difficulties in locating slope stakes for by virtue of frequent practice they become more or less adept at locating the required point after two or three trials. On the other hand, field engineers who are called upon only occasionally to set slope stakes sometimes find it necessary to "fish around" five or six times, with attendant computations, before they find the required point.

It is especially for the tyros in the latter category (to which class the author blushingly admits affiliation) that an "Automatic Slope Stake Locator" has been devised. Even experienced highway engineers will find that on long routes they can turn out the slope stakes on a "mass production" basis by using two crews as described below.

Fig. 2 shows a section of a road in fill. The problem is to locate the slope stakes L & R.

For sections in fill, locating the slope stakes becomes an extremely simple operation by using an L-shaped piece of wood (or metal, cardboard, etc.) in which are driven four nails as shown in Fig. 1. It is obvious that lines drawn from nail B to nails N, M and P would correspond to slope ratios of 1, 1½ and 2, respectively. It is also obvious that by holding this "Fill Slope Stake Locator" so that nail B is at point B of Fig. 2 the rodman can sight along line BN (or M or P, depending upon the slope ratio desired) and spot the desired point R. Similarly, by holding nail B at point A he can spot point L.

The height of point B above the existing ground is, of course, the amount of fill required and is equal to the Ground Rod — Grade Rod. Note that points A & B are at the edges of the road (technically called the "Side Stakes"). Hence in order to locate slope stake R:

1. Take a rod reading at E (at the side stake).
2. Subtract the Grade Rod from the above.
3. Put nail B on the rod at the difference given above.
4. Sight from nail B to one of the other three nails.

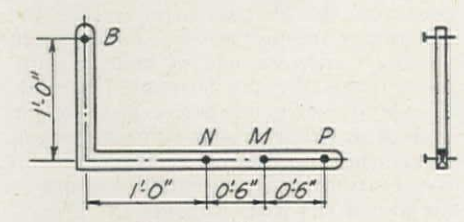


Figure 1

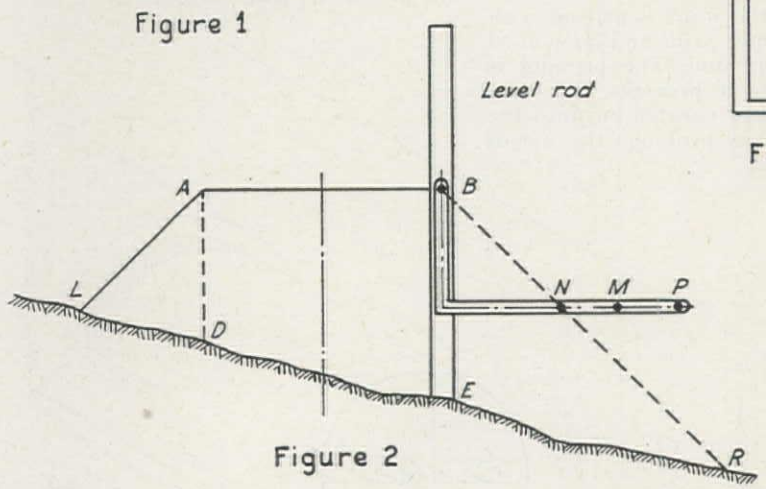


Figure 2

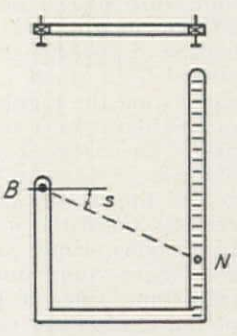


Figure 4

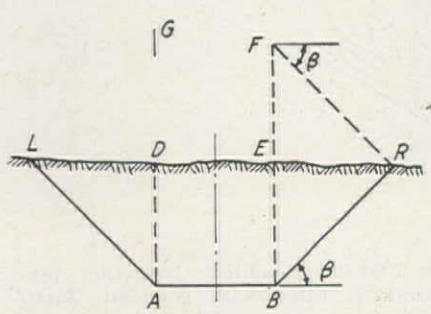


Figure 3A

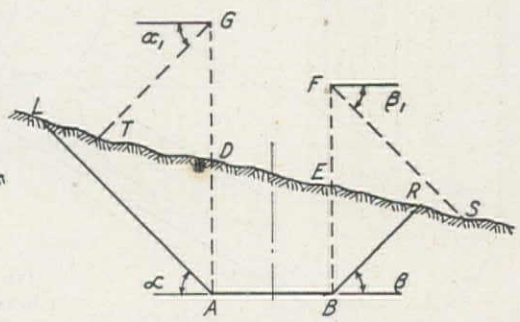


Figure 3 B

Slope stakes in cut

Fig. 3-a shows a section of a road in cut. If the rodman were to put nail B of the "Fill Slope Stake Locator" at point F (when F is chosen so that FE = EB) he can, by sighting on the appropriate nail, locate point R as in the case of sections in fill—provided that the existing ground is perfectly level. When the existing ground is not level (see Fig. 3-b) the line of sight from F would hit at S and the line of sight from G (where GD = DA) would hit at T. Hence some method must be found to adjust angles α_1 & B_1 as the existing ground slope changes.

Since he is now dealing with a variable angle, B_1, in quadrants I & IV, it is necessary to change the gadget from an L shape to a U shape as shown in Fig. 4. Nail B is fixed as formerly, but the problem now resolves itself into one of ascertaining the location of nail N; this location being a function of the slope ratio desired and the slope of the existing ground. In other words, there must now be devised a nomograph which can be attached to the level rod at a desired height (at the amount of cut required at the side stake), and by sliding nail N up and down an appropriate scale, locate the slope stake R.

It is a simple problem in mathematics to determine the equation for the tangent of the angle between the horizontal and line FR, in terms of the slope ratio and the grade of the natural ground. Given these equations, it is a simple matter to construct the nomograph. The nomograph is then affixed to a piece of plywood (or metal, cardboard, etc.). The sliding nail N is welded to an ordinary office paper clamp so that it may be clamped at any point along

GRAPHIC ILLUSTRATION of slope stake problems shows the application of the Zucker nomograph to rapidly locate stake positions for any given cut or fill slope ratio.

the scale. Nail B is at one end of a wooden pointer, the other end of which rests upon the nail N. The entire assembly, hereinafter referred to as the "locator," is attached to the level rod by means of a spring steel snap-on clamp.

Using the nomograph

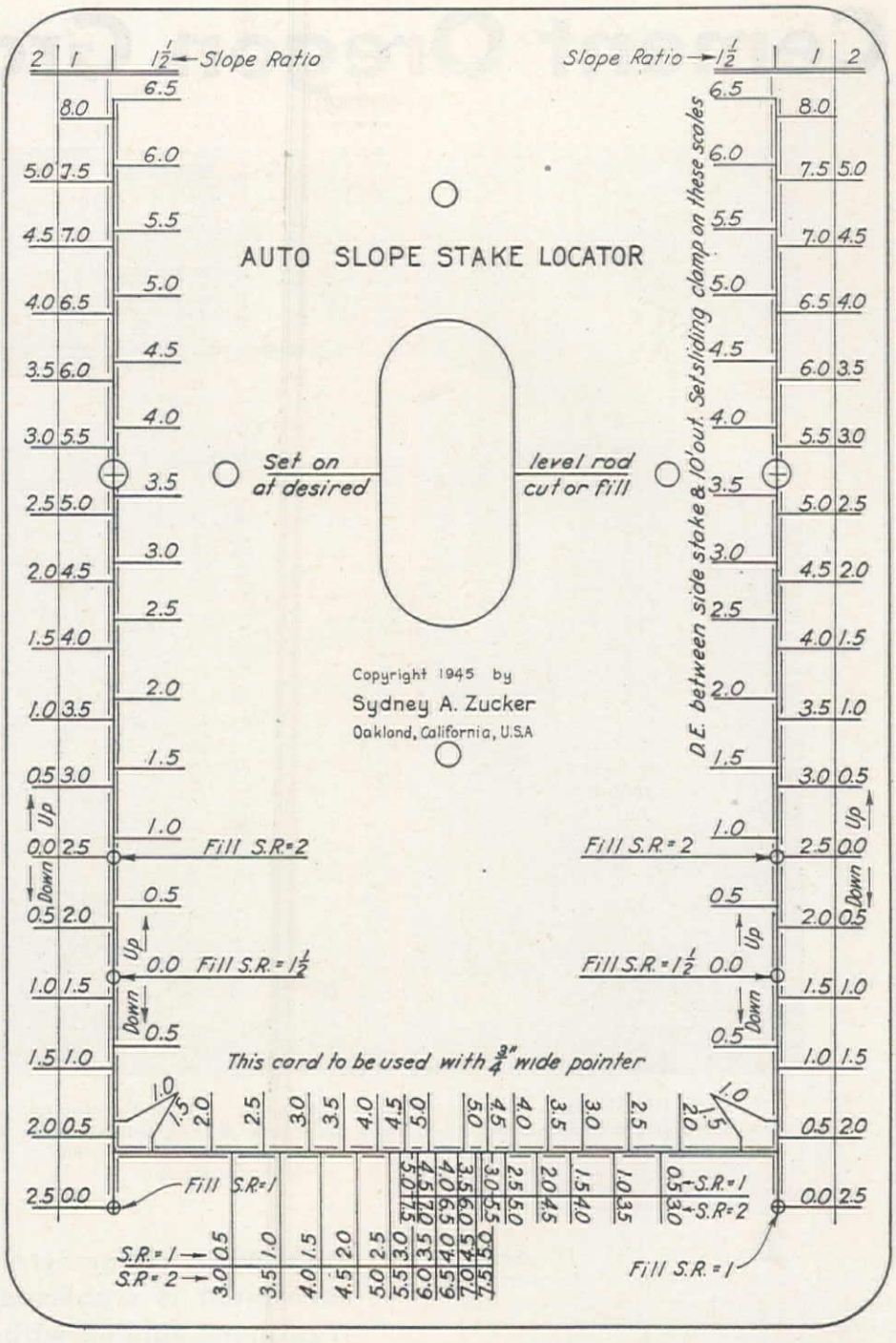
In order to use the locator for sections in fill, and thus eliminate the L-shaped gadget, points are marked on the scale to correspond to the slope ratios of 1, 1½ & 2. The procedure for locating slope stakes on cut sections is as follows:

1. Take a rod reading 10 ft. out from the side stake, then take a reading at the side stake, to estimate the slope of the existing ground.
2. Set sliding nail N on the difference of elevation between these two points, using the desired slope ratio scale.
3. Keeping the rod at the side stake, attach the locator to the rod at the required amount of cut. (Note that the required Cut = Grade Rod — Ground Rod, the opposite of the equation for fills.)
4. Slide the locator so that the axle of the pointer (Nail B) is in the middle of the rod.
5. Let the lower end of the pointer rest on Nail N and sight along the pointer.

In case the cut or fill exceeds 5 ft., the locator would be above the rodman's head and it would be impossible for him to sight along the pointer. Under such circumstances it is necessary to set the locator on the rod at some fraction of the required cut or fill, say one-half or one-third. Then the point spotted on the ground is one-half or one-third of the required distance from the rod, providing the natural slope is reasonably constant.

It is obvious that for sections in fill, the slope stake is located precisely regardless of the terrain, whereas for sections in cut the sighted point may be 0.10 or 0.20 ft. off due to faulty estimation of the existing ground slope, hence for highways and similar long distances of cut one two-man party may be used to spot the location of the slope stake and drop a stake on the ground at that point. A three-man crew then follows up to drive the stake and check the elevation with the distance out. Lest the reader should protest that this follow-up crew is a duplication of effort and that the slope stake can be directly set in the present conventional manner by the same three-man crew, it should be borne in mind that the disadvantage of the present trial-and-error method is due to the time consumed in "fishing around" for a point whose elevation corresponds to its distance from the centerline of the road. The preliminary crew has already located this point and it takes but a moment for the follow-up crew to check it before driving the stake, moving it a tenth or so as mentioned above, if required.

The locator described here is not made for sale, but it has been patented, and may at a later date be made available through the usual channels.



DEVELOPED to clip on the level rod and adjust to the required cuts or fills, this nomograph will solve slope stake positions by sighting along a movable pointer. For cuts or fills exceeding 5 ft., the position is arrived at proportionally.

City Engineer Must Be Habitual Fence Builder

IN TESTIFYING in Los Angeles Superior Court recently as a witness in the suit brought by the State of California against the City of Los Angeles, to force abatement of the nuisance and health menace caused by dumping raw sewerage into the ocean from the city's disposal plant at Hyperion, City Engineer Lloyd Aldrich injected some humor into an otherwise dry proceeding. He was asked by the State Attorney General when the fence had been erected to keep people off the Hyperion pier so that they would not fish in polluted waters. Aldrich replied by asking, "Which time?" He elucidated by stating that to his knowledge the fence had been erected at least 25 times since 1936. He went on to say that a local promoter regularly tore the fence down and charged people $1 a day to fish from the pier. In the final adjudication the State's contention was upheld and blame for the unsanitary shore conditions was placed upon the city. The court recommended an expeditious correction of the situation and the installation of chlorination equipment as a temporary solution until the $20,000,000 rehabilitation program of the city can be carried out.

Cement Oregon Gravel Levee

TOPPING THE SLOPE, is an especially constructed agitator used by the contractor to obtain deep bonding of the river rock composing the flood control levee. Shown above is the dragline boom carrying the air hose used to supply two jackhammers for vibrating this animated trowel. Completed portions of the revetment is slow-curing under wet fabric protection in the background.

Built with Willamette River cobblestone, this revetment is stabilized with a surface cement treatment applied with a novel pneumatic-powered vibrator—When floated over the bank slopes with a dragline, the toothed agitator causes deep penetration of the concrete into the underlying gravel to form a secure bond

TO EFFECTIVELY spread concrete used as a binder and surface for a cobblestone revetment along the banks of the Willamette River near Albany, Ore., Leonard & Slate, contractors on the project, developed an interesting and unusual pneumatic vibrator.

No particularly unusual design features are incorporated in the project, it being a simple bank protection device evolved by the U. S. Engineer Department, Portland District Office. The levee is approximately 12 ft. high, with an 8-ft. level top and a gentle sloping toe or pad extending approximately 10 ft. from the toe of the levee to the normal water's edge. At its base, the levee is 61 ft. from toe of back slope to river's edge.

The levee is composed of an earth fill covered with a heavy layer of ballast rock taken from the stream bed by carrier scraper and compacted by repeated passage of tractors and trucks.

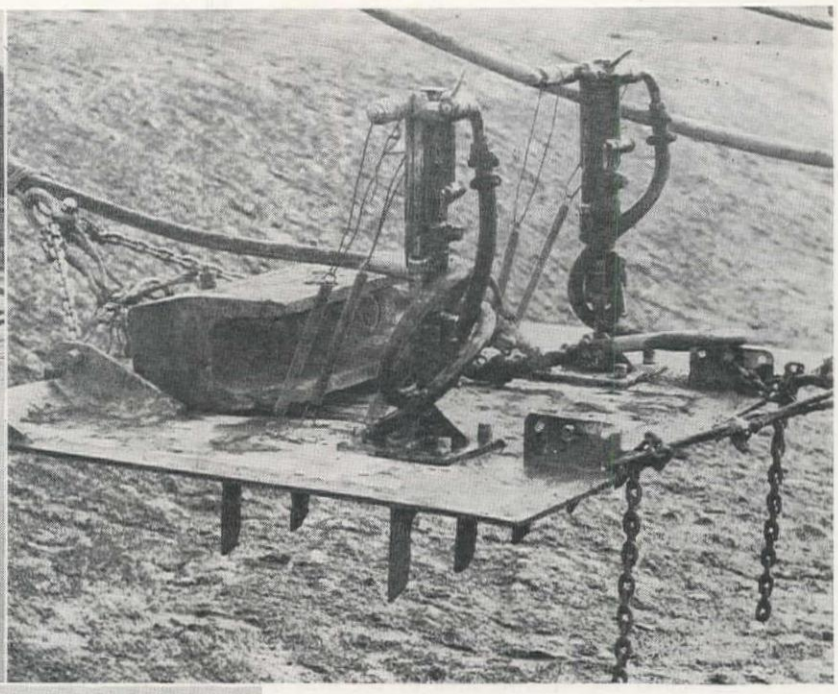
Penetration desired

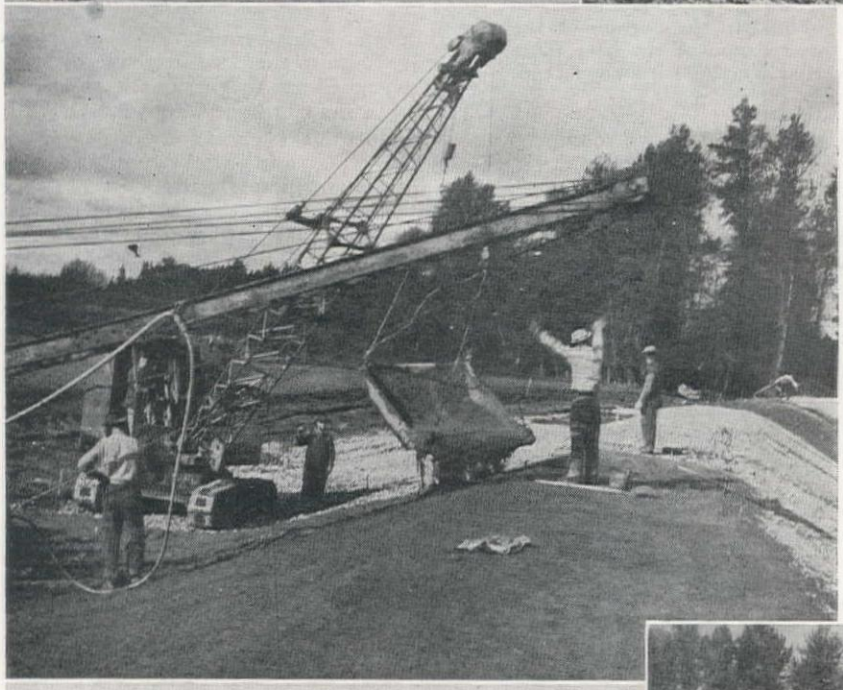
To present a durable wearing surface and to bind the ballast rock on the fill, a layer of wet mixed concrete was spread over the river side, the crest and the sloping toe pad. In order for the concrete to properly perform these duties it was essential that an adequate penetration into the rock be secured, and for this purpose the special vibrating device shown on the accompanying pictures was developed.

The concrete was conveyed from the mixer in a .05-cu. yd. flat-bottomed skip attached to the boom of a power shovel by cables running over two sheaves. Material was dumped by elevating the cable at one end of the skip. After pouring, the vibrator pad, attached by cables to the 40-ft. boom of a dragline located near the base of the levee, was passed over the concrete.

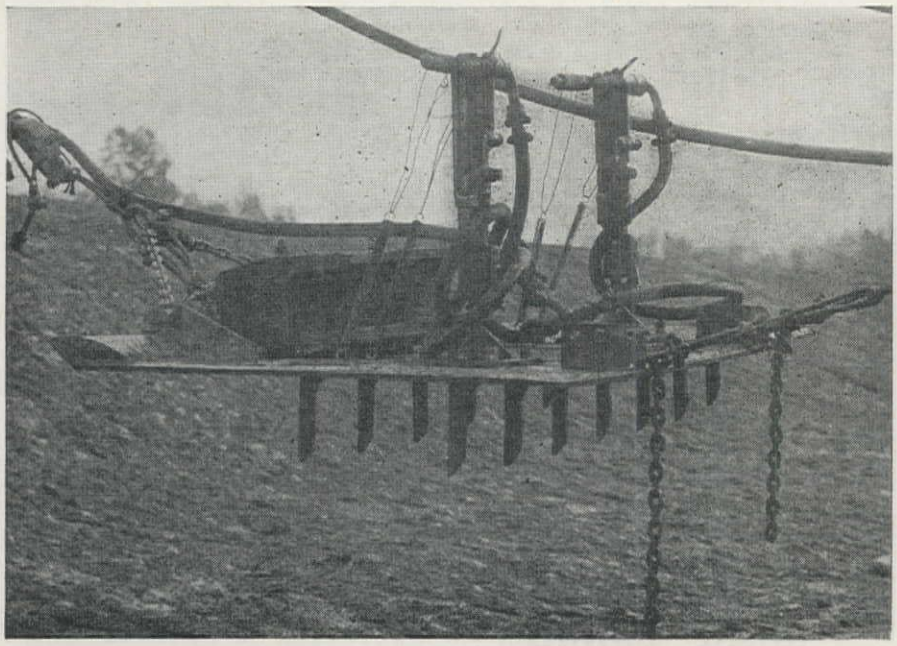
Vibrator design

This vibrator is composed of a 4x5-ft. sheet of .75-in. steel plate bent slightly upward at the forward edge. To the bottom surface of this sheet fourteen long teeth made of .75-in. steel, 2.5 in. wide, have been welded. To the top of the plate two pneumatic jackhammers have





LEVEE BUILDING along the Willamette river near Albany, Ore. Upper left, transporting gravel for fill from banks on far shore; center, pouring concrete from ½-cu. yd. skip operated from boom of power shovel; lower left, spreading the concrete with rakes prior to vibrating with the tamping machine; above, specially designed plate tamper for securing penetration of the concrete facing into the porous gravel of the levee. Total weight of the device is about 250 lb., with the added metal block in front, and vibratory motion is from jackhammers bolted to the top surface. Below, the tamper in action, being drawn up the slope of the revetment by cables from 40-ft. boom of dragline. The air hose for operation of the pneumatic jackhammers is strung along the boom.



SUSPENDED over the working area by the dragline control, is the jackhammer-driven vibrator showing its ¾ x 2½ in. wide teeth welded to the bottom of the steel plate sled. The heavy weight mounted on the forward end of the base plate is for the purpose of counterbalancing the lift exerted by the wire rope lead.

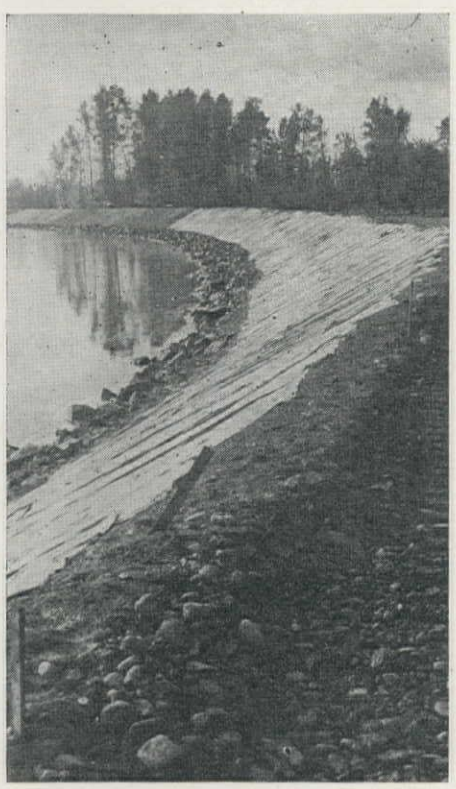
been firmly attached by bolting, so as to give a vigorous vibratory motion to the plate and teeth. To aid in securing adequate penetration and overcome the lifting effect of the dragline cable a heavy weight has been bolted on to the head end of the steel plate.

The air for operating the jackhammers is supplied by hose laid along the dragline boom and is controlled from the dragline cab. A 100-cu. yd. compressor furnishes air for operating the device.

In actual operation the vibrator pad is dropped on to the concrete at the toe of the slope and pulled slowly upward by the forward dragline cable. The vibration of the jackhammers causes the teeth to penetrate to their maximum depth, and the weight of the pad forces the soft concrete into all crevices and voids down to and beyond the extreme end of the teeth. The final finish for the concrete surface is supplied by raking and brushing with a stiff broom, and the surface is protected during curing by strips of heavy fabric laid over it.

The work was supervised for Leonard & Slate by Leonard Runkle, a veteran superintendent for the firm. He also assisted in designing the vibrator. Col. Ralph Tudor was District Engineer at the Portland office.

COMPLETED levee, showing river side of revetment covered with wet burlap to retard evaporation. Hand finishing of surface done with long-handled brooms.



Ripple Rock Removal To Require Two More Years

REMOVAL OF RIPPLE ROCK, one of the most serious menaces to the shipping industry of the British Columbia coast, cannot be completed until at least the fall of 1947. Work has been under way on this project in Seymour Narrows for the past two years and has now been closed down due to heavy winter weather with accompanying tides which made further operation impractical. Approximately $700,000 has already been spent or earmarked for expenditure on the Ripple Rock project. About 150 holes have been drilled in the rock to date and blasting has been carried out in a test of the new system of anchoring the drill bridge by means of overhead cables. Public Works officials expect that at least two more summers will be required to complete the project, with work carried out during the spring and summer only.

Engineers state that the new system of overhead anchorage of the drill barge has proven satisfactory. Previous efforts to anchor the barge proved futile, owing to the tremendous currents in the limited passage of the Seymour Narrows.

Bureau Will Build Dam at Bidwell Bar

BIDWELL BAR DAM, reservoir, and power plant, a multiple-purpose project to be constructed on the middle fork of the Feather river 8 mi. east of Oroville, Calif., are recommended for immediate construction as part of a fifteen-year building program by the Bureau of Reclamation in its Central Valley Basin report.

This project, if approved and financed by Congress, will:

1. Provide irrigation, flood-control, domestic water supply, power, recreation, and other benefits for a large area lying within the Feather river region between Chico to the north and Bear river to the south, and between Oroville and Butte Creek.

2. Furnish a full water supply for irrigating approximately 100,000 ac. of land now unirrigated and a supplemental water supply to approximately 170,000 ac. now irrigated by Feather river water. Water not now required for local irrigation could be made available for export to the San Joaquin Valley through the Central Valley system. The lands that would be supplied with the irrigation water are all included in Butte, Sutter, and Yuba counties.

3. Generate over 100,000 kw. of capacity producing an average annual output of 310,000,000 kw. hr. of hydroelectric energy. In addition to the Bidwell Bar dam and powerhouse, it is proposed to construct the Elbow Afterbay and power plant with 20,000-kw. capacity capable of producing an average output of 100,000,000 kw. hr. of energy. This would be located on the main Feather river, near Oroville, downstream from Bidwell Bar reservoir and would be for the purpose of re-regulating the daily power releases from the main reservoir and power plant.

4. Provide an adequate supply of mountain water for Oroville and the suburban area nearby.

Bidwell Bar dam would be one of the highest dams in the Reclamation Bureau system. The maximum height of the dam would be 679 ft. above the stream bed. It would have a length of 2,100 ft., providing capacity in the reservoir for 1,200,000 ac. ft. of water, covering an area of 5,800 ac.

The estimated cost of the Bidwell Bar dam, reservoir, and two power plants would be about $70,000,000. Projected for later development it is a distribution system for the forty thousand acres of new land that might be brought under irrigation in the next fifteen years. This distribution system would add $2,000,000 (at 1940 prices) to the cost.

Engineering Publicity Ideas

With the return of competition, engineers are becoming publicity-conscious—An expert in the field makes suggestions for cheap yet effective ways of getting the accomplishments of the profession before the public—articles, pictures, speeches, community activities, good relations with daily press included

By GEO. C. McNUTT
Vice-President
Botsford, Constantine & Gardner
San Francisco, Calif.

DO ENGINEERS need a public relations program?

For the answer, just ask a few of your friends and casual acquaintances outside the engineering profession what engineers do. It won't take you long to discover that folks know precious little about engineering, especially in the construction and structural fields. All too often the public officials who approve many of your projects reflect the public's lack of knowledge about engineering.

Can public relations change this situation?

Simply put, the contacts you and other engineers make to create a better understanding among the public of what engineers do are public relations. If you make enough public contacts of the right sort you are bound to improve the public's conception of the value and importance of engineers.

Remember, when you reach the public you indirectly (and frequently directly) reach the business men responsible for placing orders on big private projects, the public officials responsible for public construction and the taxpayers who foot the bills. Never underestimate the public.

What's in it for you and how can you help?

Generally speaking, a public that knows the importance of sound engineering will demand better engineering both in public and private building projects. That means greater recognition of the value of engineering services, more demand for good engineers and higher pay throughout the entire profession. Certainly that's worth working for.

Naturally, a well-financed public relations program can be a big help in winning public esteem but raising the funds and planning the campaign will take time. Meanwhile there's much you can do either by yourself or through your local engineering chapter to improve the public relations of the profession. Let's start with things you can do by yourself.

Trade paper articles

Take advantage of your trade papers to make yourself better known in the construction industry. The editors of *Western Construction News* and other national engineering and construction papers are always looking for authoritative articles covering interesting construction projects. Study the jobs you work on to see if there aren't some special angles other engineers would like to know about. If so, prepare an article on the project or projects for your favorite construction paper. Send along photographs, charts and diagrams to illustrate the details and special problems of the job. Frequently these trade paper articles can help you further special aims of your engineering chapter. For example:

Right now the Structural Engineers of Northern California are campaigning to have western structures designed by western engineers. If you are a structural engineer preparing an article you may be able to help this campaign by stressing the local peculiarities of your project. Tell about the effect of local building codes, foundation requirements, labor supply, earthquake conditions, etc., on the engineering plans and show how familiarity with these local conditions enabled the engineers to effect economies in time and money.

Once the article is printed don't let false modesty keep you from using it to get some additional local recognition. Mention it to the bulletin editor of your engineering chapter. Carried in the chapter's bulletin, the news will help to spur other engineers to go and do likewise. If you live in a small town or city the fact that your article appeared in a national engineering magazine should be worth two or three inches of space in the local newspaper, especially if the article deals with a nearby project. Telephone the editor or, better yet, drop in to see him—you ought to make his acquaintance anyhow. Secure attractive reprints of the article for distribution among possible clients and other engineers.

GEORGE C. McNUTT is a western advertising executive who has spent many years directing advertising campaigns for construction equipment manufacturers. Until about a year ago he was advertising manager for LeTourneau, Inc. and since that time has been vice-president of Botsford, Constantine & Gardner, one of the best known advertising agencies in the industrial field.

Moved by an editorial in the December issue of *Western Construction News* on the subject of publicity for engineers, Mr. McNutt has prepared a down-to-earth discussion of the specific things engineers can do to make their profession and themselves better known. His experience in the publicity field adds weight to his suggestions.

Learn to talk

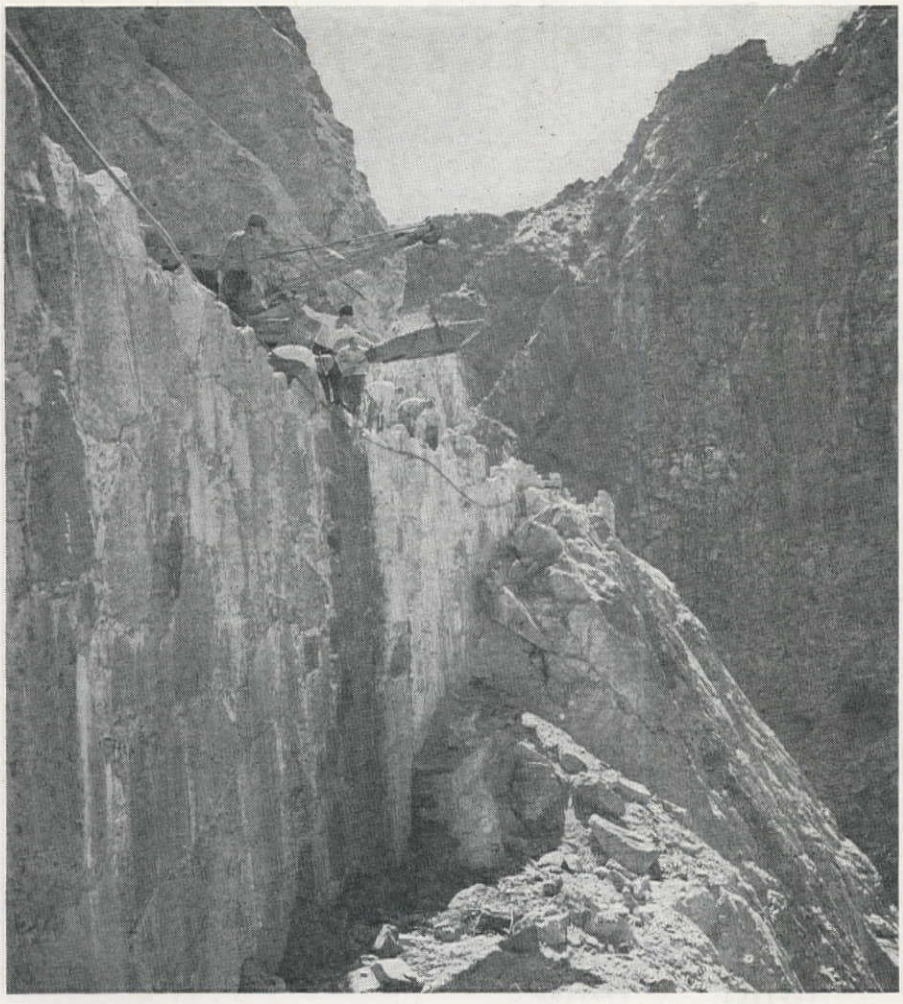
Luncheon clubs, church fellowship groups, student engineering societies, farm bureaus, etc., are constantly looking for speakers. Develop the ability to speak to such groups. If you're a poor speaker now, take a public speaking course. Then pass the word along to the presidents or program chairmen of local clubs that you're available for a talk.

There are plenty of engineering projects worth a full talk in themselves. However, if you feel that your projects aren't worthy, you might try taking your audience behind the scenes. Explain some of the simple nomenclature of engineering—such terms as "cuts," "fills," "borrow pit," "station yards," "backfill," "false bent," structural stresses and strains, what the markings on grade stakes mean and a lot of other things that seem commonplace to you, but give the layman a feeling that he's in the "know." These terms will be doubly interesting to him if they are described in terms of some local job. Better use chalk and blackboard to illustrate the terms as you describe them. Spice the whole with anecdotes from your personal experiences.

Behind the scenes

A good title and subject for a behind-the-scenes talk might be "How a Worthwhile Public Works Project Is Born." If possible build the talk around a local or nearby project. Tell your audience about the engineering surveys establishing the need, the engineering reports covering the feasibility of the job, the planning, blue prints, estimates, appropriations, bids, job award, some of the difficulties solved by smart engineering and the inspections made to protect the public. Talk about the benefits to the public. Try to interpret these benefits in terms of the individual or the local community. For example, a highway bypass may eliminate downtown traffic congestion, a new reservoir may insure plenty of bathing water during dry summers, a new highway may save 10 minutes driving time between two cities, and so on.

It's a good idea, too, to show how big engineering projects increase both on-site and off-site employment. Any good reference library can help you get data



TAKE PICTURES of your projects, particularly spectacular ones like this shot on the Kings Canyon Highway of California. Then display them on walls, and in windows, and submit them for publication in technical magazines and the daily papers. Be sure to describe the picture accurately and mention the engineer's name.

to show the approximate spread of employment effected by your particular job. You can drive the point home by telling where the materials came from — steel from Fontana, Gary or Pittsburgh, timber and aggregates from nearby sources, etc.—and how they were brought in by trucks and railroads.

Such a talk or talks should give you ample opportunity to show the place and value of engineers in present-day life.

Slides, strip film or movies help

You can increase the interest of your talk by using slides or strip films made from progress photographs. It's easy, too, to include in such films engineering drawings or charts and diagrams to illustrate points on which you have no photographs or where photographs would be inadequate.

Movies are good but usually too expensive when a single individual has to foot the bill, especially now that sound is so universally demanded. If you're a movie fan, though, you may find your private movies helpful. Be sure you edit the footage so the film moves along at a good clip, then practice your talk so it synchronizes with the speed of the film.

Because of the cost, movies for most engineers and chapters probably will have to wait until funds are raised to make possible a really professional "talkie" covering engineering.

Multiply usefulness with speakers bureau

If you have slides or a movie, you may find that fact helpful in organizing a speakers bureau in your engineering chapter. Offer to make your material available. Thus you increase the range and multiply the effectiveness of your public relations program for engineers, yet make fewer talks yourself.

To prepare themselves all the members of the speakers bureau need do is go over your notes and the slides in advance. In many cases the slides themselves practically serve as notes.

Getting in the news

When you accept a speaking engagement check to see what the group does to publicize the meeting. If they have a publicity chairman cooperate with him. See that he gets the title of your talk, a brief outline of its contents, your exact name and title, plus some biographical background notes. If the group has no publicity setup send this material direct to the newspapers yourself well ahead of the meeting. Be sure when doing so to include date, time, place and group.

News about you and engineers need not be confined to coverage of talks. If you're a project engineer, remember that your project has plenty of interest locally. Let local editors know that you will gladly answer any questions they have. Invite them to go over the project with you. Be ready for their questions by having the five "W's" and "how" ready—who? what? why? where? when? and how?

You can increase the interest of the story by having data on the number of local persons employed, weekly or monthly payroll, local material and services utilized and other information on the local benefits and advantages of the project.

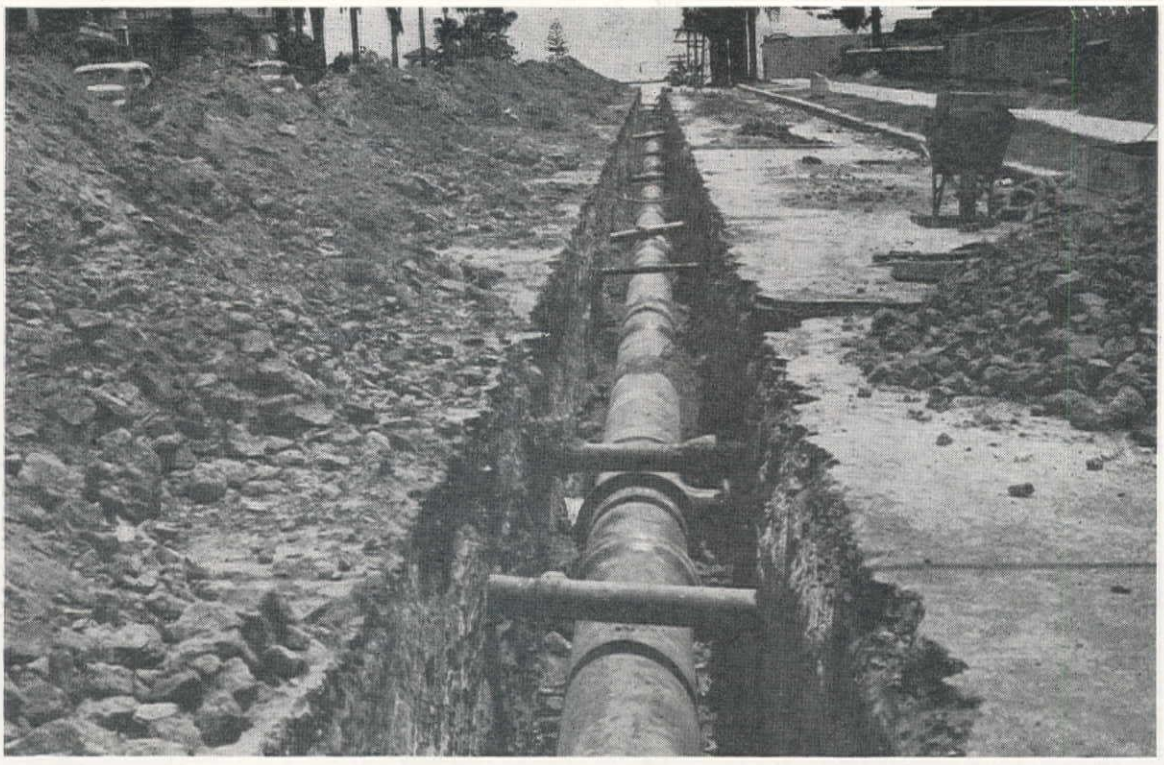
After you've gotten acquainted with local newsmen you may find it helpful both to yourself and to your engineering associates to ask one of the editors to talk to your chapter on some such topic as "How Engineers Can Cooperate with Editors to Make News." You may be surprised to find out how human editors really are. Certainly such a talk will open the eyes of your chapter and will go a long way towards improving your press relations.

Be civic-minded

Said H. J. Brunnier before a recent meeting of the Structural Engineers of Northern California, "As individuals you must get out of your shell. Perform services for your community for which no remuneration is expected. Join and work in important organizations of the community. When you are well known as an unselfish individual your profession will likewise become known and your rewards in the form of business will commence to flow in." Brunnier said a mouthful there. You, as an engineer, can do much in civic affairs to further both your own public relations and those of the engineering profession. Welcome opportunities to serve on city planning groups, good roads committees, building code committees, etc. Such civic groups help get you acquainted with the public, also usually get you additional recognition in local papers.

When the reports of the committees you serve on are released see that they are readable and to the point. If the reports cover really important projects or findings see that the newspapers get copies, then take time to answer newsmen's questions on the salient points.

Finally, remember that the steps outlined here do not take the place of a well-financed regional or national public relations program. They are set forth simply as a starting point for individual engineers and chapters with the thought that whatever you do is bound to help any larger program you and your fellow engineers undertake. Remember, there are a lot of taxpayers out in the grass roots where you live. Your talks may help them to gain greater respect for you and the whole engineering profession but don't be discouraged if you see no new jobs come your way as a result. Have patience—building good public relations takes time. That's why it's so important that you start now.



San Diego Expands Water System

Cement-lined cast iron mains were installed by the city of San Diego in their newly-expanded water system using a special sterile packing and cement seal to prevent the growth of bacteria — Protection from soil corrosion is provided by a sand blanket placed around the pipe

THE WATER SUPPLY problem of San Diego, Calif., which has been so tremendously multiplied during the war years, involves not only new sources of supply but also an extensive distribution program. On two contracts awarded last summer, and recently completed, 21,000 ft. of cement-lined cast iron main was placed by B. G. Carroll and L. B. Butterfield, San Diego contractors.

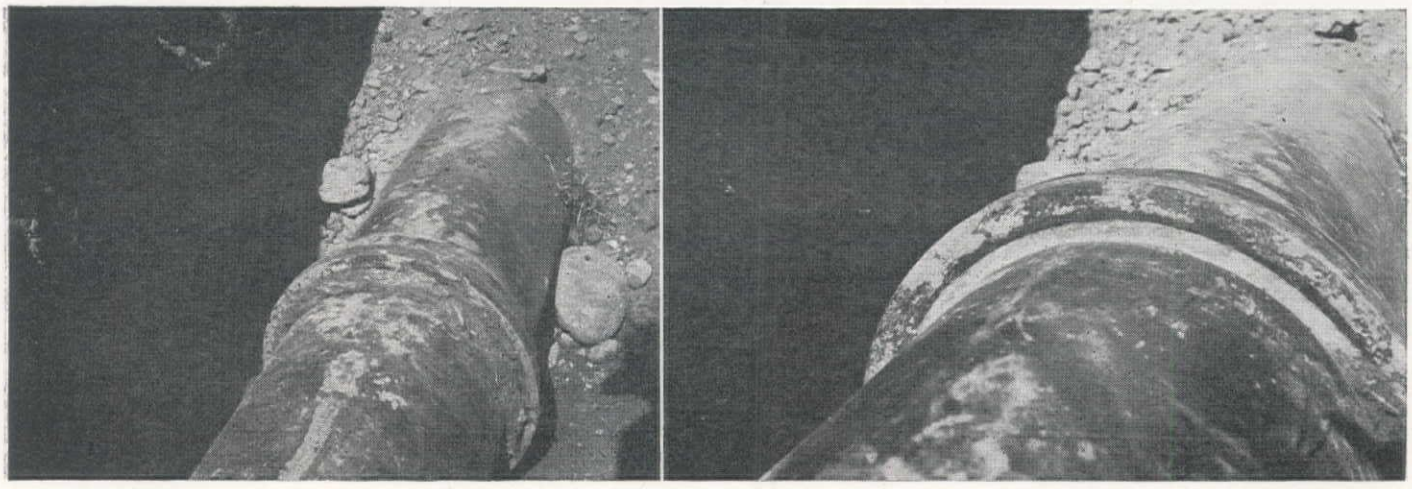
The Carroll contract was for $25,989 to lay the 19th St. water main, and the Butterfield contract for $31,920 involved construction of the "B" St. main.

These contracts are but a portion of the city's expansion program. Some 81,000 ft. of cast iron pipe ranging in size from 4 to 20 in., has been installed by the Federal Government in the bay front area where tremendous military expansions have taken place, and 50,100 ft. of 16-in. cast iron pipe by the city.

As a partial solution to the water supply problem the city completed San Vicente dam in the fall of 1943 (*WCN*, Nov., 1944), and a San Diego County water district has been formed to investigate the possibilities of securing Colorado River water for the city. In December, 1944, the Navy announced that it would construct an aqueduct connecting with the Colorado River aqueduct of the Metropolitan Water District of Southern California at the west portal of its San Jacinto tunnel. With the cessation of hostilities the Navy withdrew its support for this project but work was resumed recently on the $18,000,000 project when the city assured Naval officials that it would repay construction costs over a period of 30 years.

Special joints

The 16-in. cast iron distribution feeder mains installed under the two contracts mentioned above specify the use of cement joints. These joints are filled with



BELL AND SPIGOT joint, below right, sealed with neat cement caulked in place over successive layers of sterile Fibrex and jute packing. Left, wet jute covering finished cement seal to retard drying.

neat cement. The filling operation is carried out by caulking into place a ring of Fibrex, a braided sterile paper packing, which is to prevent a breeding of bacteria. Following this a ring of jute is caulked into place and the balance of the opening is then filled with neat cement which has been barely moistened.

The specifications call for this cement to be moistened only sufficiently to form a solid ball when held in the hand, the ball on being dropped a few inches readily falling apart. This moistened cement is caulked into place using a standard tool and hammer. When the joint is completed a ring of wet jute is placed around the outside edge so as to prevent rapid evaporation. When the cement has finally set, this last jute ring is removed.

When a section of the line is completed a final leakage test is conducted, using an interior pressure of 225 lbs. per sq. in. for a period of one hour.

Profile and soil

The new mains traverse a hilly area and air vents are installed at frequent intervals to release any air which may become entrapped at high points in the system. One section of the Butterfield contract was laid on a 24 per cent grade, necessitating the use of concrete anchor blocks in the bottom of the trench to prevent creeping.

The lines pass through a variety of soils, some types of which are extremely corrosive with respect to metal pipe. In these cases a blanket of sand is placed around and under the pipe before excavated earth is backfilled.

These water mains were laid for the San Diego City Water Department, of which Fred D. Pyle is hydraulic engineer in charge of water development and conservation and Earl F. Thomas is superintendent of water distribution. R. O. Stevens, engineer of water distribution, was in direct charge of the work.

DISTRIBUTION feeder installed on a 20 per cent grade near the business section of San Diego, above. A 16-in. cast iron valve body installed in a concrete box. The control is through an oil-enclosed gear box, upper right. A 24-in. cast iron cross installed in 1912 is still in excellent condition. Bottom, concrete pier is installed behind all 16-in. C. I. Tees to prevent thrusting the pipe from proper alignment.

Columbia Authority Analyzed

Prominent Colorado irrigation Authority presents analytical discussion of new bill presented by Washington's Senator Mitchell for creation of a Columbia Basin Authority, modeled after TVA and MVA, with parallel invasion of State control of water, and exercise of individual initiative

By JUDGE CLIFFORD H. STONE
Northern Colorado Conservancy District
Denver, Colo.

ON DEC. 20, 1945, Sen. Mitchell of Washington presented to the Senate a bill since numbered S. 1716, and simultaneously Rep. Jackson of Washington offered to the House an identical bill numbered H.R. 5083. These provide for the creation of a Columbia Valley Authority and are designed to supplant Sen. Mitchell's former bill for the same purpose, known as S. 460.

In general

The fundamental provisions of the new CVA bills do not differ from those of the original bill, nor do they differ from the provisions of the MVA bill, turned down by two Senate committees. The changes are essentially a "sugar coating" designed to make the legislation more palatable to those who have opposed such legislation. The futility of an attempt to overcome the fundamental objections which have been made to Authority legislation was voiced by the Senate Committee on Irrigation and Reclamation in its adverse report of Oct. 18, 1945, to the MVA bill. The committee stated: "That the overwhelming opposition to the creation of a Missouri Valley Authority is based on fundamentals and will not be overcome by mere amendments of S. 555 . . ."

Sen. Mitchell in his explanation of the new bill stated that changes had been made . . . "to remove the doubts of irrigation interests" respecting the protection of "vested water rights and the existing system of the appropriation of water under State laws."

The Senate committee succinctly stated the impossibility of accomplishing such a result in Authority legislation by stating: "In short and as a summation on this question, it must be recognized that the jurisdiction essential to a regional Authority, in order that it may accomplish the purposes for which it is created, cannot be maintained and at the same time preserve the integrity of State water laws."

Declaration of congressional policy

The declaration of policy, appearing as Section 2 of S. 1716, coupled with Section 29, which provides the rule for the interpretation of the proposed act, makes it the primary obligation of the Authority to develop and control the water resources of the Columbia River region in order to provide for the disposition of and making needful rules and regulations respecting government property, to provide for the national defense, to improve navigation, to control destructive floods and to promote interstate commerce and the general welfare.

These are the directives placed upon the Authority. They express the imposition of Federal jurisdiction in the control and use of water. When the Federal interest conflicts with the rights and interests of the State in water and its development and control the former must prevail, if such congressional policy can be constitutionally sustained.

The region

The Authority would exercise its jurisdiction in an area roughly described as follows: (1) The entire Columbia River basin in the United States. (2) Those portions of the states of Oregon, Washington and Idaho which are not within the Columbia River watershed. (3) Such additional adjoining territory as may be related to or materially affected by the development consequent to the proposed act. (4) In addition the Authority is empowered to consult and negotiate, and through the State Department, may agree with the Dominion of Canada or any province or subdivision thereof, concerning the conservation, utilization and control of the waters of the Columbia River basin.

It should be noted that all of Idaho lies within the Columbia River basin except that portion in the extreme southeastern corner which is within the basin of the Bear River. Thus, the new description of the region includes the Bear River in Idaho and a large portion of Bear Lake. There are hydro-electric developments on the Bear River which supply power to the Salt Lake area.

In this connection attention is called to Item 3 above which explains that the region shall extend to adjoining territory which "may be related to or materially affected by the development consequent to this act." The Committee on Irrigation and Reclamation of the Senate in commenting on an identical provision in the the MVA bill stated: "The provision makes indefinite the territorial scope of the Authority's powers. Clearly it would involve adjoining territory into which power transmission lines might be constructed; and it would include portions of other river basins, to which waters from the Missouri basin might be diverted or into which they flow. Also, it is broad enough to encompass portions of adjoining river basins from which waters might be diverted by projects constructed and operated by the Authority into the Missouri River basin. As already stated, the territory which would come under the jurisdiction of the corporation may, under the terms of the bill, be extended at the will of the corporation's board of directors."

Thus, it appears that the Authority may make its influence felt and exercise powers within the Salt Lake basin and in the Green River basin, a portion of the Colorado River basin, because of existing hydroelectric developments on Bear River and because of proposed importation of water from the Green River for use in Idaho and Utah.

The administration

The new bill contains the sentence, "Each director shall maintain his residence in the Columbia Valley region."

The Authority is directed, in carrying out the programs authorized by the proposed act, to consult with, and obtain the assistance and participation of, the people of the region and their State and local governments and organizations, public and private, in the formulation of policies to carry out the basic provisions of the proposed legislation. To accomplish such purpose, the Authority is directed to establish procedures for the interchange of views with one or more representatives from each of the states of Idaho, Montana, Oregon and Washington (as designated by the respective governors), with representatives of the business, agricultural and labor interests of the region, and with representatives of the general public of the region.

A provision setting up a National River Basin Development Board, composed of various department chiefs and the heads of all Valley Authorities, which was proposed in S. 460, is eliminated.

It was the ostensible purpose of such a board to effectuate national policies set forth by the Congress and to insure conformity of development plans on the regional level with national programs. There was some merit in such an objective. Further, such a board would function to integrate the activities of Authorities which might eventually operate in adjoining major river basins of the country.

Federal participation in the development of river valleys of the country should in many important respects reflect a national policy and not be subject to the varying policies of different Authorities. As river valley development proceeds, the interrelation of adjoining river basins becomes more apparent. The transmission of hydroelectric power from one area to another, the interconnection of power grids, and the importation of surplus water from one basin for use in another where there is a shortage of water, indicates a need for coordination of water development activities between basins. If the country is eventually regionalized under the control of a number of Authorities, the conflict, which in some instances has arisen between existing Federal agencies, would be mere "child's play" as compared with the war

which Authorities, with all of their extensive and arbitrary powers, would wage among themselves. Either that or the independent Authorities would form a powerful combine to make and enforce national water policies and procedures.

Rights and interests of states

Prominently displayed in the second section of the bill is language designed to allay the fears of those who are concerned with the rights and interests of the states in the utilization and control of the water resources.

The Senate Irrigation and Reclamation Committee referring to provisions in the MVA bill for that purpose stated that they are "apparently intended to delude the unwary into believing that State laws affecting water rights will be respected." It may not be said here that the drafters of the new CVA bill entertain the same intent; but the insertion of similar provisions in S. 1716, although amplified and changed, will have that effect.

The language of the Flood Control and Rivers and Harbors Acts of 1944 and 1945, respectively, for the protection of irrigation and other beneficial uses of water west of the 98th meridian, is not changed by S. 1716. Likewise, this language is the same as employed in the MVA bill. Concerning such language the Senate Irrigation and Reclamation Committee stated that ". . . it is left to the board constituting the Authority to determine whether there are conflicts between navigation and irrigation uses of water and to adjust such conflicts. This change in the recent policy established by Congress is material. It substitutes the judgment of the three-man board for the protection now afforded by law."

The effect of such provisions must be considered in connection with the intent and purposes of the bill and with the law of water as interpreted by the courts in a dual (Federal and State) form of government. The relationship between Federal and State laws, now recognized and preserved by existing laws, established over a long period of time, cannot be disregarded nor changed in the simple way attempted in the bill.

Authority legislation, such as S. 1716, effectuates centralized Federal control of the water resources within a river basin. That is its essential purpose and is necessary in order for the Authority to accomplish the objectives for which it is created. It makes little or no difference whether such centralized control is effectuated entirely through the employment of Federal laws or in connection therewith, through State laws where necessary.

It is the apparent legal theory of those who advocate these bills that the creation of an Authority in control of development of water for all purposes is the effective way to take advantage of recent Supreme Court decisions and to impose complete Federal jurisdiction. A mere provision in the new CVA bill that the Authority in carrying out the provisions of the proposed act shall proceed in conformity with State laws does not detract from the Federal control. As a matter of fact, if such a single Federal agency, charged with the administration of an integrated, multipurpose program of river development, should appropriate and distribute water under State law, it would amount to nothing more than using such laws to aid in realizing its full control. The State law would become an instrument of the Authority. It is not the appropriation of water by a Federal agency in conformity with State laws which is of first importance. It is the preservation of the opportunity of acquisition of a right by the actual water user and the protection of vested rights, pursuant to State law, even under projects financed by the Government, unfettered by the Federal control of the water resource, which is important.

In those areas dependent upon the use of water for irrigation to maintain an agricultural economy, the practical day-to-day administration of streamflows is of paramount importance to the water users. Water rights and water decrees are of no value unless the water available thereunder is actually diverted into the headgate of a canal. Under S. 1716 the corporation is given broad powers to effectuate the declared purpose of establishing and maintaining "integrated water control."

By Section 6 the corporation has the power to acquire water rights by purchase, lease, exchange or condemnation and it is specifically given the power to sell and dispose of water. Section 10 (a) (3) gives to the corporation a broad power "to develop and provide such methods and conditions of water and land utilization as the corporation deems necessary or appropriate to prevent and abate floods and droughts."

These specific provisions, when considered along with the broad, general purpose of the act, can have no other effect than to charge the Authority with the administration of streamflows. At the present time such administration is accomplished under and pursuant to State laws so far as the distribution of water for irrigation purposes is concerned. This is in conformity with the policy which has been recognized by the United States Government since the passage of the act in 1866. The creation of an Authority with powers to administer and regulate streamflows for irrigation and other purposes is the attempted establishment of at least a dual administration of water which could result only in turmoil.

Proposals for river Authorities are attempts to create Federal agencies having the powers of State governments in regard to water matters. A situation wherein there exists dual administration of water resources is not only unworkable but also utterly foreign to our system of government.

Land limitations

The subsection under the heading "Reclamation Provisions" deals with the maximum size of farm units which would be served by a Reclamation project under the Authority. This question of land limitations in single ownership, as anyone familiar with western reclamation knows, constitutes one of the present-day troublesome problems incident to reclamation. There is a divergence of opinion on the subject. At the last annual meeting of the National Reclamation Association, it appeared that it was the view of a majority of western irrigation interests that the solution probably lies in land ownership adjustments by the Congress for each individual project, in accordance with the land, ownership and other conditions which exist thereunder. According to the provisions of the new CVA bill the size of farm units under each project for the reclamation of lands is left to the determination of the Authority. The criterion for the determination of the size of individual farm units and the procedure to be carried out by the corporation would be as follows: (a) The corporation would make a finding as to the area sufficient in size to constitute a productive, owner-operated farm or adequately to supplement adjacent grazing or dry farming lands; (b) no benefits from any irrigation project constructed and operated by the Authority would be made available to the owners of lands whose individual holdings exceed the maximum area so prescribed by the corporation, until and unless such owners had agreed by contract, acceptable to the corporation, that they will sell such part of their lands as may exceed the farm unit set by the corporation, at the appraised value thereof, as determined by the corporation, without reference to, or increment on account of, the construction of the project. It is further provided that the corporation would be given an irrevocable power of attorney to sell on behalf of the land owners any such excess lands, not disposed of by the land owner himself, at the appraised value of his lands. It is further provided that the owner would be required to surrender possession of all of his excess lands at substantially the same time.

General corporate powers

The general corporate powers of the Authority are set forth in Section 6. These general powers do not include all of the powers and functions found in other sections of the bill, nor do they encompass the broad discretionary powers which run all through the bill. The powers contained in Section 6 may be briefly summarized as follows:

(a) The corporation would sue and be sued in its corporate name, and would settle and adjust claims either by it against other parties or by other parties against it.

(b) The corporation would have the power to acquire by purchase, lease, condemnation, exchange, transfer or donation such real and personal property, and any interest therein, including water rights, and may sell, lease or otherwise dispose of any real and personal property, and any interest therein, as in its judgment may be necessary or appropriate in carrying out the purposes of the corporation under the proposed act, or under any other federal law.

(c) The corporation would have power to acquire, without reimbursement, any properties defined as surplus under the

Surplus Property Act of 1944. In addition the corporation would be empowered to maintain, repair, alter, use and operate such properties.

(d) The corporation would have the power to produce, transmit, sell and dispose of electric power and water.

(e) The corporation would have the power to enter into such contracts and agreements and to do such things as it may determine to be necessary or appropriate to carry out the powers conferred by the proposed act or which may later be conferred upon it by law.

Section 355 of the present law, above mentioned, governs proceedings in eminent domain by Government agencies.

It is interesting to note that, if a municipality consents, the corporation may acquire and operate its water system. It is thus within the power of the corporation to enter into the business of distributing water to individuals.

It should also be observed that, although the corporation by the express terms of the bill may not acquire an electric or water system of the municipality through the power of eminent domain without its consent, it nevertheless reserves the right to acquire easements within such a municipality for the purpose of constructing and operating a competing electric or water transmission system. Further, according to the bills' provisions, if in the judgment of the corporation an existing municipal electric or water system is rendered useless because of the construction or operation of the dam or reservoir by the corporation, then eminent domain may be resorted to to take over existing municipal works for furnishing power and water. In other words, the "door is left open" by the terms of the bill so that the corporation may accomplish by indirection that which it cannot directly do.

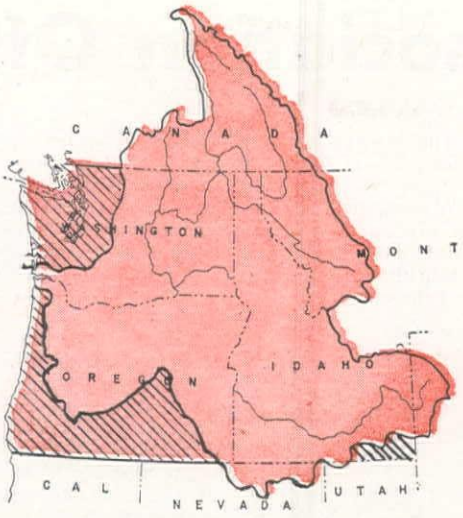
At this time when there are vast properties of the United States, located in the Columbia basin for the purpose of manufacturing the sinews of war which may be taken over and used by the corporation, whether for the purposes of this bill or not, it is evident intent that this Government agency would be put in a position to carry out almost any kind of manufacturing process or other activities heretofore conducted by private enterprise.

Additional powers and duties

Section 10 of the new bill headed "General Powers and Duties of Corporation" provides that the corporation is authorized and directed, among other things:

To construct, operate and carry out such projects and activities in the Columbia Valley region as will best serve to control and prevent floods, to safeguard the navigable waters and to promote navigation and the reclamation of lands.

To construct by contract, force account or otherwise, operate and carry out the projects. Note that S. 1716 contains language, not in the old bill, that the corporation may carry on construction "by contract, force account or otherwise."



THE COLUMBIA river watershed outlined in black, cross-hatched areas being included in the proposed CVA. The Canadian area may be included by later negotiation.

To advise and cooperate in the readjustment of population displaced by the construction of dams, the protection of watersheds, the acquisition of lands and other necessary operations in order to effectuate the purposes of the act.

To construct or operate any project or to conduct any activity entrusted to it through, or in cooperation with, other departments and agencies of the United States or in cooperation with states, counties, municipalities, cooperatives, individuals, educational and scientific institutions, or other bodies, agencies and organizations, public or private.

Financing

The corporation may issue revenue bonds, revenue notes and revenue obligations. These are not direct obligations of the United States and none of the properties of the corporation shall be mortgaged as security for them. They are strictly revenue bonds.

Current proceeds are described in the bill as being derived from "the sale of electric energy, the returns from water contracts and the sale of any products manufactured by the corporation and from any other activities of the corporation, including the disposition of any real or personal property."

Attention is called to the proviso contained in sub-section (d) of Section 20. It reads: "Provided, that subject only to the provisions of this act, the corporation is authorized to enter into such contracts, agreements and arrangements, including the amendment, modification, adjustment or cancellation thereof, and the compromise or final settlement of any claim arising thereunder, and of all litigation by or against the corporation, and to make such expenditures, upon such terms and conditions and in such manner, as it may deem necessary and notwithstanding the provisions of any other law governing the expenditure of public funds, the General Accounting Office, in the settlement of the accounts of the treasurer or other accountable officer or employee of the corporation, shall not disallow credit for, nor withhold funds because of, any expenditure which the board shall determine to have been necessary to carry out the provisions of said act."

This is substantially the same provision contained in the MVA bill. After referring to the provisions of the MVA bill on this subject, the Senate Irrigation and Reclamation Committee in its adverse report on the establishment of a Missouri Valley Authority stated:

"Thus, the corporation would be relieved from control generally exercised by the Comptroller General, as the agent of the Congress, upon expenditures by Federal agencies. In fact, the Comptroller General would be limited to making an audit once a year of the corporation's transactions. He could not even make a report to the Congress of the results of such audit until the corporation had had 'reasonable opportunity to examine the exceptions and criticisms of the Comptroller General or the General Accounting Office, to point out errors therein, explain or answer the same and to file a statement which shall be submitted by the Comptroller General with his report (sec. 8 (d)). In other words, even in those cases where the Congress, through its agent, the Comptroller General, is grudgingly permitted to inspect the corporation's books of account, every possible provision is made to delay the filing of a report for examination by the Congress as a whole.

"Under the express provisions of the bill, the board alone determines the validity of its expenditures without regard to any contrary determination by the Comptroller General, or by even the Congress itself. This committee believes that the enactment of S. 555 and like measures would go far toward bringing about that condition of affairs in which control by the legislative branch shall have been lost, perhaps irrevocably."

State compacts

Attention should be called to Section 25 of the act, under which the consent of Congress is given for the states to make a compact. Such consent is limited by these conditions: (a) That any compact must further and supplement on behalf of the states the purposes of the proposed CVA act; (b) that any compact must be designed to carry out on behalf of the states appropriate projects and activities in relation to the proposed act; (c) that no compact shall become effective or binding upon the signatory states unless and until it has been submitted to the corporation and ratified by Congress.

Under Section 25 of S. 1716 Congress gives a conditional consent to the states to make compacts. If this bill should pass, the Congress thereby expresses its policy that, so far as the Columbia region is concerned, only those compacts which further and supplement the provisions of S. 1716 and carry out on behalf of the states projects and activities which are in accord with those provisions, as determined by the corporation, will have congressional approval. Thereby the Congress virtually delegates to the Authority the exercise of the constitutional power to control interstate compacts within the basin.

Western Association Officers—1946

A. S. C. E.

Jacob E. Warnock, senior engineer in the Bureau of Reclamation at Denver, has been elected president of the Colorado Section, American Society of Civil Engineers. **Russell W. James,** senior highway engineer of the Public Roads Administration, is vice president, and **Alfred J. Ryan,** member of the firm of Crocker & Ryan, consulting engineers of Denver, was named secretary-treasurer.

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Officers of the San Diego, Calif., section of A. S. C. E. for the ensuing year are: **Earl E. Sorenson,** construction engineer for the state Division of Highways, as president; **Philip W. Helsley,** as vice president; and **Robert E. Cullmer,** of La Mesa, as secretary-treasurer.

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L. C. Bishop, State Engineer of Wyoming, has been elected president of the Wyoming section of A. S. C. E. for 1946. Vice-president is **Z. E. Sevison,** construction engineer of Cheyenne, and **Paul H. Berg,** associate engineer of the Bureau of Reclamation at Cheyenne, was named secretary. Assistant to the secretary is **C. L. Endicott,** engineer with the Soil Conservation Service at Tensleep, Wyo.

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Fred M. Veatch, district engineer for the Water Resources branch of the Geological Survey at Tacoma, Wash., was elected president of the Tacoma section, American Society of Civil Engineers, at its annual meeting. **Chas. E. Andrew,** consultant on the Tacoma Narrows bridge, was named vice president, and **Charles H. Strong,** secretary-treasurer. As a director for three years, **Frank E. Culp** was named.

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Wallace Chadwick, chief civil engineer of Southern California Edison Co., Los Angeles, was named president for the present year of the Los Angeles Section, A. S. C. E. Vice presidents are **Charles R. Compton,** assistant chief engineer of Los Angeles County Sanitation Districts, and **Trent R. Dames,** partner in the foundation engineering firm of Dames & Moore, Los Angeles and San Francisco. The secretary for 1946 is **Arthur Pickett,** deputy county engineer, and the treasurer is **David M. Wilson,** professor of civil engineering at University of Southern California. Two past presidents, **Don Hull McCreery** and **Markham E. Salsbury,** complete the board of directors.

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Gerald H. Jones, supervising hydraulic engineer of the California Division of Water Resources, is the new president of the Sacramento section, A. S. C. E. First vice-president is **Robert L. Wing,** also of the Division of Water Resources, and second vice-president is **Arthur J. McNeil** of the Sacramento city engineer's office. **Edwin F. Sullivan** of the Bureau of Reclamation is secretary-treasurer.

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Theodore Parker Dresser, chief engineer of Abbott A. Hanks, Inc., consulting engineers, is the newly-elected president of the San Francisco Section of American Society of Civil Engineers. Vice-presidents are **Sidney T. Harding,** professor of irrigation engineering at University of California, and **Leon H. Nishkian,** consulting engineer of San Francisco. **John E. Rinne,** Standard Oil Co., continues as secretary-treasurer. **George D. Whittle,** retiring president, becomes a director.

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A. G. C.

R. J. Lawrence, of the Lawrence Construction Co. of Denver, has been elected president of the Colorado Contractors Association Inc., a branch of the Associated General Contractors of America, for 1946. Vice-presidents elected at the same time were **Jay T. Williams** of C. V. Hallenbeck & Jay T. Williams Co. and **C. L. Hubner** of C. L. Hubner Co. Secretary-treasurer will be **U. S. Siegrist** and managing director will be **Earle W. Devalon.**

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H. Sather is the new president of the Spokane, Wash., chapter of Associated General Contractors and with him were elected **Walter Meyers** and **James Quick** as vice-presidents. Additional directors are **S. G. Morin** and **Frank Heath.**

R. F. Rasey, an executive of Winston Brothers Construction Co., has been elected to the post of president of Southern California chapter of Associated General Contractors, the largest chapter in the country. The three vice presidents for 1946 are: **John A. Kier,** of the W. E. Kier Construction Co.; **Frank C. Wood,** of Clyde W. Wood, Inc., and **J. S. Reynolds,** of M. W. Kellogg Co. The treasurer is **Wm. Curlett,** who operates under his own name. Other directors are: **Donald MacIsaac,** retiring president, **Harry Friedman, George A. Herz, Thomas H. Paul, Harry James, G. W. Abernathy,** and **Ed Green.**

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Ted C. Jacobsen, partner in the Salt Lake City firm of Jacobsen Construction Company, will be the 1946 president of the Intermountain branch of A. G. C. **Grant Thorn** of A. O. Thorn Construction Co., Springville, Utah, was elected vice-president, and **J. H. Tempest, Sr.,** Salt Lake City contractor, was re-elected secretary-treasurer. New board members elected were **Frank B. Bowers** and **Carl Nelson.**

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At the annual election of the Arizona chapter of Associated General Contractors, **H. L. Royden** was chosen 1946 president. **P. W. Womack** is the new vice president, and **M. O. Packard** was elected director to serve a three-year term. Hold-over directors were **I. G. Beall, Bert M. Pringle,** and **D. W. Fisher. Joseph P. Condrey** was re-named executive secretary.

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Louis A. Peacock, was elected by the Portland, Oregon, chapter of Associated General Contractors to be its 1946 president. **Donald Hall** and **Marshall Newport** will assist him as vice presidents during the year. Re-elected as secretary - treasurer was **Jack McDougall.**

Other Groups

General contractors of Vancouver, Wash., have organized a group to be known as the Vancouver Contractors Association. **Cecil J. Hearn** of Heinrichs, Beedle and Hearn was elected the first president. Associated with him are **Larry O. Collins**, vice-president; **Drexel Scott**, secretary, and **C. S. White**, treasurer.

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Ernst Maag has been elected by the Structural Engineers Association of Southern California as its 1946 presiding officer. Serving with him are **Richard W. Ware**, vice president, and **L. T. Evans**, secretary-treasurer. Other directors are **Ellis W. Taylor, Harry W. Bolin, Ernest C. Hillman, Jr., Rumley DeWitt**, and **Milton W. Nigg.**

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H. H. Johnson of Smith Bros. & Wilson was elected president of the Vancouver, B. C., General Contractors Association, and **Ralph C. Pybus** of Commonwealth Construction Co. and **F. J. Dawson** of Dawson, Wade & Co., were named vice-presidents. Others on the board of directors include **J. Tucker, Hugh Martin, W. D. Lee, L. G. Murray** and **W. E. Jenkins.**

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G. G. Hall, planning engineer of Reno, Nev., has been elected first president of a newly-organized Engineers Club at Reno, and **Eliott Cann** was named secretary. Other charter members are **Charles L. Hill, William C. Anderson, Kyle Forrest, A. E. Holgate, H. L. Morisette, H. P. Boardman, E. C. Grafton, Fred W. Clayton, E. H. Raiford** and **H. N. Wallace.**

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James Reid of Lewiston, Idaho, is new president of the Idaho Society of Engineers. **L. E. Stalker** was elected vice-president; **Archie Biladeau** of Boise, treasurer, and **W. P. Eaton** of Boise, secretary.

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W. O. C. Scott, assistant superintendent of the structural division of Dominion Bridge Co., Vancouver, B. C., has been elected president of the Association of Professional Engineers of British Columbia. **T. H. Crosby**, Vancouver district manager for Westinghouse Co., was made vice-president.

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J. L. Hazen of the contracting firm of Hazen & Clark, Spokane, Wash., has been elected president of the Spokane Construction Council by its board of directors. **H. A. Smith** of Electric Smith was named vice-president and **Al. Funk**, an architect, was appointed treasurer.

William Adrian, prominent structural engineer of San Francisco, was elected 1946 president of the Structural Engineers Association of Northern California. Three new directors were elected. They were: **William W. Moore**, partner in the firm of Dames & Moore, foundation engineers, **Mark Falk**, consulting engineer, and **M. V. Pregnoff**, partner in the firm of Hall & Pregnoff, structural engineers. Moore was selected as vice president. **Franklin P. Ulrich**, of the Geological Survey, Seismological division, was re-appointed secretary. **Harold M. Engle** is a hold-over director.

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Ralph C. Pybus, engineer with Commonwealth Construction Co., has been elected chairman of the Vancouver, B. C., branch of the Engineering Institute of Canada. Vice-chairman is **J. P. Fraser**, and secretary-treasurer is **A. M. Eyre.** Executive board members are **R. Rennie, J. M. Rothwell, R. M. Walkem, R. A. Emerson, G. W. Allan, N. D. Lambert** and **A. Peebles.**

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(Because some organizations elect officers too late for inclusion in this issue, additional announcements will be made next month.)

Sea Level Canal Proposed for Panama as Bombing Defense

ATOMIC BOMBING of the Panama Canal would do no more damage than "could be taken care of promptly with a little dredging"—if the canal is streamlined "for maximum safety and unlimited capacity."

Such streamlining, advocated in a talk by John G. Claybourn, superintendent of the canal's dredging division, is no modernistic concept, but would be achieved by turning back the clock 40 years to convert the present canal into the lock-less, dam-less sea level cut across the Isthmus recommended by a majority of engineers on the commission which studied the project in 1905-06.

While economic considerations, as well as speed in construction and defense needs commensurate with that day rightfully dictated that the minority report of the commission's engineers supersede the majority report, the atom bomb and other technological advances of modern warfare make the streamlining of the canal a "must," Claybourn told the American Society of Civil Engineers on the opening day of that organization's ninety-third annual meeting in New York. He spoke at a joint session of the construction and waterways divisions of the organization.

"Such reports as are available on the atomic bombing of Hiroshima," Claybourn said, "indicate that channel conditions there remained unchanged, right at the focal point of the bomb blast, despite the above-ground, structural damage with which we are all familiar."

Cost of a 500-ft. sea-level channel, requiring a minimum of 12 years to construct, is estimated at $1,310,400,000.

"At the rate of the late war's cost, it would require the equivalent of five and one-quarter days' expenditures. If the project serves its purpose of defense on one critical occasion, its cost will have been justified, despite the fact that the conversion of the Canal is not justified from the commercial earning power over that of a lock canal."

Pointing out that the war interrupted construction of a third set of locks, authorized by Congress in 1939, "in the interest of defense and interoceanic commerce," Claybourn, who has been associated with the Panama Canal project since 1910 and last year was presented the Balboa award by the Panamanian Government, emphasized that the locks and dams of the present structure are the vulnerable parts insofar as bombing is concerned; that the proposed sea-level channel would have no dams or locks other than readily-reparable under-water tidal locks, and that the conversion to the sea-level channel could be accomplished most economically by doing the work simultaneously with the resumption of the third locks project, to insure continuous traffic during conversion.

Only half the channel would be excavated an additional 30 ft. of depth at a time, and when the work was completed, the channel would be 500 ft. wide and of an average depth of 55 ft.

Declaring that "we now have the background of experience to convert our present canal to an invulnerable, indestructible sea-level canal of unlimited capacity which will insure its continuous operation in war as well as in peacetime," and that "there are no problems here that cannot be solved." Claybourn pointed to the Suez Canal as proof of the superiority of a sea-level route over the American lock and dam structure.

"The invulnerability of the sea-level canal has been demonstrated at Suez; its serviceability, by the fact that it is passing the largest ships efficiently, at low cost, and with practically no hazard. It has been blocked by sunken ships during the war, but only for days, not months or years. Its effectiveness as a world-wide waterway has been demonstrated, and with channels less than half the minimum recommended for Panama at sea level.

"Authoritative statements have been made by high officials of the Government that the present lock canal cannot be protected against bombing. These statements were made before the advent of the atomic bomb. With this instrument of devastation, destruction of our control works would be infinitely greater, resulting in the disintegration of structures and even removing the possibility of making repairs, as might be possible in case of ordinary bombing."

Budget Proposals for 1947; Reclamation Chiefs Confer

By ARNOLD KRUCKMAN
Associate Editor
Washington, D. C.

THE 1947 BUDGET submitted by the President to Congress recommends expenditure of $163,554,055 for reclamation; with the unexpended balance available to the Bureau of Reclamation the total for 1947 will be $167,609,690, if Congress approves.

For the Bonneville Power Administration the President recommends $19,701,000; with the unexpended balance available, the total for 1947 would be $21,173,069.

Appropriations totaling $305,838,792 are recommended for fiscal year 1947 for highway development, including the Federal-aid highway program, carried on through State highway departments.

The 1947 budget recommended for detailed planning and construction of river and harbor and flood control projects by the Corps of Engineers, $212,720,000.

The National Park Service would receive an appropriation of $25,250,000 to build roads, trails, parkway, buildings and utilities and to buy new land, if the President's recommendations are accepted.

In Alaska the Federal Government would spend for roads, trails and bridges $3,930,400; and for the Richardson highway $1,000,000.

The Department of Agriculture would spend through the Forest Service, for roads and trails, $36,244,222.

The Bureau of Indian Affairs would spend $9,627,250 for roads, irrigation construction, building construction and new lands.

The budget contains an item of $270,000 for a flood control survey by the Federal Power Commission.

The Geological Survey is budgeted $10,463,000 to make, during fiscal 1947, a topographical survey, a geological survey and to gage streams.

The State Department would expend $10,700,000 for construction of projects and for emergency flood control construction on the Rio Grande, all in connection with international commitments.

The Public Buildings Administration would receive an appropriation of $175,000,000 for expenditure during fiscal 1947.

These twelve general divisions in the budget, which contain large amounts which will be spent in the West and particularly on the Pacific slope, total approximately $1,000,000,000, or in exact figures $979,826,423.

It is safe to predict the appropriations will be substantially as recommended and, in many instances, larger.

The total recommended for highways and airports to be built by various agencies aggregates $349,214,222. The overall figure for flood control and reclamation is estimated at $427,333,250.

The items of especial interest in the reclamation budget, for construction, are: San Luis (Colo.), $1,500,000; Boise, Payette Division, $2,573,000; Boise, Anderson Ranch, $2,847,000; Minidoka, $1,000,000; Palisades, $1,500,000; Sun River (Mont.), $96,000; Rio Grande, $831,000; Tucumcari, $1,738,000; Lugert-Altus (Okla.), $2,080,000; Deschutes, $1,300,000; Klamath, $500,000; Ogden River, $62,000; Provo, $3,102,000; Yakima, Roza Division, $1,440,600; Shoshone, Heart Mountain, $800,000; Shoshone, Willwood, $136,000. Operation and maintenance: Yuma, Boise, Owyhee, Yakima, Riverton, Shoshone, $1,107,055. For construction, reimbursable: Gila, $2,000,000; Davis Dam, $15,000,000; Central Valley, $25,000,000; Colorado-Big Thompson, $15,000,000; Kings River (Calif.), $200,000; Hungry Horse (Mont.), $2,000,000; Columbia Basin, $30,000,000. Water conservation and utilization projects: Ft. Peck, $1,000,000; Missouri River Basin, $23,783,600; Boulder Canyon, $1,357,000; Boulder Dam, $1,000,000; All American Canal, $5,500,000.

The budget for the Corps of Engineers carries an item of $2,000,000 for flood control works in the Sacramento River (Calif.), and an item of $1,505,000 for a power plant at Ft. Peck (Mont.).

The Public Roads Administration budget has an item of $55,000,000 for Federal-aid highways, $23,000,000 for Federal-aid secondary or feeder roads, $30,000,000 for grade crossing elimination, $175,000,000 for Federal-aid postwar highways, $10,515,637 for strategic highway networks and $7,323,155 for access roads. There is available for regular Federal-aid highway work, deferred since before the war, $108,000,000.

The major items in the aggregate overall are for roads, reclamation, power and flood control and rivers and harbors in the West. Over 10 per cent of the entire proposed appropriation, as enumerated, would be spent on five major western projects: Columbia River, $30,000,000; Central Valley, $25,000,000; Colorado-Big Thompson, $15,000,000; Davis Dam (Mexican Water Treaty commitment), $15,000,000; Missouri River Basin, $18,369,300; gross total of the five items, $100,369,300. It is illuminating that of $32,643,215 proposed for the budget of National Park Service, $22,400,000 would be spent for construction of roads, trails and parkways.

Later detailed study will make possible an exact statement but it is more than likely that at least half of the billion dollars listed in the items taken from the budget will be spent in the West, from Kansas towards the setting sun.

A VIGOROUS SHOT-IN-THE-ARM for the top-hole regional and field executives of the Bureau of Reclamation is being administered by new Commissioner Michael Straus, in a series of conferences, which began immediately after New Year and continued into February. Straus' ideas on reclamation and the job ahead is the main theme to the meetings and the immediate result is to make the inner cogs of the Bureau whirl like a pinwheel. New ideas, new plans, new programs, and undoubtedly new shuffles of field personnel will result. Budget estimates for 1946-47 and succeeding years will be re-examined.

The first group summoned to Washington included the following men from the regional offices:

Region I, Boise Ida.: J. L. Cunningham, assistant to the director; W. C. Christopher, regional engineer; R. E. McGowan, acting progress control officer.

Region II, Sacramento, Calif.: R. S. Calland, assistant regional director; J. F. Kastl, finance officer; Marshall Jones, engineer of the regional planning staff.

Region III, Boulder City, Nev.: L. R. Douglass, assistant regional director; J. P. Jones, assistant regional engineer; E. G. Nielsen, regional planning engineer.

Region IV, Salt Lake City, Utah: Clinton D. Woods, assistant to the director; Reid Jerman, regional planning engineer; Mrs. I. P. Stout, administrative assistant.

Region V, Amarillo, Tex.: Wesley R. Nelson, regional director; A. N. Thompson, assistant regional director; Orville Craft, acting regional engineer.

Region VI, Billings, Mont.: W. G. Sloan, assistant regional director; D. H. Huff, acting regional progress control officer.

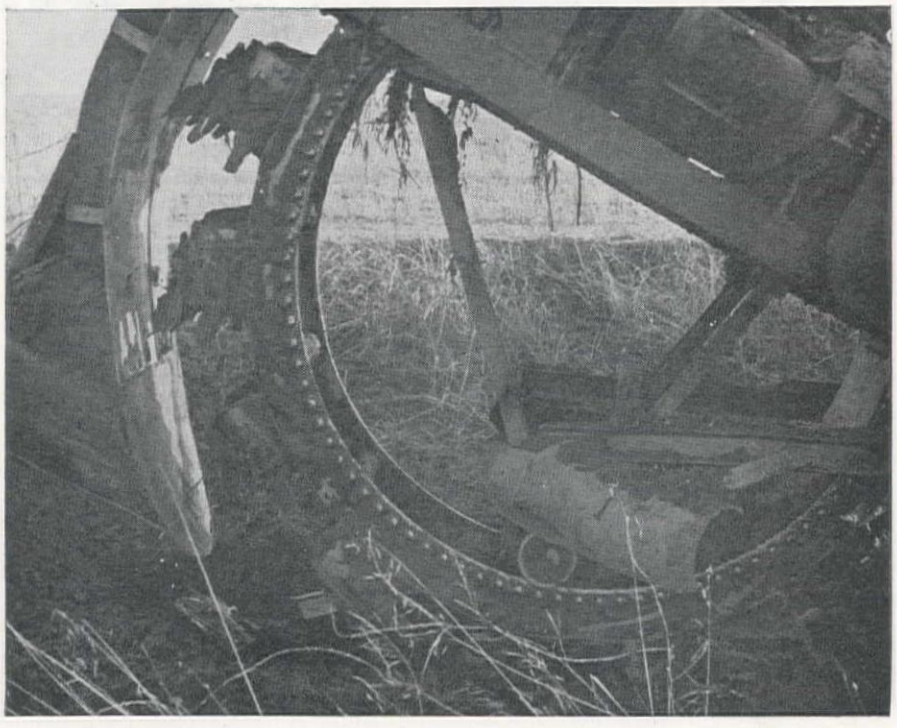
Region VII, Denver, Colo.: A. A. Batson, assistant regional director; W. E. Blomgren, regional engineer; Carl Voyen, finance officer; Henry J. Tebow, acting progress control officer.

Others at the earlier conferences, all from the Denver headquarters, were: Walker R. Young, chief engineer; F. E. Wilhelm, chief progress control officer; L. J. Snyder, assistant to Wilhelm; Q. R. Dungan, assistant budget officer; G. W. Holmquist, administrative analyst; H. F. McPhail, director of power utilization; E. L. Fosdick, McPhail's assistant; J. R. Riter, chief of the hydrology division; L. F. Maca, engineer of hydrology; L. J. Moran, finance officer; Lester F. Ferrell and Emil T. Ficenec, accountants; T. D. Culbertson, budget analyst; Joseph R. Kingsley, auditor; William F. Sha, management analyst; and Glenn D. Thompson, chief personnel officer.

On Jan. 22 the following regional directors and branch directors put in their appearance for additional discussions: R. J. Newell, Boise; Richard L. Boke, Sacramento; E. A. Moritz, Boulder City; E. O. Larson, Salt Lake City; H. D. Comstock, Billings; E. B. Debler, Denver; R. F. Herdman, production engineer; and N. L. McClellan, assistant chief engineer for electrical and mechanical engineering.

HOW IT WAS DONE

JOB AND SHOP TIPS FROM THE FIELD EDITOR'S NOTEBOOK



Round-Nosed Shoe Finishes Trench for Monolithic Pipe

EQUIPPED WITH a rounded follower shoe, a Cleveland trencher was adapted by the Pacific Pipe Line Construction Co., Visalia, Calif., to dig round-bottomed trenches used as the outside form in which monolithic concrete pipe is poured. The trencher was rigged in Turlock, Calif., where it is being used to excavate ditches for the Turlock Irrigation District for the purpose of laying an extensive system of underground irrigation laterals.

The shoe is attached to the excavator wheel frame so that it follows the wheel into the ditch to produce a smooth finish suitable for the forming of concrete pipe. Fabrication of the shoe and supporting frame was accomplished with the use of a cutting torch and electric arc welder, from steel plate material. Frame and shoe were adequately braced with 1¼ x 1¼ x ¼-in. sections of angle bar to develop a sturdy, inflexible follower.

To produce the 30-in. inside diameter pipe the shoe was laid out to cut a trench 35½ in. wide, usually dug to a depth of between 4½ to 5 ft. to assure an 18-in. cultivation clearance above the installed pipe line. The teeth on the buckets were raised by shimming to form the crown section necessary to produce the semi-circular-bottomed ditch specified for the construction of monolithic pipe.

Two flanger blades are attached to the side of the excavator frame and held in a horizontal position so that they clean the ditch bank of loose material as the trencher advances. In this way a smooth, level bank is prepared where planking is laid to facilitate wheeling concrete when the pipe is poured.

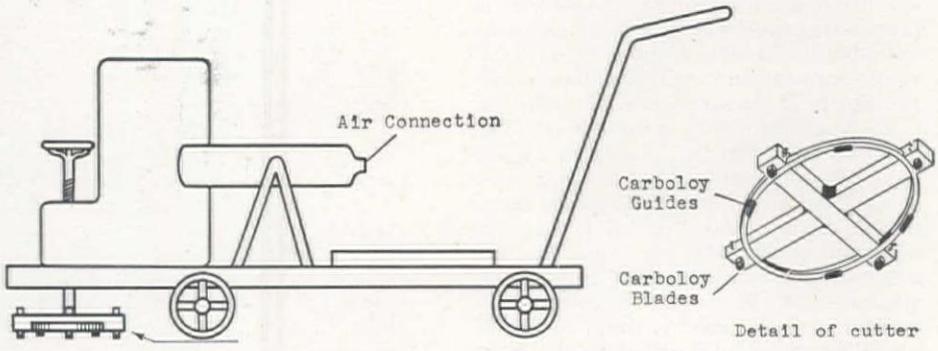
Under normal working conditions the trencher can dig approximately 4,000 ft. of trench, in sandy loam soil typical of the district, during an 8-hr. shift, or about 9 ft. per minute of operating time.

Carbide Tools Used In Floor Surfacer

A CARBOLOY-TOOLED rotary floor scraper that renovates concrete floors by removing encrusted and embedded dirt, oil, metal chips, and even inequalities in the concrete itself is a wartime development which should have peacetime implications. Such a machine has been in successful operation in one large industrial plant devoted to the production of war materiel. The power scraper in this shop was improvised from boiler plate, an air motor, four Carboloy standard tools, and four Carboloy standard blanks. Removal of the dirt-oil-chips mass is accomplished with a four-bladed fly cutter (see sketch below). The cutter head was built up of four standard Carboloy ½-in. tools tipped with a "steel-cutting" grade of cemented carbide.

The cutter head is driven at approximately 100 r.p.m. by an air motor. The head is adjusted up or down by means of a hand screw wheel, depending on the thickness of the accumulation to be removed in order to get down to "clean concrete." Cutter and motor are mounted on a small four-wheeled truck made of boiler plate.

To control the depth of cut and so prevent undue abrasion of the concrete floor, a steel guide ring was incorporated into the cutter head as shown. Since the revolving guide ring is subject to the same conditions of wear as the cutting tools, the steel ring was protected against abrasion by the insertion — at the points indicated in the accompanying sketch—of four ⅜ x ½ x 1-in. standard blanks of a carbide possessing both great toughness and good resistance to wear. The four scraping tools project 1/16th in. beyond the four blanks set in the guide ring. In this manner, the blanks control the depth of cut made by the tools when the rotary scraper is in operation and also prevent undue wear on the steel guide ring.



Detail of cutter

NEWS OF WESTERN CONSTRUCTION

FEBRUARY, 1946

Texas Firm to Lay 1,000-Mile Gas Pipeline to California

THE FEDERAL Power Commission has granted to the El Paso Natural Gas Co., El Paso, Tex., a certificate of public convenience for the construction of practically 1,000 mi. of pipeline to conduct natural gas from Texas and New Mexico oil fields to a connection with another 26-in. line at Blythe, Calif., which will convey the gas to California centers of population. The California branch was discussed in *Western Construction News* for December, 1945.

The company estimates the initial capital costs of facilities to deliver 125,000 Mcf of gas per day would be $27,822,000 and that additional costs to increase deliveries to 175,000 Mcf per day would be $9,365,000, with further additional costs to bring delivery capacity to 305,000 Mcf per day estimated at $14,038,000.

Proposed facilities in detail.

In detail the facilities El Paso proposes to construct include:

1. A 24-in. pipeline beginning near Dumas, Tex., and proceeding southwesterly for 272 mi. to the company's Jal No. 1 plant in Lea Co., N. Mex.
2. A 26-in. pipeline beginning at the Jal plant and proceeding west a distance of about 720 mi. to Blythe, Calif.
3. Twenty-nine mi. of 18-in. line to transport gas from the TXL-Wheeler field in Ector and Winkler counties, Tex., to the company's proposed compressor station at the Jal plant; 37 mi. of 30-in. line to transport gas from the Fullerton field in Andrews Co., Tex., to the Jal plant and about 4 mi. of 12.75-in. pipe to transport gas from the Keystone-Ellenberger field in Winkler Co., Tex., to a connection with the company's present 10.75-in. pipeline in Winkler Co.
4. A compressor station with five 1,000-hp. units to be located in Moore Co., Tex.; a compressor station with five 800-hp. units and 14 1,000-hp. units, to be located near the Jal plant; the addition of 9 1,200-hp. units at the company's existing Eunice compressor station in N. Mex.; and a compressor station with 7 1,200-hp. units to be located southeast of Lordsburg, N. Mex.
5. Gas purification plants to be located at the Eunice compressor station and at the Jal plant and a dehydration plant at the latter location.

To complete pipeline by 1947

The company proposes to finance the cost of the project by the issuance of securities including $22,000,000 of 3 per cent bonds, $6,000,000 of additional 4.5 per cent preferred stock and 100,000 shares of common stock at $30 per share to be offered present stockholders. The company has arranged for a bank loan for any additional money required up to $7,500,000 at 2 per cent interest.

The agreed rate at which gas is to be sold the Southern California companies is shown in the application as follows: A demand charge of $1 per month per thousand cubic feet of maximum contracted daily demand, plus commodity charges of 15c per Mcf for the first 500,000 Mcf per month, 11c per Mcf for the next 500,000 Mcf per month and 9.5c per Mcf over 1,000,000 Mcf per month.

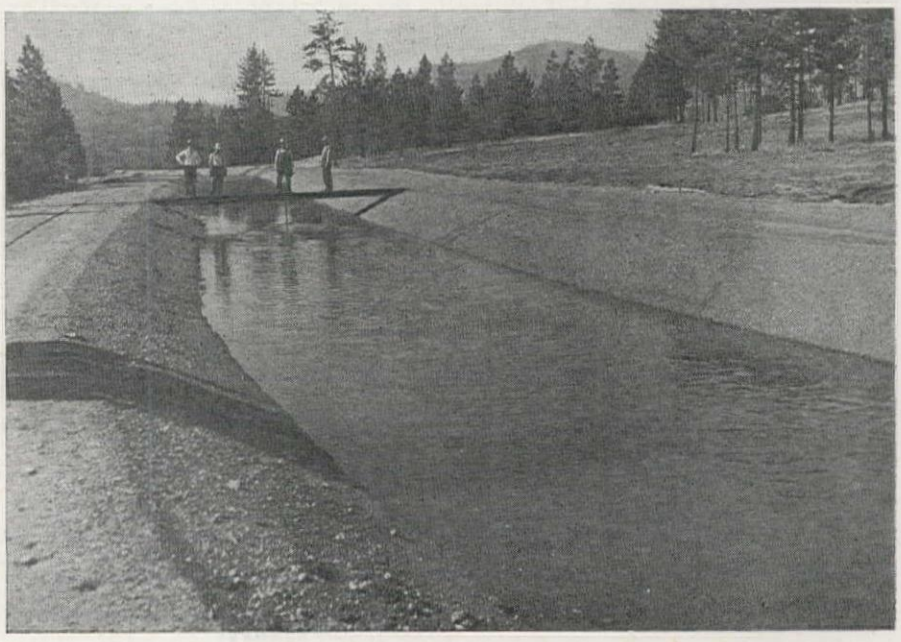
The company intends to begin construction as soon as materials can be secured and to complete the initial facilities for delivery of gas in California in 1947. According to the application it is anticipated that by 1953 the maximum capacity will be required.

Additional facilities

Additional facilities on which the company proposes to begin construction some time before March 1, 1950, include five compressor stations with a total of 35 1,200-hp. units and 24 1,000-hp. units to be located at specified points. It is further proposed to install 17 additional 1,000-hp. units and 5 additional 1,200-

SPOKANE RIVER WATER CARRIED BY CANAL TO IDAHO PROJECT

INITIAL IRRIGATION service will be provided the Post Falls Unit of the Rathdrum Prairie Project in northwestern Idaho this spring by the Bureau of Reclamation. Pumps, borrowed from the state of Idaho, bring water from the Spokane River through a wood-stave pipeline and a main canal, just completed, and shown below, to the lateral system, serving 3,500 ac. of land. The entire proposed Rathdrum Prairie development would include approximately 40,000 ac. of valuable agricultural land.



hp. units in compressor stations included in the initial project, and dehydration facilities to raise the line's capacity to an ultimate 305,000 Mcf of gas per day.

El Paso Natural Gas Co. owns and operates a natural gas pipeline system extending from Jal, N. Mex., in a general westerly direction across portions of Texas, New Mexico and Arizona to Phoenix and Ajo, Ariz. Among other operations it purchases natural gas in the Lea County field in New Mexico and delivers it to other companies for distribution in numerous communities and to industrial customers in those states.

Large Pumps Built For Grand Coulee

THE LARGEST and most powerful water pumps ever built will be installed at Grand Coulee dam to provide irrigation for the first 400,000 ac. of land to be developed on the Columbia Basin project in the State of Washington it was revealed in announcing the call for bids on the equipment by the Bureau of Reclamation.

Each pump, with a capacity eight times greater than the largest comparable installation, will be capable of providing sufficient water for irrigating 100,000 ac., according to Assistant Commissioner of Reclamation William E. Warne. It is planned ultimately to install 12 of these giants at Grand Coulee dam but the present call asks bids on the manufacture of four or six units, as each bidder may elect.

Driven by 65,000-hp. electric motors, each of the pumps will be capable of lifting 12,000 gal. of water per sec. to a height of 270 ft. Frank A. Banks, supervising engineer of the Columbia Basin project, said that they will pump water from the reservoir formed by the dam, up over a hill into another reservoir in the coulee itself where a 27-mi. lake will be formed by two new dams.

Because no water pumps approaching the size of the Grand Coulee equipment ever have been constructed, the Bureau's call requires that the successful bidder build a reduced-scale working model which is to undergo extensive tests to prove its efficiency and dependability. Delivery of the first of the four pumps from the manufacturer is tentatively scheduled for Nov. 1948, the remaining three in 1949.

The pumps will be of centrifugal type with a capacity of 1,600 cu. ft. per sec. on a 270-ft. lift. Operating simultaneously, ten of the units could pump a gallon of water for every man, woman and child in the United States in 18 min. The pumping plant will be built on a rock shelf of the canyon wall upstream from Grand Coulee dam, and each pump, with its overhead motor installation, will be approximately 50 ft. high.

Bids will be received until Feb. 5, 1946. The Bureau hopes to have the model pump ready for final tests by its hydraulic experts within 180 days after the successful bidder receives orders to proceed under the contract.

Southland AGC Leader Dies in Los Angeles

FRANK J. CONNOLLY

FRANK J. CONNOLLY, manager of the Southern California Chapter of Associated General Contractors for twelve years, ending last October, died on January 14 in Los Angeles at the age of 52 of a heart ailment complicated by pneumonia. He built the Southern California Chapter from a practically dormant organization to the largest local group in the entire Association, and was given every award for his efforts that the national group could bestow.

He was the moving factor of the master labor agreement between the contractors and the labor unions which has worked so satisfactorily in the area to maintain good relations and eliminate work stoppages. His health deteriorated last year to the point where it was necessary for him to take a protracted vacation. He returned to his desk last spring, but the responsibilities of his office were too severe a strain upon his health and he was forced to retire on Oct. 15.

W. Don Shaw, formerly secretary-manager of the Mountain-Pacific Chapter of AGC in Seattle, Wash., has taken over the position of manager of the Southern California Chapter.

Hydraulic Laboratory To Open in Colorado

A HYDRAULIC LABORATORY for summer studies of fundamental hydraulic problems by teachers, engineers and students is to be established on North St. Vrain Creek, near Allenspark, Colo. The site for the institution has been acquired by a non-profit corporation and the laboratory will be open to use in the summer of 1946. The discharge of the creek is more than ample for ordinary experimentation and there is 80 ft. of fall in the quarter-mile of its course which lies within the boundaries of the 20-ac. site.

Charges for use of the facilities will be low, since no pumping will be required and only a small amount of shelter will be required. Accommodations for those performing experiments will be available in hotels nearby, and only the most delicate instruments will require housing, the dry summer climate being well adapted to outside work.

The trustees of the institution, to be known as the Rocky Mountain Hydraulic Laboratory, are John C. Stevens, 1945 president of the American Society of Civil Engineers, Gerard H. Matthes, John L. Savage, Sherman W. Woodward, Hardy Cross, Francis M. Dawson, Ivan E. Houk, Adolph F. Meyer, C. J. Posey, Edward Soucek, Royce J. Tipton and Judge Clifford H. Stone. All but Stone are members of A. S. C. E. Matthes is president of the trustees and Ralph W. Powell is secretary.

Davis Dam Brings Boom To Early Mining Town

SEARCHLIGHT, NEVADA, is enjoying a boom for the first time since the early mining days. The sudden increase in activity comes from the imminent construction of Davis dam, about 15 miles east of the town. The State Highway Department of Nevada has begun drawing plans for a highway connecting the town with the $21,000,000 dam and it is anticipated that hundreds of construction workers will reside at Searchlight. The town, which has a population of 205 according to the Census Bureau, is supplied with water from one well and additional water is one of the first necessities if the town is to expand. The Clark County Board of Supervisors has authorized the drilling of a new well but sites likely to produce water are extremely rare in Southern Nevada.

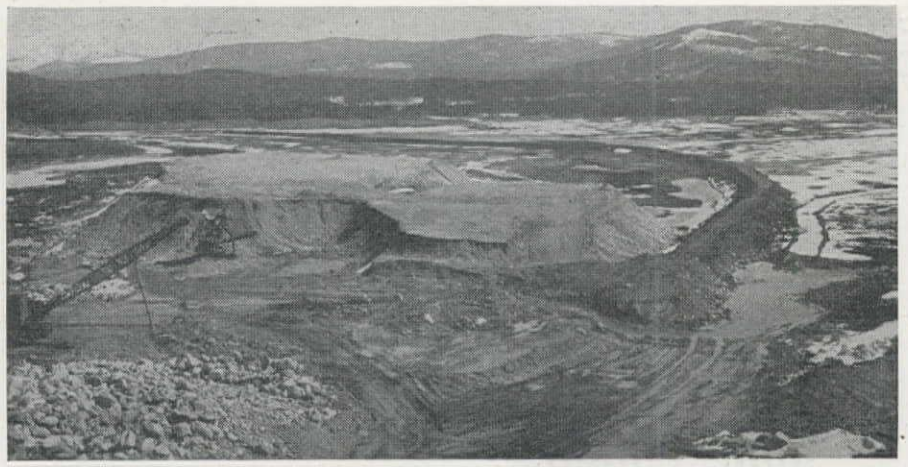
Temporary headquarters for the engineers of the Bureau of Reclamation have been established at Kingman, Arizona, about 40 mi. east of the dam site. Permanent headquarters for the Bureau will, however, be established near the dam.

Ample Water Supply Assured For Columbia River Basin

WATER SUPPLY for the Columbia River Basin will be 110 to 125 per cent of normal, if precipitation is normal during the coming months, thus assuring adequate supplies of water this spring and summer, according to the Weather Bureau of the Department of Commerce.

Even if the most extreme dry weather should set in the water supply would still be 80 per cent of normal; and if there is an unusual amount of rain this spring the amount of water available could equal that of the best year on record.

The situation prevails, according to the Bureau, because, "September through December precipitation has been sustantially above normal over the Columbia Basin, except for portions of the Salmon and Bitterroot drainages and at scattered stations in the Upper Snake."



EMBANKMENT CONSTRUCTION AT SHADOW MOUNTAIN DAM, COLORADO

A DIKE 2,500 FT. long, extends westerly from the main earthfill structure and spillway. The Bureau of Reclamation earthfill structure will serve as a control reservoir at the inlet end of the 13-mi. continental divide tunnel of the Colorado-Big Thompson project. Material excavated from the spillway and cut-off areas was stockpiled (center) and later segregated to supply material for the main dam embankment.

"Cape Cod Commandos" to Reassemble As Permanent Army Engineer Brigade

WHEN A LARGE CONTINGENT of the Second Engineer Special Brigade arrived in Tacoma, Wash., recently, the "Cape Cod Commandos," as they are known in South Pacific battle-beach areas, came through one of the worst storms ever to sweep the North Pacific and will reassemble later as a permanent engineer unit in the postwar army.

After 33 months in the Pacific, the Second Brigade under Brig. Gen. William F. Heavey, commanding officer, will be trained at Camp San Luis Obispo and Morro Bay, Calif., for incorporation in the regular Army. Its full wartime strength of 8,000 will be reduced to 5,000. Born of necessity for island-to-island assault landings in the Pacific, the Second Brigade so proved the power of its organization and methods that Gen. MacArthur requested its retention.

Units in the Second Brigade include the 532nd, 542nd, 592nd Engineer Boat and Shore Regiments, 562nd Engineer Boat Maintenance Battalion, 262nd Medical Battalion, 287th Signal Co., 416th ASF Band, Headquarters Co., Medical Detachment, Quartermaster Headquarters and Headquarters Co., the Brigade Support Battery, 162nd Ordnance Maintenance Co., 189th Quartermaster Gas Co., 5204th Amphibious Truck Co., 695th Quartermaster Truck Co., and 3498th Ordnance Motor Maintenance Co.

From June 30, 1943, until the end of the Philippine campaign, the Second Engineer Special Brigade rammed the bows of their landing craft onto the beachheads of 25 major assaults with 87 beachhead landings. Eight landings won presidential unit citations for the brigade including Lae, Finschhafen, Hollandia, Biak, Wakde Island, Ormoc, Los Negros Island and Corregidor.

The "Cape Cod Commandos" received their training under the Corps of Engineer amphibious program designed and supervised by Brig. Gen. Arthur Trudeau who was stationed in the Seattle Army Engineer headquarters from Sept. 1936 to July 1940.

The brigade devised many innovations in beachhead tactics, including partly lowering an LCM ramp while at sea to allow a Sherman tank loaded on the LCM to engage an enemy tank ashore, knocking it out in a few rounds and being the first known instance of a tank firing at sea from an LCM to destroy an enemy tank ashore.

Basically the brigade was organized into boat and shore teams, the boat teams to make landings with assault infantry and combat engineers aboard, the shore teams to establish beachhead supply for advancing troops. The setting was the same on all landings—jungle forests, sago swamps, hidden coral heads, black muck, sudden storms and Japs.

Their weapons were rocket launchers, machine guns, antitank guns and beach bulldozers. Their craft were armored amphibian tractors known as Buffaloes, decked barges with outboard motor units known as Elephants, DUKWs, LCVPs, LCMs, LSDs, LCTs and the like. Their business was beachheads, scouting, mapping and charting islands and offshore waters before assault; carrying in troops, artillery, ammunition, food and all types of supply; returning with casualties, sick, mail and relieved troops.

The brigade, with its scarlet seahorse insignia and golden anchor shoulder patch, had for its Philippine motto "Put 'Em Across." They proved that motto in all their leapfrog landings.

New Mexico Power Plant Sold to Colorado Firm

THE FEDERAL POWER Commission has authorized the Trinidad Electric Transmission, Railway & Gas Co., Trinidad, Colo., to purchase from its affiliate, the New Mexico Power Co., Santa Fe, N. Mex., electric facilities comprising the latter's Dawson Division located in Colfax and Mora counties, N. Mex. The base price will be $526,101 in cash.

The New Mexico Public Service Commission has approved the proposed transaction.

The facilities to be acquired are now interconnected with the Trinidad company's system. They include a 4,000-kw. steam generating station, about 60 mi. of transmission lines, and distribution facilities.

According to the Trinidad company's application, the purchase price is based on the original cost of the facilities less depreciation at Dec. 31, 1944, and adjustments will reflect improvements and retirements made and depreciation accrued between that time and the closing date of the transaction.

Helicopters Will Land On Portland Building

WORK IS UNDER WAY at SW Clay St. and Harbor Drive at the Portland, Ore., waterfront on the first Portland building—and one of the first on the Pacific Coast — designed for a helicopter landing field on the roof.

It will be the ultra-modern two-story and basement building to be readied in the first half of 1946 for the Columbia Distributing Co., a beverage concern. The Ross B. Hammond Co., well-known Portland contracting firm, is general contractor.

The building will cost $500,000, and will be 80 by 460 ft. Plans were drawn by Wolff & Phillips, architects. Extra strength in the roof and roof supports will make the "top deck" suitable for the proposed landing field.

Juneau Gets War Department Okay for Small-Boat Harbor

WAR DEPARTMENT approval of one of Juneau's major postwar projects, construction of a small-boat harbor, has been announced by John Paget, Chief, Permit Section, Seattle District, U. S. Army Engineers.

The small-boat harbor as planned by the city of Juneau will be located in Gastineau Channel, northwesterly of the existing boat harbor. Plans provide for a basin about 400 by 500 ft., dredged to a depth of 14 ft. at low water. Four main floats each 12 ft. wide by 320 ft. long and a slag-fill breakwater 1,180 ft. long are included in the project which will give Juneau additional moorage facilities for fishing fleets.

WASHINGTON NEWS

. . . for the Construction West

By ARNOLD KRUCKMAN

WASHINGTON, D. C.—The first fruit of the Mexican Water Treaty has been plucked by Heroic Harold, the high priest of the Department of the Interior. In mid-January he approved the announcement by Reclamation Director Mike Straus that a $77,000,000 earth and rockfill dam immediately will be started at Pyramid Canyon, 35 mi. west of Kingman, Ariz., to be the largest work on the Colorado River since the building of Boulder Dam. Davis Dam starts with a contract for $21,462,520 which has been awarded to the Utah Construction Co. of San Francisco.

This, the fourth of the great projects on the Colorado, was made imperative by the pledges given to the Mexicans. The plan includes transmission lines which will supply power for the pumping plants, and will connect with the system at Boulder and Parker dams. It is designed to provide more power for Coachella Valley, and for large areas of Southern and Central California. The artificial lake created by Davis Dam, 1,820,000 ac. ft. of impounded water, will be three times larger than the lake behind Parker Dam. The power plant includes 5 generators of 45,000 kw. each. Built for the needs created by our contract, in perpetuity, with Mexico, it is intended the water shall be used and re-used.

The preliminary excavations were done before the needs of the war shut down all work of the kind. The new urgency for Davis Dam obviously sprang from the Good Neighbor policy conceived by former President Roosevelt and cashed in by Sen. Connally of Texas.

It is anticipated the building of Davis Dam will bring into existence another Federal town patterned after Boulder City; and will do, relatively, to historic old Kingman what Boulder Dam has done to Las Vegas, Nev. It gives much satisfaction to the old-timers in the development of the Colorado system that these benefits will come to the fine old mining community of Kingman. This staunch Arizona town, with its picturesque earlier-day background, has long been the home of a group of Hassayampans who have consistently supported all efforts to bring into being the dreams of half a century to harness the Colorado to its ultimate potentialities.

Here, in Washington, old-timers are glad that the name of Arthur Powell Davis will be immortalized in the second largest dam on the Colorado. Davis was another engineer of extraordinary stature, who gave the best years of his life to the earlier and more difficult phases of reclamation as head of the Bureau of Reclamation. He was the nephew of the classic pioneer of the Colorado, the famous one-armed explorer, Maj. John W. Powell, who lost his arm at the Battle of Shiloh and later became one of the greatest geologists and explorers of America. He was the first head of the Geological Survey. It was Maj. Powell who made the first boat trip along the entire course of the Colorado River and first explored the Grand Canyon. It has been proposed that his image, in heroic mold, together with that of his nephew, be placed at Davis Dam.

Contractors bid on reclamation

Apparently the contractors who work on the West slope have more courage than those who undertake jobs elsewhere at this time. Aside from the Davis Dam contract the Bureau of Reclamation reports work on the Friant-Kern Canal in the Central Valley is proceeding, contracts having been let recently for 50,000 bbl. of modified portland cement and 110,000 cu. yd. of sand and 190,000 cu. yd. of coarse aggregate. Contracts for construction work on the 45,000-ac. Tucumcari reclamation project have been awarded for the building of earthwork and structures on the Conchas and Hudson canals. Also let is a contract to build laterals, sublaterals, pipelines, structures and earthwork for the distribution system of the Roza Division of the Yakima reclamation project.

Bureau of Reclamation people report that bidding for these various contracts has been spirited. This information has startled other Government agencies which have construction programs. They report they have found contractors generally are not ready. It is assumed the uncertainty of the national situation, the instability reflected in the strikes, the slow demobilization of the armed forces, the unbalanced channeling of supplies, uncertainties in transportation, and other factors have caused the contractors to wait. The Reclamation people ascribe the ease with which they have been able to proceed, to the location of their projects and to the escalator clause in their contracts.

The clause generally covers the cost of labor alone, although some contracts have a clause which covers both labor and material. Generally, the clause occurs in those contracts whose performance is expected to take more than 180 days. For example, if the wage rate rises in excess of 50c an hour, the Government accepts responsibility for 65 per cent of the increase, and the contractor absorbs 35 per cent. It is reported virtually all reclamation and corollary projects now under construction are covered by these clauses, or by the clause which pertains jointly to labor, supplies, materials and equipment, including heavy equipment. The non-labor factors broadly constitute 25 per cent of the contract. The contractors are reported to be well satisfied with these contracts.

Reclamation program rolling

The impression in the Bureau of Reclamation is that contractors who have been invited to bid on construction jobs sponsored by other Government agencies apparently fear that the escalator clause is a cost-plus provision under another name. It is thought when the cautious contractors really understand the adjustment clause as drafted by the Reclamation people they will be more ready to undertake the various projects.

The temper of the contractor is seriously important to the Bureau of Reclamation, since it is driving with all energies to get all of the current $140,000,000 program going as soon as possible, this year.

Its plans touch 30 projects in 17 states, with $14,000,000 for three major projects in the Missouri Basin: Boysen Dam and power plant on the Big Horn in Wyoming; the 150-ft. concrete dam on the Cheyenne near Hot Springs, S. D.; and the Kortes Dam and power plant on the North Platte, southwest of Casper, Wyo. It also has the job of constructing a 290-mi. transmission line to bring power from Fort Peck Dam to enable the Corps of Engineers to build Garrison Dam on the Missouri above Bismarck, N. D. Investigation is under way into the feasibility of projects at Canyon Ferry and Marias, Mont.; Heart River, N. Dak.; Frenchman-Cambridge, Nebr.; Bostwick and Kirwin, Kan.; Owl Creek and Glendo, Wyo. Work is to start on some of these projects this year if Congress gives the proper signal with funds.

It also is planned to start on the irrigation system to bring the Columbia River water to the 400,000 ac. under the Grand Coulee Dam, and to start work on the power plant and pumping system at Grand Coulee. Considerable work is planned in Central Valley.

Funds now available are: $2,789,971, Gila, and $432,000, Parker, Ariz.; $6,665,400, Coachella Canal, Calif.; $8,474,000, Colorado-Big Thompson and $1,471,200, San Luis, Colo.; $3,494,000, Boise Project-Payette Division, $5,353,270, Anderson Ranch; $1,663,100, Palisades, and $725,200, Minidoka, Ida.; $1,700,000, Hungry Horse, $167,800, Sun River, Mont.; $1,274,400, Rio Grande, $4,568,200, Tucumcari, N. Mex.; $3,491,197, Luger Altus, Okla.; $3,035,580, Deschutes, $1,695,300, Klamath, $249,145, Owyhee, Ore.; $2,997,500, Provo River, Utah; $2,226,300, Yakima-Roza Division, Wash.; $774,400, Kendrick, $1,824,300, Riverton, $1,377,100, Heart Mountain, and $1,177,800, Shoshone Power Division, Wyo.

The new broom

They say the Bureau of Reclamation is moving so fast administratively that you can hear the machinery rattle. It is no reflection to say that a new broom sweeps clean. Commissioner Mike Straus and his friend, Assistant Commissioner Bill Warne, intend to make the dirt fly, literally as well as figuratively. They regard peace as an opportunity to expand the Bureau. It is reported the Bureau needs, for its seven regional offices, 857 additional payrollees and the Washing-

ton office wants 509. The "recission" of funds from various agencies is not interpreted to mean the regular agencies will shrink.

One of the most interesting incidents of the Reclamation month in Washington was the farewell dinner the personnel of the Bureau gave to Commissoner Harry W. Bashore, just before he laid down his baton. It was held at the Statler. The surviving assistant commissioner, Warne, presided and the Secretary of the Interior, as well as the new commissioner, Straus, said smooth things. Also at the table were Sen. Joseph C. O'Mahoney, Wyo., and Sen. Carl Hayden, Ariz. The most surprising presence, as a guest, was Floyd O. Hagie, the dynamo of the National Reclamation Association. He was the only non-Government personality in the room.

What will Bashore do?

Bashore has left for Mitchell, Nebr., which he has adopted as home. The Reclamation crowd here are very jittery about Bashore's intentions. They fear he will go out in the Reclamation country and needle the present people in the Bureau. His friends say that Bashore will do no needling, he will simply set the record straight.

He may even talk about that interpretation by the solicitor of the Department of the Interior of the 1939 Reclamation Act which has stirred up so much contention. Congress is quite clear it intended the act should require investments in commercial power, in connection with irrigation projects, to be repaid in 50 years at 3 per cent. Apparently the cheap public power group in Interior understood Congressional purposes otherwise. The solicitor construed the act to require only that commercial power rates repay 3 per cent annually. He thinks Congress intended the original investment in commercial power installations in the Reclamation West as a subsidy provided by all the taxpayers of the nation.

The Congressional group are peeved. They are peeved about the bill supposedly written by an official of the Bureau of Reclamation, at the request of Chairman John R. Murdock of the House Committee on Irrigation and Reclamation, to cover a project which was to be a memorial to Murdock's son, who was killed in the war. When the bill was taken apart at a hearing it was discovered its enactment would have made effective some unpopular radical ideas written in the bill entirely unbeknown to Congressman Murdock. They are so well peeved about this incident and the unsolicited interpretation of their intentions by the solicitor, that they have let it be known there will be no more appropriations for irrigation or power connected with irrigation until another amendment is enacted which will make the original purpose of Congress so crystal clear that no one can distort the meaning.

A new Authority bill

The new Columbia Valley Authority bill, S. 1716, introduced by Sen. Mitchell, Wash., is a bulky document which is ostensibly regarded by those opposed to Authorities as just so much sociological dynamite. In effect it is a frank reversion to the pattern of the TVA. It would place the CVA in the control of a three-member board and would make it the dominant force in all matters of water, agriculture, mining, forestry and allied industry in the Columbia Valley. Those opposed insist the bill has gained adherents in Congress and that there is a real prospect that it may be passed. Apparently it is assumed the general drift towards socialized government and towards stronger and more highly concentrated government direction makes the enactment of the bill entirely possible.

Sen. Murray, on Jan. 15, appeared before the Senate Agricultural Committee and asked that no more hearings be held on his Missouri Valley Authority bill. Also, that the committee abrogate the time limit for the hearings, March 15. In effect this makes possible a formula which enables the Senate to painlessly kill the MVA bill and at the same time to save Sen. Murray embarrassment. The bill simply disappears without comment and without unpleasant debate. The President is usually credited with giving the coup de grace to the bill. He not only damned it by faint praise but he finally hedged it about with so many qualifications and limitations that it was clear it meant nothing. Apparently the energy that was to be expended on this project will be focused upon the CVA program.

Highways

Observers in the capital remark that the season for letting highway contracts is now on hand but that the contractors do not seem to be ready. The Federal funds are on hand, the plans generally have been prepared, the State highway people have put out "feeler" contracts but the results have been unsatisfactory. Bids generally are too high and the contracts have been held back. It is the general assumption that contractors will delay, although large programs are ready if they can be achieved at reasonable prices. The impression is that everyone is waiting to see what will happen in connection with the steel strike, the General Electric and Westinghouse strikes and other strikes which have swept the country.

Also, they wish to see what will happen to the vociferously discussed, but minus-action, housing program. The materials, the equipment, the manpower, the transportation and many other factors involved in housing and building construction have a bearing on the highway construction programs. Apparently the escalator clause for adjustment of costs and prices used by the Bureau of Reclamation does not appeal to highway builders.

No one seems to have a clear idea what is immediately ahead, except that deep interest everywhere is manifested in the meeting to be held by the American Association of State Highway Officials at Oklahoma City. It is hoped the discussions there will make clearer what is ahead. Charles M. Upham, Engineer-Director, American Road Builders' Association, emphasized recently highway construction will not interfere with housing construction.

House and Senate conferees are still deadlocked over the bills to construct airports with Federal aid. The chief obstacle is the method of channeling the funds. The Senate wishes to channel all

LATE WIRE

THE NAME has been changed to War Assets Corporation; but the war surplus will be sold through the same offices in the regions heretofore designated by RFC, Surplus Property Administration, and other surplus sales channels.

Rep. Case, S. Dak., recently put an amendment to a Boulder Dam bill, which amendment would have legally nailed tightly the name of Hoover to the dam. The committee induced him to withdraw the amendment by promising it would report the amendment out of committee in the immediate future for action on the floor. Apparently, the committee feared a fight which might jeopardize the immediate bill. Chronology of the nomenclature for the dam shows it was called Boulder by habit, rather than by any fixed purpose. In 1930 Sen. Reed Smoot tried to have it legally named Boulder Dam but failed. In 1931, dedicating the dam, Interior Secretary Wilbur named it Hoover Dam. In 1933 Harold, the Hellraiser from Winnetka, wrote a long letter for the record renaming the dam Boulder. When the country got sore and said Harold was petty, one of his "tame cat" solicitors ruled that it was necessary to remove the name of Hoover and to affix the name of Boulder to the dam. To back this up, the Geographical Names Board of the Interior brought forth the declaration that notable places were only named after those who were dead. In this obedient finding they clearly forgot that the first great reclamation dam on the Salt River in Arizona was named Roosevelt Dam while Theodore Roosevelt still was very much alive. Since that time the New Deal Government insistently and persistently forced into legal usage the name Boulder Dam, and wiped out the identification of Hoover. At the same time Harold apparently forgot that Mr. Hoover gave his Rapidan Camp, near Washington, to the nation for the use of the President for summer holidays. The name of Hoover was never heard in connection with the extensive, and useful, camp; and it was usually loaned to secretaries and stenographers for weekend parties. Rep. Case now intends to make a strong fight for the legal christening of Boulder Dam as Hoover Dam. The results will be interesting.

funds through the States; the House insists they must go directly to quasi-public bodies, from municipalities to various types of districts. The House will not permit the funds to be used for purchase of land but permits condemnation of land needed for airports. The Senate permits acquisition of land but no condemnation. The Senate would provide $75,000,000 annually for 5 years to be allocated to States proportionately, with 35 per cent earmarked for Class 4 and larger airports; the House would provide $650,000,000 over a 10-year period, 25 per cent available regardless of State quotas.

And finally—Harold

As stated above, the tempestuous Harold is expected to leave the Interior Department soon. Who will follow him is still a question which stirs the capital to its foundations.

Those who usually are close to the sources of information insist that former Senator Clark of Idaho is certain to be appointed to Interior. Some commentators are certain it cannot come to pass because Clark is intimate with Tommy Corcoran. There also are substantial people in Government itself who profess to be certain Lew Schwellenbach, now Secretary of Labor, who comes from Washington, may have the post if he wants it when he leaves the Labor job, which is expected to go to Steelman. The White House gossip is that Schwellenbach may either become Secretary of Interior or go back on the bench. It also is repeated insistently that Sen. Harley M. Kilgore of West Virginia may get the Interior post. Most recently there has been mention of Congressman Harry Sheppard of California, who represents the area around San Bernardino. Take your pick!

FWA Funds Advanced Cities Of West for Works Planning

FUNDS ALLOTTED by the Federal Works Agency, Bureau of Community Facilities, for advance planning of public works projects in the Western States, include the items listed below. These funds are made available to assist the cities and other agencies in their preconstruction planning and are to be repaid without interest after construction begins.

Arizona

The Chandler High School District has been allotted $1,400 for planning the remodeling and equipping of certain departments, estimated to cost $42,100; Coconino County received $336 to plan a jail addition at Flagstaff, which will cost $9,000; the City of Flagstaff has been given three advances, totaling $5,350, for designing additions to the sewerage collection system and a treatment plant at a total cost of $187,200; Gilbert was awarded $2,200 for planning a sewer system and treatment plant, estimated to cost $55,420; Globe School District, $4,000 for planning a new gymnasium to cost $112,000; Maricopa County School District, $5,048 to assist in planning a school addition and auditorium; Tempe, $3,000 to design a sewage treatment plant estimated at $70,000; and the University of Arizona, $12,928 for designing a three story dormitory at Tucson, which will cost $363,948.

Colorado

Denver was advanced $50,000 as an aid in planning a dam on Boulder Creek, which it is estimated will cost $9,576,000; and an advance of $16,000 has been approved for the County of Larimer to design a courthouse at Fort Collins, which will cost $516,000.

Idaho

Bannock County has been given a Federal advance of $27,000 for designing a general hospital at Pocatello, the estimated cost of which is $802,000.

Nebraska

Greely County School District was advanced $2,000 to prepare plans and specifications for remodeling an existing school at Scotia at an estimated cost of $78,000; McCook was allotted $5,476 for planning a sewerage system and treatment plant estimated to cost $123,681; Kearney has been awarded $13,950 to design an auditorium for 4,000 people, which will probably cost $395,600.

Nevada

Churchill County has been given two advances, totaling $15,400, to plan a new courthouse, jail, telephone building and 25-bed hospital at Fallon, total estimated cost of which is $425,000; the State of Nevada was allotted $5,350 to design three new cottages for the orphans' home at Carson City, estimated to cost $132,975; and the University of Nevada, $11,000 for planning an addition to the engineering building at Reno, to cost $288,800.

New Mexico

Eastern New Mexico College has been awarded three planning advances, $3,500 for a student union and little theater building to cost $162,955, $4,500 for a library building to cost $218,750 and $3,000 for an auditorium and gymnasium to cost $162,550; Las Cruces Board of Education received $6,000 to plan a 16-room school estimated to cost $107,000; and the New Mexico Insane Asylum was given $4,840 to assist in making plans for a 70-bedroom dormitory at Las Vegas to cost $129,000.

Oregon

Multnomah County School District has been given an advance of $3,600 for planning in connection with an addition to Fairview school, which is estimated to cost $92,500.

Utah

Clearfield has been advanced $1,050 to plan additions to the town water supply system, which will probably cost $30,300; Logan School District has received three advances, totaling $2,680, for school additions to cost approximately $75,200; Ogden School District, $6,208 as a planning fund for a 13-classroom school addition which will cost $188,680; Perry, $1,900 to design a reservoir and water system appurtenances to cost $55,000; Pleasantview, $2,356 to lay out a culinary water system, including intake supply, reservoir, mains, etc., which will cost $69,000; and Salt Lake City, $25,000 for planning citywide extensions to storm sewers estimated to cost $1,050,000.

Washington

Bellingham has a Federal advance of $3,300 for planning extensions to the sanitary sewer system installation, cost of which will be $95,835; and the Bryn Mawr sewer district near Seattle was granted $7,560 for planning a complete sanitary sewer system estimated to cost $159,895.

Wyoming

Greybull was granted a Federal advance of $3,080 to plan storm sewers estimated to cost $85,470; Laramie, $3,100 also for planning storm sewers to cost $87,000; Sheridan County, $4,500 to assist in planning an airport administration building at Sheridan, estimated to cost $112,200; and Sweetwater County School District, $2,600 for designing an elementary school at Rock Springs, which will probably cost $79,500.

Hawaii

The County of Hawaii has received an allotment of $2,500 for planning a hospital laundry at Hilo, estimated to cost $55,000, another of $8,000 to lay out the Wailoa River Park at Hilo, which will cost $216,000 and a third of $5,000 to design a 16-classroom school at Paauilo, estimated to cost $112,000.

Totals to date

Advances in Federal Works Agency funds aggregating $13,248,246 for the preparation of plans and specifications for 1,826 proposed public works to cost an estimated $564,932,291 had been approved up to Dec. 31. A total of 4,175 applications, for an estimated expenditure of $1,686,097,204, have been received.

By types the proposed public works for which advances have been made are:

Highways, roads and streets (not included in the Federal-Aid Highway System), 100; to cost an estimated $15,651,960.

Bridges, viaducts and grade separations, 27; to cost an estimated $19,358,982.

Airports, 11; to cost $4,125,248.

Sewer, water and sanitation facilities, 809; to cost $235,416,906.

Schools and other educational facilities, 483; to cost $116,862,079.

Hospital and health facilities, 75; to cost $33,252,246. Other public buildings, 195; to cost $56,819,713.

Parks and other recreational facilities, 93; to cost $7,995,061. Miscellaneous public facilities, 33; to cost $75,450,096.

First in Series of Surplus Building Material Sales to Be at Port Hueneme

THE FIRST OF A SERIES of sales of building materials and construction equipment from excess stocks at various Army and Navy depots throughout the country will be held shortly at Port Hueneme, Calif., a Seabee depot, 68 mi. northwest of Los Angeles, the Reconstruction Finance Corporation has announced.

While portions of certain categories of materials at Port Hueneme have already been sold locally, an on-site sale of the balance of the materials and equipment at this location will be held as soon as sale arrangements can be completed. The actual date of this and following sales at other depots will be announced through the local press.

Although the sales will help to alleviate the present critical and increasing shortage of building materials needed for the housing of veterans and others, the quantities of materials will nevertheless be insufficient to meet all demands. All sales will be handled by the RFC, the disposal agency designated by the Surplus Property Administration for such materials, assisted by Army and Navy personnel.

It is understood the armed services will reduce their inventories of building materials and construction equipment at approximately 22 supply depots to actual current and anticipated needs as well as placing restrictions on all construction that is not immediately necessary. It is expected that the balance of the inventories above the revised minimum stock levels will be declared surplus for prompt disposal by RFC. With the exception of 30 per cent of the materials and equipment to be reserved for priority holders (federal, state and local governments) and veterans' preference, at least 70 per cent, or the unclaimed balance, will be channeled into housing, with preference to veterans' housing.

In the interest of further speeding distribution, all sales will be made on a fixed-price basis wherever possible. It is felt that a pre-determined fixed price, based on fair market value, will greatly speed the use of the materials by reducing the time lag inherent in sealed-bid selling.

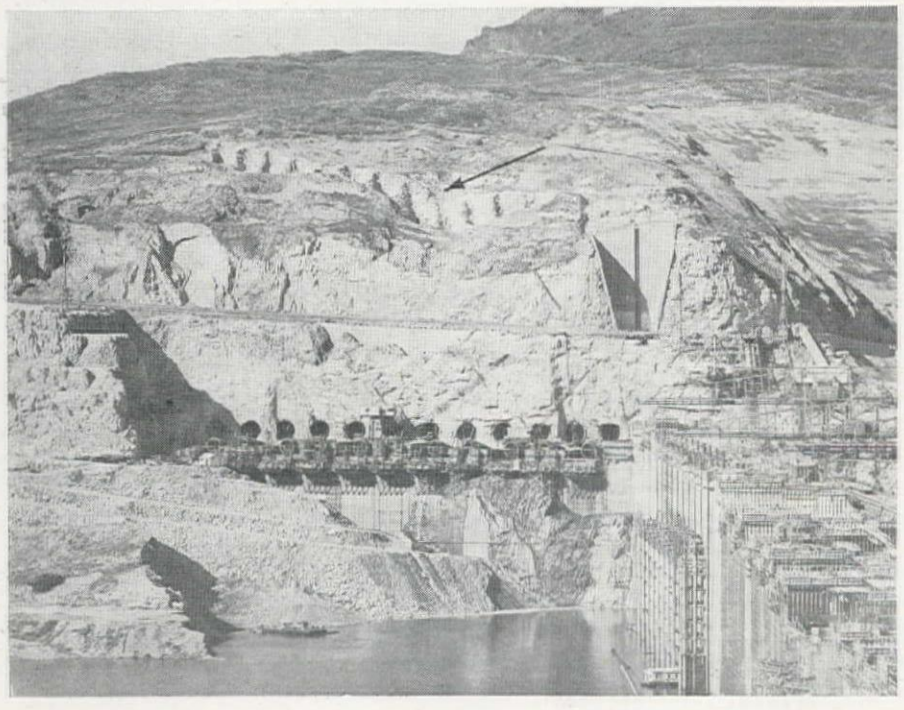
Under the plan, up to 30 per cent of each class of materials and equipment will be reserved for sale to priority claimants and veterans who have preference under the Surplus Property Act for a period of 10 days following the announced sale date. After the initial 10-day period, certain items of the unclaimed 30 per cent and the remaining 70 per cent will be sold to buyers certifying that they are holders of HH or CC ratings issued pursuant to priorities regulations of the Civilian Production Administration, or to those certifying that they will resell to holders of such ratings. Items for which HH or CC ratings will be issued are: common and face brick, clay sewer pipe, structural tile, gypsum board and lath, cast iron soil pipe and fittings, cast iron radiation, bathtubs, lumber and millwork.

Applications for ratings should be filed with the nearest district office of the Federal Housing Administration.

With respect to items other than the above purchased out of the remaining 70 per cent, all buyers, whether priority claimants or otherwise, will be required to certify that the materials or equipment acquired will be used by them for housing or channeled by them into housing construction.

WATER WILL TRAVEL THROUGH TUNNELS CUT OUT OF GRANITE

AT GRAND COULEE Dam the Bureau of Reclamation has driven tunnels through a granite barrier to serve the Columbia Basin Irrigation System in south-central Washington. The world's largest pumps will force water from Lake Roosevelt through 12-ft. pipes in the bores which will convey it over the hill into a feeder canal leading to the main regulating reservoir of the system, 2 mi. distant at the head of the Grand Coulee. Arrow shows tunnels emerging halfway up hill.



NEW BOOKS...

GLYCERIN—ITS INDUSTRIAL AND COMMERCIAL APPLICATIONS—by G. Leffingwell and M. A. Lesser. Published by Chemical Publishing Co., Inc., Brooklyn, New York. 259 pages, 5x8. Price $5.00.

This book is a comprehensive survey of the many and diverse industrial uses for glycerin. The authors list many formulas gathered from the professional and patent literature, both domestic and foreign.

Glycerin as a quenching medium for tempering steel fills the gap between oil-quenching and water-quenching. It is pointed out that when using a mixture of glycerin and water a temper of high elasticity and maximum hardness is produced. Other uses of interest to the construction tool sharpener and maintenance mechanic are given in formulae, in which glycerin is used as a constituent of derusting and scale removing solutions, general metal cleaners and tinning compounds. Glycerin is especially favored as a solvent in many cutting fluids and lubricants and its adhesive, protective film prevents corrosion by other elements.

A SHORT DICTIONARY OF ARCHITECTURE—by D. Ware and B. Beatty. Published by The Philosophical Library, Inc., 15 E. Fortieth St., New York, N. Y. 109 pages, 5½x8. Price $2.75.

A practical reference book, not only for the student of architecture but for everybody whose work or interests bring him into contact with the building industry and its array of technical terms. The text is well illustrated with 278 drawings to support the text defining over 790 architectural terms.

PLASTICS, enlarged, third edition—by J. H. Dubois, member Society of Plastics Engineers. Published by American Technical Society, Drexel Ave. at 58th St., Chicago 37, Ill. 447 pages, 5½x8. Price $4.00.

This book discusses the manufacture and use of most of the important plastic materials and products. It is a handy reference book for those persons interested in methods of processing, mechanical and electrical design and molding, injection and lamination of plastics. Of special interest is the chapter on syn-

thetic rubber and one on the low pressure lamination of plywood. The whole book is an authoritative text on this important industrial material, written in clear and simple language and well illustrated. It is especially suited to the use of industrial arts and vocational education instructors who wish to introduce this new phase of industry into their shops.

Atkinson Co. Bids Low On L. A. Outfall Sewer

GUY F. ATKINSON CO.'S bid of $3,517,000 was the lowest of five submitted to the Los Angeles Board of Public Works for a contract to construct a submarine outfall sewer line, extending 1 mi. into the ocean, at Hyperion.

Atkinson's bid was for the construction of a precast 12-ft. concrete pipe line, one of the three alternates offered in the plans and specifications prepared by the city engineer's office.

No bids were received for the alternate calling for the use of three concrete pipe lines, equal in capacity to the single 12-ft. drain. One bid was submitted for the construction of three cast iron pipes, the third alternate, but this proposal was not in the low brackets.

All bids received on the sewer project have been referred to the city's bureau of engineering for final checking and analysis.

Late in 1945 the Los Angeles City Council allocated $2,000,000 to pay the cost of the proposed submarine sewer. It will be necessary for additional funds to be provided before the contract can be awarded and construction operations launched.

Plans are being drawn by designers in the city's department of public works for the proposed sewage disposal plant to be erected at Hyperion. Sewage will be treated in this modern plant and the effluent forced into the submarine outfall and emptied into the ocean one mile from the shore line.

Santa Fe Wants to Establish Road Freight Truck Service

SANTA FE Transportation Co., a wholly owned subsidiary of the Atchison, Topeka & Santa Fe Railway Co., has filed an application with the California Railroad Commission requesting authority to establish an over-the-highway freight truck service to and from San Francisco, Oakland, Los Angeles and San Diego via the San Joaquin Valley, providing service generally throughout the territory served by the Santa Fe Railway in the San Joaquin Valley and Southern California.

The Santa Fe companies state that after an extensive investigation it has been determined that the inauguration of the proposed through truck service is the only practicable method of providing the character of service which is now demanded and required by their shipper and receiver patrons.

BELT CONVEYOR SYSTEM USED FOR STOCKPILING BALLAST

GRANT SMITH CO. is producing railroad ballast for the Northern Pacific Railway near Billings, Mont. When short of cars, they installed a Pioneer belt conveyor system to maintain continuous operation. A portable conveyor spreads the pile out from stationary conveyor, and is also used for loading material into cars.

OBITUARIES . . .

Harry A. Schenck, 56, director of the Institute of Practicing Engineers, died in Los Angeles in January. Schenck was the engineer in charge of the original surveys locating the position of Hoover Dam. He was chief surveyor for Southern California Edison Co. before he went into private practice in 1924 as a specialist in engineering subdivisions and municipal improvement.

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Albion K. Vickery, 73, city engineer of Denver, Colo., since 1922, died in December at his Denver home. Vickery was largely responsible for most of his city's major building programs, including the municipal building, the Jones Pass tunnel, the Stapleton airport and the city's sewage disposal plant.

* * *

Arthur Loforth, 73, assistant engineer of the Nevada state highway department, died Jan. 4 in Las Vegas from a heart attack. For the last two months he was in charge of highway construction in southern Nevada. He joined the highway department in 1920, and for many years was division engineer in Reno.

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Vernon C. Tolboe, 48, contractor of Provo, Utah, and his wife were killed in an automobile accident near Salt Lake City, Dec. 16. With his father and brothers, Tolboe conducted a general contracting business. They built the Utah Valley Hospital, Farrer Junior High School and part of Provo Senior High School, all in Provo.

* * *

James B. C. Lockwood, 82, retired consulting engineer specializing in dredging, died in January in Seattle, Wash. Lockwood was the first president of the Puget Sound Bridge & Dredging Co. In 1899 he became manager of Port of Portland, Ore. He was one of the organizers of the Drummond Lighterage Co. and a member of American Society of Civil Engineers.

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James H. Hooper, 76, engineer in Elko Co., Nev., mines, died Dec. 31 in his home in Elko. Hooper managed the Elkoro Mine Co. in Jarbridge from 1918 to 1932, then went to Mountain City, and to Elko in 1945.

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William Henry Rockingham, 57, mechanical and electrical engineer in the California State Architect's office, died Jan. 5 from a heart attack. Rockingham had been in the State Architect's office since 1915.

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Edward K. Hussey, Oakland construction engineer, died January 6. He served at various times as city engineer for Oakdale, Mill Valley, Riverbank, Lodi and San Leandro, Calif., and was chief engineer for the former Civil Works Administration in Alameda Co.

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William H. Higgins, former Phoenix, Ariz., contractor, died last month in Pasadena, Calif.

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Clyde C. Ruble, Los Angeles hydroelectric engineer, died Dec. 15 in his Los Angeles home. Ruble was employed by the city department of water and power since 1916.

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Silas H. Weaver, 79, retired contractor and builder, died Jan. 4 at his Los Angeles home.

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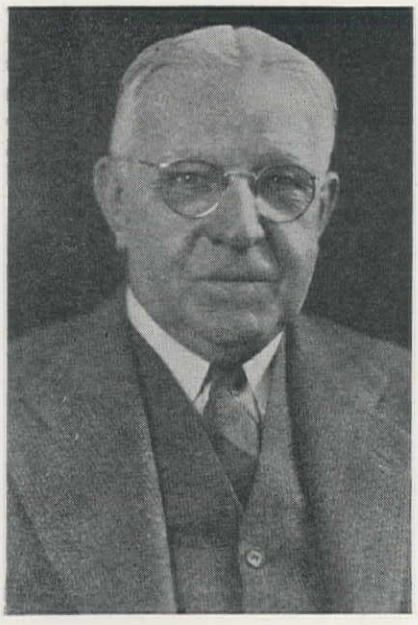
James Grew, 87, retired contractor of Pasadena, Calif., died last Dec. 19.



FRED R. MUHS, above, has just resigned as president of the San Francisco Bridge Co., one of the oldest contracting firms in the West. Muhs became vice-president of the company in 1919, and president in 1938. During World War I he was manager for the Pile Driving Contractors in construction of the Liberty Shipyard in Oakland. He is a member of the ASCE, the Engineers Club of San Francisco, and has been a director of the National Association of River and Harbor Contractors for many years. He will remain on the Board of Directors of the firm. BARRETT G. HINDES, below, has succeeded Muhs as president. He graduated from Massachusetts Institute of Technology in 1922, worked for J. G. White Engineering Corp., and joined San Francisco Bridge Co. in 1924. From 1928 to 1941 he was in San Francisco in charge of all field operations for the firm. During the war he served as Lt. Commander in the Navy Civil Engineer Corps at Puerto Rico, Midway, the Marianas, Iwo Jima and Okinawa, directing harbor improvements and clearance projects. FRED R. MUHS, JR., is new vice-president and will direct the field work.

Colorado Univ. Action Scored by Contractors

TWO DENVER contracting associations have condemned Colorado University for failure to "obtain competitive bids" before letting a contract on a two million dollar housing project for veterans in Boulder.

The Denver Contractors Association and the Allied Contractors Association filed formal protests with Dr. Robert L. Stearns, university president, the board of regents and the supervising engineer after Platt Rogers Co. of Pueblo received the contract. Stearns and other university officials denied the charges, saying the contract did not comprise a construction contract in the general sense of the word and that the award was not discriminatory and did not involve unusual practices.

"The reason for the action was to save time in construction of essential quarters for veterans and to take advantage of opportunities to acquire surplus materials necessary for construction," Stearns commented.

The contractors' associations were still not satisfied with Stearns' explanation and filed a second protest, emphasizing that it was in no way a reflection on the Platt Rogers Co.

State Drops Sewage Charges Against City of Denver

CHARGES THAT the city of Denver was emptying improperly treated sewage into the South Platte River, causing dangerous pollution, have been dropped by the State of Colorado.

Dr. R. L. Cleere, executive secretary of the state board of health, had earlier ordered Denver officials to do something about the polluted condition of the stream. He said he ordered the charges dropped, because the first survey did not include effluent discharged into the stream by industrial plants outside the city limits.

Further studies, taking two months or more, will be made and in the meanwhile no action will be taken against or by the city. The original charges stated that Denver's treatment plant, which began operation in 1937, had used chemical treatment for only about a week after starting operations.

Speaking of Employment . . .

Bureau Studies Project In Placerville Vicinity

IN RESPONSE to numerous local requests to relieve the critical water problem in the Placerville, Calif., area, the Bureau of Reclamation has dispatched a survey crew to the North Fork of the Cosumnes river to make detailed studies of the proposed dam site for the Sly Park reservoir. The proposed dam, which is one of the foothill features of the Central Valley Project outlined in the Bureau's forthcoming Comprehensive Basin Report, would serve these purposes:

1. It would supply supplemental water for the El Dorado Irrigation District and water for 3,000 ac. of new lands.

2. It would provide a supplemental domestic water supply for the city of Placerville and other towns, and for summer homes, along Highway 50, all of which are in serious need of water.

3. Extra water developed would serve downstream users during dry periods or be available for export to other parts of the Central Valley Basin.

The proposed Sly Park dam is on one of the branches of the North Fork of the Cosumnes river, approximately 15 mi. east of Placerville. The reservoir, the site of which is owned by the El Dorado Irrigation District, would store about 20,000 ac. ft. of water. The dam would be an earthfill structure, about 140 ft. high, with a crest length of about 600 ft.

Power Line to Be Erected to Assist in Building New Dams

ARTHUR PRAGER, president of the Albuquerque Gas & Electric Company, Albuquerque, New Mexico, has been informed by the Bureau of Reclamation that a new power line is to be built from Elephant Butte dam to Albuquerque to connect with a line to Santa Fe, and that still another new line will be built from Santa Fe to El Vado dam and the town of Tierra Amarilla. The new line will provide only for 2,000 kw of dump power to be used in construction of two other dams on the Rio Grande. It is not intended that this line or power will be used for domestic uses in any New Mexico community.

PERSONALLY SPEAKING

Charles H. Purcell, director of California's state department of public works and chief engineer of the San Francisco-Oakland Bay bridge, was one of three men upon whom was conferred honorary membership in the American Society of Civil Engineers, America's oldest engineering organization, at its first postwar session in January. Purcell has an imposing record of highway and bridge engineering feats. He was Northwest district engineer of the Bureau of Public Roads for eight years, held several positions in the Oregon and Washington highway departments and was California State Highway Engineer from 1928 to 1943, when he was appointed to the Public Works department. The other two men honored were **Charles F. Kettering,** General Motors vice-president, and **Dr. Boris A. Bakhmeteff,** professor of civil engineering at Columbia University.

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Clay P. Bedford, who constructed and operated the Kaiser shipyards at Richmond, Calif., which surpassed all previous records in Liberty ship production, has been named vice-president in charge of manufacturing at Willow Run by Joseph W. Frazer, president and general manager of Kaiser-Frazer Corp. and Graham-Paige Motors Corp. From 1938 to 1940 Bedford was first general superintendent in charge of construction of Grand Coulee Dam and then one of the three in charge of construction at NAS, Corpus Christi, Tex. At Willow Run he succeeds **Vern R. Drum,** who recently resigned.

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Herbert E. Robinson, reclamation, construction and military engineer, will direct work on three of the Bureau of Reclamation's biggest projects in the Republican River basin of eastern Colorado and southern Nebraska. Robinson will be responsible for investigations, reports and construction on Frenchman-Cambridge, Bostwick and N. Republican projects, which include multiple purpose reservoirs, irrigation canals and other works. Robinson has been resident engineer in Denver, Colo., for a year.

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Leonard R. Dunkley has been advanced to construction engineer of the Provo River project of the Bureau of Reclamation, where he has been resident engineer since April, 1944. Previous to his assignment in 1938 to the Provo River job — Utah's largest reclamation development—Dunkley worked on several reclamation construction jobs, including Gibson Dam of the Sun River project, Montana, and Sanpete and Moon Lake projects in Utah. He will now have field supervision of the entire Provo River project.

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John H. Stevenson and **Boris R. Rubens,** consulting engineers, have opened an office in Seattle. Stevenson started in the Seattle branch of a New York firm, then worked as a structural engineer with John L. Hall and for five years with Port of Seattle engineering department. Rubens was previously with the Pacific Car & Foundry Co., then the Austin Co. and recently with Colby Steel & Engineering Co. in Seattle.

* * *

James K. Carr of Sacramento has been appointed district engineer of the newly created Sacramento water district by M. W. Straus, new commissioner of the Bureau of Reclamation. The district will embrace the area from Knights Landing to Shasta Dam, with headquarters at Chico, Calif. Carr has been with the Bureau for almost ten years, four of them working on Shasta Dam and the past two as technical assistant to the regional director.

CHARLES H. PURCELL

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Ferd Schlapkohl, chief of the Division of Irrigation Operations in the regional office of the Bureau of Reclamation, has retired after 35 years of continuous service in the Pacific Northwest. Schlapkohl joined the Bureau in January, 1911, on the Yakima project, Wash. He served at Kachess Dam, Minidoka Project, Idaho, Owyhee Project, Oregon-Idaho, and in 1941 became office engineer of the Boise Project when Anderson Ranch Dam was begun.

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E. G. Putnam is opening an engineering office in Bellingham, Wash., where he has spent the past two years on the engineering staff of construction of the Puget Sound Pulp & Timber Company's alcohol and wood breakdown plants. His work will cover Washington, Oregon, Idaho and Alaska.

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A. R. Nieman, former assistant general manager of Swan Island shipyard for Kaiser at Portland, Ore., filed articles of incorporation for Nieman Co., Inc., general contractors and consulting engineers, in Clark County, Wash. Nieman's firm will do general building construction and all types of industrial, commercial and residential work in the Portland-Vancouver area and other sections.

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L. J. Wright has resigned as assistant county engineer of Skagit County, Wash., after serving there 25 years in all capacities, from crewman to chief engineer. After a month's vacation Wright will open a general engineering office in Mount Vernon, Wash., with **Frank Gilkey,** also an ex-county engineer.

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Four westerners were among the ten representatives of highway, police and safety organizations that met January 10 with Maj. Gen. Philip B. Fleming, Federal Works Administrator, to lay the

groundwork and plan the agenda for President Truman's Safety Conference in May. **Malcolm MacKachin,** president of the American Association of Motor Vehicle Administrators, from Carson City, Nev., **H. J. Brunnier,** consulting engineer of San Francisco and president of the A. A. A., United States Chamber of Commerce's **Eric Johnson** of Spokane, Wash., and **Kenneth B. Coleman** of Seattle, Wash., chairman of the National Committee for Traffic Safety, attended from the West.

* * *

Paul W. Dexheimer and **Frank V. Wedlick** have associated as consulting engineers and opened offices in Denver, Colo. Their practice will be devoted to industrial and mechanical engineering, particularly operational and management problems of production plants in connection with plant and equipment design and installation, and production methods.

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Homer A. Hunter, assistant city manager of Dallas, Tex., has been made city manager of Lubbock, Tex. Hunter was previously assistant director of public works at Dallas and then superintendent of the water and sewage department there. For 13 years he served as consulting engineer with the late **John B. Hawley** of Fort Worth, and for two years as engineer for the Fort Worth Housing Authority.

* * *

Loren B. Almy, who worked as an engineer in the Nebraska department of roads and irrigation, on the Missouri river control project and for a consulting firm doing bridge design and municipal projects, has been appointed assistant professor of civil engineering at Washington State College. He also taught six years at the University of North Dakota.

* * *

James Cherrington succeeds **W. G. Dyer** as divisional engineer for the Canadian Pacific Railway at Penticton, B. C. Cherrington was resident engineer for the B. C. Department of Public Works at Nelson from 1935 to 1941. Dyer will be engineer of track for the C. P. R., with Montreal headquarters.

* * *

Capt. George F. Hopkins has been named chief of the operating division and contracting officer by the Seattle District, U. S. Army Engineers. Hopkins, who joined the Seattle Engineer District as a civilian engineer in 1930, succeeds **Maj. Leonard W. Bindon,** who has been honorably discharged.

* * *

George J. Angelovic, formerly with the U. S. Maritime Commission, is now engineer for the U. S. Bureau of Reclamation at the Angostura project, Hot Springs, So. Dak. He is working on planning a concrete and earthfill dam, power plant and irrigation canal there.

* * *

T. P. Scholz has been named county engineer of Whatcom County, Wash., by the county commissioners at Bellingham. Scholz announced that **Carl McCoy,** who has been acting engineer for some time, will stay on as office engineer.

* * *

Charles L. Kaupke, water master of Kings River Water Association, Fresno, Calif., has been appointed acting California member of the board of directors of the National Reclamation Association. Kaupke was named to the post tentatively following the death of **James R. Fauver** of Exeter and will serve there until the California caucus convenes at the NRA conference next fall at Omaha, Neb.

* * *

Maj. Leonard W. Bindon, Seattle architect, has been discharged from the U. S. Army Engineers and plans to re-enter the Seattle architectural field. Major Bindon was chief of the operations division in the Seattle Engineer District and was in charge of several large military construction projects in the Pacific northwest.

* * *

I. L. (LARRY) JOHNSON is back with the Donald R. Warren Co., consulting engineers, to manage their San Francisco office. A commander in the Civil Engineer Corps, he was resident officer in charge of Pacific Naval Air Base contracts costing $500,000,000 and directed designing of structures at Pearl Harbor and Pacific islands worth $200,000,000.

Edward A. Smith, 35 years with the Denver city engineer's office, has been appointed acting city engineer there, succeeding **Albion K. Vickery,** who died recently. Since 1923 Smith has been chief deputy engineer in charge of construction and was in charge of the paving program from 1923 to 1929 when a great deal of street paving was accomplished.

* * *

C. M. Nye has retired and will be replaced by **H. J. Seyton** as chief engineer of the Great Northern Railway. Nye was with the railway since 1909 and chief engineer since 1940. Seyton will be replaced as assistant chief engineer in Seattle by **H. M. Goehring,** now office engineer in St. Paul.

* * *

R. H. Cushing, formerly architect at Halvorson Construction Co. and Birch & McLaughlin of Great Falls, and **E. O. Terrell,** also from Halvorson Co., have reopened their architectural and engineering office in Billings, Mont.

Anthony Leone, former bridge designer for the Nevada highway department, has returned from two years as bridge engineer on the Pan-American highway in Central America. Before his assignment to Central America, Leone spent fourteen months on the Alaska highway, first designing major bridge structures, then in the field in charge of construction.

* * *

Thomas F. Myers of the regional forest service in Albuquerque, N. Mex., has retired after 35 years as a civil engineer in the service's engineering department. Myers worked at road survey and road construction during his forest service career.

* * *

E. Edward Jacoby, on terminal leave from Army Engineers, has been made assistant engineer for Grants Pass, Ore., where he is drafting plans for the city's sewer extension system, to be built in the spring for $85,000.

* * *

Don W. Robins has left the engineering office of the Public Service Department, Burbank, Calif., to become City Engineer at Compton, Calif. Robins has been with Burbank for 18 years. A year and a half ago he returned from 14 months of surveying the Pan-American highway through Central America.

* * *

H. H. Wright and **G. W. Williams** of Seattle and **G. J. Schuchart** of Everett, Wash., have incorporated the Howard S. Wright Co., founded by the late **H. S. Wright** of Everett, who was prominent in Northwest construction circles.

* * *

R. J. Potter, who worked with the Pacific division of the U. S. Engineers as an advisor in operation and maintenance of engineering equipment, has joined with **D. C. Manning** of Tularosa, N. Mex., in opening the Northern California Equipment & Repair Co., Yreka, Calif. Manning also was employed by the U. S. Engineers.

* * *

Col. Jesse H. Veal, civil engineer, has been made chief of the engineering division of the San Francisco District office of the U. S. Engineer Department. He replaces **H. S. Pond,** who is retiring after more than 30 years with the Engineers in San Francisco.

* * *

Comdr. W. N. Hedin is now on terminal leave from the Navy and returning to the firm of Nels Hedin, Seattle, general contractors, which will now expand its activities. Hedin served two years overseas with the Seabees and for the past year has been in charge of construction at the marine barracks at Klamath Falls, Ore.

* * *

J. Otis Burrage, formerly of the Pacific Gas & Electric Co., now has a private practice in San Francisco as a consulting civil engineer specializing in matters under the jurisdiction of the Federal Power Commission.

* * *

M. D. Williams, district engineer of the Public Roads Administration in Alaska, has retired after 31 years of government service. He took part in the topographical survey of the Colorado River and Grand Canyon, worked for several years in the

Los Angeles city engineer's office and had a private practice at Klamath Falls and Lakeview, Ore.

* * *

Roger I. Eby, a Navy commander in the Civil Engineer Corps, has joined the engineering staff of the National Board of Fire Underwriters' San Francisco office. Eby was formerly an inspecting engineer and during the war was assistant head of the Fire Protection Division for the Bureau of Yards and Docks.

* * *

Capt. Alvin E. Ahlberg, civil engineer of Tacoma, has been sent to the engineer officers replacement pool at Ft. Lewis, Wash. Formerly manager of the Tacoma district office of the General Appraisal Company, Ahlberg was called to duty October, 1942, and has served continuously with the Seattle Army Engineer office.

* * *

Don Huff has been appointed assistant regional control officer of Region 6, U. S. Bureau of Reclamation. Huff worked as an engineer with the bureau before he entered the Navy in 1943. In his new position he will be particularly concerned with development of the Missouri River basin plan.

* * *

George A. Mason, with the Washington state highway division for 25 years, has been appointed assistant city engineer of Tacoma by Burwell Bantz, city engineer.

* * *

G. A. Shultz, who was engineering department officer of the Southern Pacific Railroad at Houston, Tex., succeeded **G. A. Boyer** as assistant division engineer of El Paso. Shultz was discharged from the Army a few months ago, where he served with a railway battalion. Boyer has been promoted to division engineer at San Antonio, Tex.

* * *

R. I. Riedesel, William R. Lowe and **Leonard M. Johnson,** all of Billings, Mont., have filed articles of incorporation for the Riedesel Construction Co. of Billings. The firm will conduct a general engineering and contracting business.

* * *

Ernest T. Fukuda, who worked for Ayers & Graf, civil engineers of Cincinnati, Ohio, during the war as a surveyor, is now back with the Department of Water & Power, City of Los Angeles, in his former position of hydraulic engineer.

* * *

George W. Ellison of Dawson Creek, British Columbia, who worked for three years as safety engineer on the Alaska Highway, is returning to his work as inspector for the B. C. Department of Public Works on the Pine Pass Highway.

* * *

Lawrence McConville II has returned to Los Angeles from Vicksburg, Miss., and is associated with **George Fosdyke,** general engineer.

* * *

James F. Twohy will re-enter private business in San Francisco after 11 years in government service in the Federal Home Loan bank system. Twohy formerly headed a construction company there and was secretary-treasurer of the Northern Pacific Shipbuilding Co. at Seattle, Wash.

COL. RUFUS W. PUTNAM

Col. Rufus W. Putnam, U. S. district engineer in Los Angeles since 1942, has just been succeeded by **Col. Robert C. Hunter,** former Sacramento district engineer, who worked under Gen. Douglas MacArthur in the General Engineering District, Philippines, putting the islands in shape after Japanese resistance folded. Putnam is president of the Los Angeles post of the Society of Military Engineers.

* * *

Nicholas (Nick) E. Fordham, engineer in charge of mechanical installations on Shasta Dam, is leaving the Bureau of Reclamation after 38 years of helping it become important in western development.

RICHARD ELLIS has been promoted from district manager in the Pacific Northwest to vice-president of The Austin Co., Engineers and Builders. Ellis joined the company in 1924 and recently had charge of coordinating design and construction activities of Boeing Aircraft Co.'s Seattle and Renton plants. He is past president of the American Society of Civil Engineers in Seattle.

Chas. M. Johnstone, formerly District Engineer at Las Vegas, N. M., has been recalled to New Mexico's state highway office in Santa Fe to become Right of Way, Safety and Traffic Engineer. He was replaced at Las Vegas by **Guy Mayes,** who was formerly Engineer of Safety, Traffic and Signs.

* * *

Ernst Maag, newly elected president of the Structural Engineers Association of Southern California, is now chief engineer of the Latisteel Company. He was formerly Structural Research Engineer for Los Angeles County.

* * *

Lt. Comdr. William W. Aultman is out of the Navy and returning as a water purification engineer to the Metropolitan Water District of Southern California, where he was in charge of construction and operation of the softening and filtration plant.

* * *

Col. George Zimmerman, Army engineer since 1937, succeeds **Col. Ralph A. Tudor** as district Army engineer in Portland, Ore. Col. Tudor resigned to join the Morrison-Knudsen Co. at San Francisco, Calif.

* * *

Henry Karrer is in charge of the Bakersfield office of the Bureau of Reclamation, succeeding **Harry S. Riddell,** who resigned to accept a position with the South San Joaquin Municipal Utility District. Karrer was manager of the Patterson Water Co.

* * *

William S. Kelton and **Alfred Perthou,** Seattle engineers, are opening two engineering firms specializing in appraisals and valuation, one in Seattle and the other in Portland, under joint ownership.

* * *

Gus Albert of Worland, Wyo., has been appointed first assistant state engineer. Albert has been a pilot in the Army since 1942. The former assistant engineer, **Austin P. Russell,** resigned in January, 1945, to become superintendent of the Goshen irrigation district.

* * *

Comdr. L. D. Graham has been named supervisor of the U. S. Coast and Geodetic Survey's western district, headquarters in San Francisco. Graham recently returned from service overseas and replaces **Capt. E. H. Pagenhart,** who is retiring.

* * *

William F. Hughes, former soil engineer with the Utah road commission, has been appointed manager of Utah's state planning survey, succeeding **Emile Waltzing,** recently named superintendent of the state building board.

* * *

Faye B. Comeau, engineer with Kaiser Cargo, Inc., facilities engineers, at Richmond, Calif., is now a structural designer with an engineers and architects firm in Indiana.

* * *

K. C. Bellows, until recently plant accountant at the National Tube Co. in Pittsburgh, Pa., has started a construction organization of his own with headquarters at Sheridan, Wyo.

* * *

William J. Weller is now transportation engineer in the Portland, Ore., public utilities department. Weller has been in

SUPERVISING THE JOBS

the traffic engineering bureau, where he worked with Traffic Engineer **Fred Fowler.**

* * *

August L. Ahlf, U. S. Bureau of Reclamation employee at Denver, won the Alfred Nobel prize at the annual meeting of the American Society of Civil Engineers, Jan. 16, in New York. He won the award for writing "Design Constants for Beams with Nonsymmetrical Straight Haunches."

* * *

John V. Walker of Silverton, Ore., is doing soil and moisture work as conservationist with the Bureau of Reclamation in Boise, Idaho. Walker was a Navy lieutenant during the war.

* * *

CAPT. NOBLE A. BOSLEY, who was chief of the general engineering branch of the Seattle U. S. Army Engineers, is returning to that office as a civilian after his separation from the Army at Fort Lewis, Wash. Bosley joined the Army in September, 1942, while a civilian engineer for Alaskan projects with the Seattle Engineer District.

Maj. Charles D. Sutton, back from three and a half years of military service, is planning to resume forestry work in New Mexico soon. Sutton was formerly construction supervisor at the Lincoln National Forest in that state.

* * *

Burge Kepford is out of the Seabees and back with the Bureau of Reclamation in Cheyenne, Wyo. He served as a lieutenant in the Philippines and Aleutians.

* * *

Byron E. Doll is engaged in planning postwar projects as new deputy city engineer for Huntington Park, Calif.

* * *

Jennings J. Bennett will become assistant city engineer in the new building department for the City of Puyallup, Wash. Bennett is a Navy veteran.

* * *

John L. Moyer, chief estimating engineer in the Engineering Bureau, Board of Public Works, Los Angeles, retired Jan. 15 after 40 years of service there.

H. M. Slocum, who was general superintendent for Griffith Bros. and Bent Bros. on construction of Friant Dam, has been named project manager for J. H. Pomeroy, San Francisco, on an $8,300,000 breakwater project at Apra Harbor in Guam. **C. E. Van Langingham** is chief accountant and **Chas. Lattin** is master mechanic.

* * *

R. J. Kallender is job superintendent on three overcrossings over Balboa Park Freeway in San Diego being built by M. H. Golden Construction Co. of that city. The total contract is for $155,183. **A. J. Golden** is job superintendent at the Navy repair base in San Diego where the M. H. Golden Construction Co. is building Piers 10, 11 and 12, which is a $1,892,075 job.

* * *

S. Mattoon is job superintendent for N. M. Ball Sons, Berkeley, Calif., on a grading and paving job between San Jose and south of Ford Road, Calif. Foremen on the $1,178,869 project are **E. Boswell, G. Elliott, S. Wentworth** and **E. Guins. W. Carson** is office manager and **M. L. Simpson** is general superintendent for the firm.

* * *

Joe McCord, who was in the Aleutian Islands with Guy F. Atkinson Co., is now job superintendent for J. O. Oltmans & Son, Los Angeles, on the new building for Angeles Paper Box Co. in Maywood, Calif. **H. A. (Bud) Leib** is carpenter foreman, and **Frank Bojorques** is superintendent for Anthony C. Meehleis, Los Angeles, who has the steel contract.

* * *

W. C. Rhoads is superintending construction of a check, earthwork and other structures on Conchas Canal and Hudson Canal of the Tucumcari, N. Mex., irrigation project for A. S. Horner Construction Co. of Denver, Colo. **L. M. Drake** is engineer on the $252,934 project; **Ralph Forkner,** carpenter foreman; **Carl Boulden,** concrete foreman, and **Roy Carr,** timekeeper.

* * *

P. M. Hutchins is supervising two contracts in Otero Co., N. Mex.; one for the construction of 17 mi. of transmission lines at a cost of $51,596, and the other for 70 mi. of line to cost $100,412 for Reynolds Electric Co., El Paso, Tex., contractors. **S. P. Dahms** is general foreman on the jobs, and **F. D. Hensel** is field office manager.

* * *

V. R. (Vic) Rush is superintendent on the new Ferro Enamel Corp. building on S. Riverside Drive, Los Angeles, for McIsaac and Menke, contractors of that city. **H. E. Broadhurst** is carpenter foreman, and **Henry Clayton,** labor foreman. Rush formerly had his own contracting business at Monrovia, Calif.

* * *

Emil Erlandson is job superintendent for McNeil Construction Co., Los Angeles, on the offices, warehouses and shops being built for Union Oil Co. at Wilmington, Calif. **Ralph Cannon,** until recently a captain with the U. S. Engineers in Europe, is general foreman in the warehouse area; **Don McNamara** is carpenter foreman and **Emil Hansen** is general foreman of the office group. General labor foreman is **C. G. Murray,** office manager is **Larry H. Lloyd** and the field engineer is **Joe Judge. A. J. McAvoy** represents C. J. Willis & Sons, Los Angeles, who have the dirt moving contract.

* * *

Karl Poss is job superintendent for Fredrickson & Watson Construction Co. of Oakland on its $1,446,454 project to grade, pave, drain and light runways, taxiways and aprons for Moffett Field, Calif. **C. F. Smothers** is office manager; **W. V. Galbraith,** engineer, and **B. V. Fredrickson,** engineer.

* * *

W. B. Munson will be job superintendent for E. W. Elliott Construction Co., San Francisco, on two of its projects: two bridges across Los Angeles Aqueduct and Cache Creek, west of Mojave, Calif., and 2.7 mi. of road paving from Placerville to Lake Tahoe, Calif. **H. L. King** is general superintendent for both jobs.

* * *

Van Drouillard is project manager on the four-story addition to the Sears Roebuck & Co. building at 9th and Boyle in Los Angeles. **W. L. Crockett** is general foreman. **Al Brown** is carpenter foreman and **Leo Manning** is office manager. Myer Bros. of Los Angeles has the contract.

* * *

Joel Parks, a veteran of the Seabees in the South Pacific, is superintendent for Kamp Bros., Los Angeles, Calif., on a new petroleum warehouse at 5050 E. Slauson, Maywood, Calif.

* * *

Robert S. Schulz is job superintendent for Nyberg Construction Co., Yardley, Wash., on their highway improvement contract for U. S. Highway 95 between St. Maries and Mission Point in Idaho. The contract is for $57,935.

* * *

Harry E. Holdrege is superintendent in charge of construction at four school buildings going up at the Logan William Stephens Junior High School in Long Beach, Calif. The Modern Builders Construction Co., Inc., of Long Beach has the contract.

* * *

R. J. Connarn is manager of the Rural Electrification Administration's $500,000 project extending its lines in Coos and Curry Cos., Oregon. **H. W. Cottengin** is construction superintendent on the job, **Earl Sanders** of Los Angeles is engineer

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and **Herbert Lindsay** is co-op right-of-way assistant.

* * *

Fred Waite is at White Sands Proving Ground, Las Cruces, N. Mex., as job superintendent for C. H. Leavell's construction of industrial facilities valued at $153,797. Engineer there is **Christian Binder** and project manager is **H. S. Tannery.** Leavell is an El Paso, Tex., firm.

* * *

W. H. Williams is at Pittsburg, Calif., as job superintendent on the $150,000 Shell Point two-story office building being constructed by Howes & Whitaker of Los Angeles for Shell Oil Co.

* * *

A. D. Huff is in Reno taking charge of construction of the 10-story modern hotel being built by Mapes Hotel Construction Co. at First and Virginia Sts. T. P. Moorehead & Co., hotel architects and engineers, have the contract for the $1,000,000 hotel.

* * *

Robert Poore has been named job superintendent by Markwart Co., Sacramento, Calif., on a $120,000 contract to erect a two-story frame and stucco office building in Sacramento. **Jess Allen** is general superintendent.

* * *

J. M. Hamilton is general labor foreman and **Arthur E. Rowland** is general carpenter foreman on the $500,000 addition to Saks Fifth Ave. store in Beverly Hills, Calif., being constructed by C. L. Peck of Los Angeles.

UNIT BID SUMMARY

Dam . . .

Arizona—Mohave County—Bureau of Reclam.—Earthfill

Utah Construction Co., San Francisco, at $21,462,505, bid low to the Bureau of Reclamation for Davis dam, earth and rockfill structure on the Colorado River, 67 mi. downstream from Boulder dam and 80 mi. upstream from Parker dam. Maximum height of the structure will be 200 ft., with crest width of 50 ft., and length of about 1,600 ft. Upstream face slope will vary from 8:1 to 2½:1, and downstream face from 12:1 to 2:1. Central core of dam and upsteam foundation will be of impervious compacted earth; second zone and downstream foundation will be of rock screenings which will pass a 4-in. opening, and the faces of the dam will be of heavy rock fill, not compacted but roughly smoothed. Reservoir capacity will be 1,800,000 ac.-ft.

A 4,500-ft. diversion channel through the east abutment will lead to the spillway-outlet structure and the lower end of the channel will serve as forebay for the power plant penstocks. Spillway, outlet structure and penstocks are all combined in a concrete dam 150 ft. high, embracing three 50-ft. spillway bays, two 22x19-ft. outlet openings, and five 22-ft. diameter penstocks.

The powerhouse, located on the east bank of the river, between the main earth and rockfill dam and the spillway, will be housed in a reinforced concrete structure 110 by 448 ft. Five 45,000 kva. vertical shaft generators, each driven by a 62,200 hp. turbine comprise the power facilities.

Four bids were submitted each coming from a joint venture organization. The first known as Utah Construction Co., is composed of Utah Construction Co., Morrison-Knudsen Co., Inc., General Construction Co., Kaiser Co., Pacific Bridge Co., J. H. Pomeroy Co., Winston Bros., Raymond Concrete Pile Co. and Modglin-Kahn Corp.; the second, known as Arizona-Nevada Constructors is composed of S. J. Groves & Sons Co., Tanner Construction Co., Lee Moor Contracting Co., L. M. White, Leo G. Lynch, Bowen & McLaughlin, and S. A. Healy Co.; the third, known as Davis Constructors is composed of Griffith Co., Grafe-Callahan Construction Co., Peter Kiewit Sons' Co., Shofner, Gordon & Hinman, Martin Wunderlich, Gunther and Shirley Co., Hunkin-Conkey Construction Co., Brown and Root, Inc., Condon-Cunningham Co., D. G. Gordon, and J. C. Maguire and Co.; the fourth, known as Dam Builders, Inc. is composed of L. E. Dixon, Arundel Corp., W. E. Kier Construction Co., Guy F. Atkinson Co., Bressi & Bevanda Constructors, Inc., Macco Construction Co., A. Teichert & Sons, and D. W. Thurston. Total bids were:

(1) Utah Construction Co. $21,462,505
(2) Arizona-Nevada Constructors 22,805,940
(3) Davis Constructors $23,242,990
(4) Dam Builders, Inc. 27,481,948

		(1)	(2)	(3)	(4)
	Lump sum, diversion and care of river during const. and unwatering foundations	$ 800,000	$ 960,000	$1,355,000	$1,970,000
20,000	cu. yd. excav., stripp'g sand and crse. aggre. deposit	.25	.27	.50	.50
40,000	cu. yd. excav., stripp'g borrow pits	.30	.27	.50	.40
1,000,000	cu. yd. excav., diversion spillway and outlet	.71	1.00	.80	1.90
2,300,000	cu. yd. excav., forebay, roads, etc. above elev. 520	2.50	2.40	2.65	1.90
250,000	cu. yd. excav., rock below elev. 520	4.70	5.00	3.00	9.60
200,000	lin. ft. drill line holes for rock excavation	.64	.40	.80	1.40
800	cu. yd. excav., tunnels and shafts	30.00	35.00	30.00	50.00
500,000	cu. yd. common excav., fdn. dam embank., above elev. 455	.56	1.00	.50	1.90
40,000	cu. yd. com. excav., fdn. dam embank., below elev. 455	2.00	1.65	1.50	1.40
18,000	cu. yd. rock excav., fdn. dam embankment	4.00	3.35	9.00	3.50
600	cu. yd. rock excav., ftgs. of conc. cutoff walls	30.00	35.00	35.00	40.00
1,000	cu. yd. rock excav., open cutoff trench	15.00	14.00	8.00	12.50
150	cu. yd. rock excav., keys for switchyd. footings	30.00	35.00	40.00	40.00
5,000	cu. yd. backfill	1.20	3.50	3.00	5.00
30,000	cu. yd. fill, back of walls	.75	1.25	1.00	1.10
30,000	cu. yd. rock fill, back of gravity walls	.65	.42	1.00	.90
18,000	cu. yd. sand and gravel filt. blanket under riprap	1.00	1.65	1.00	1.50
87,000	cu. yd. riprap	.90	1.65	1.00	1.25
1,000	cu. yd. rock surfacing	.55	.65	2.50	2.50
10,000	cu. yd. road and parking area surfacing	3.00	4.00	3.00	4.00
1,180,000	cu. yd. common excav. and transpt. to dam embank.	.60	.65	.65	.70
2,000,000	cu. yd. separating rock materials	.33	.30	.40	.20
3,000,000	cu. yd. load and haul stockpiled materials	.44	.30	.30	.50
1,000,000	cu. yd. earth fill in damp embankment	.17	.25	.15	.16
1,400,000	cu. yd. rock screenings and dam embankment	.10	.15	.15	.12
12,000	cu. yd. mechanical tamping, embankment matls.	2.50	5.00	3.50	5.00
1,400,000	cu. yd. rock fill in dam embankment	.105	.15	.15	.10
400	cu. yd. rubble-masonry walls	30.00	50.00	40.00	32.00
750	cu. yd. rubble-conc. paving	20.00	40.00	30.00	18.00
200	ea. drill holes, set. fdn. drainage pipes	10.50	15.00	7.00	25.00
2,000	lin. ft. drain. holes, to 25-ft. deep in fdns.	5.35	7.00	6.00	3.50
6,500	lin. ft. drain. holes, 25-50-ft. deep in fdns.	5.35	7.00	6.00	4.00
3,000	lin. ft. 6-in. sewer pipe dr., uncem. jts., bedded in gravel	.87	1.25	2.00	2.00
7,000	lin. ft. 8-in. sewer pipe dr., uncem. jts. bedded in gravel	1.10	1.50	2.00	3.00
200	lin. ft. 10-in. sewer pipe dr., uncem. jts. bedded in gravel	1.25	1.90	3.00	4.00
3,100	lin. ft. 12-in. sewer pipe dr., uncem. jts. bedded in gravel	1.40	2.50	3.00	5.00
300	lin. ft. 24-in. sewer pipe dr., uncem. jts. bedded in gravel	3.60	4.00	6.00	10.00
650	lin. ft. lay 6-in. sewer pipe, cem. joints	1.25	1.50	1.00	3.00
150	lin. ft. lay 8-in. sewer pipe, cem. joints	1.50	2.10	1.00	3.50
200	lin. ft. lay 10-in. sewer pipe, cem. joints	1.60	2.50	2.00	4.00
450	lin. ft. lay 12-in. sewer pipe, cem. joints	1.70	3.60	2.00	5.00
150	lin. ft. lay 24-in. sewer pipe, cem. joints	2.60	5.00	5.00	10.00
300	lin. ft. 24-in. conc. pipe drains	3.50	6.00	9.00	10.00
7,000	lin. ft. 6-in. split tile drains	1.00	.70	2.00	3.00
9,500	lin. ft. 8-in. square tile drains	1.30	1.50	3.00	3.00
350	cu. yd. scrn. grav. under fills back of walls	4.50	9.00	5.00	7.00
200	lin. ft. drill weep holes	2.40	9.00	3.00	2.00
2,000	lin. ft. core drilling, 5½-in. holes up to 30-ft. deep	15.00	12.60	10.00	11.00
30,000	lin. ft. drill 1⅜-in. grout holes up to 35-ft. deep	1.35	2.28	1.75	3.00
80,000	lin. ft. drill 1⅜-in. grout holes 35-60-ft. deep	1.35	2.28	1.85	3.00
42,000	lin. ft. drill 1⅜-in. grout holes 60-110-ft. deep	1.35	2.28	2.00	3.00
20,000	lin. ft. drill 1⅜-in. grout holes 110-160-ft. deep	1.35	2.28	2.10	3.50
110,000	lin. ft. drill 1⅜-in. grout holes 160-210-ft. deep	1.35	2.28	2.25	3.50
3,000	lin. ft. drill 1⅜-in. grout holes 210-260-ft. deep	1.35	2.28	3.00	5.00
100,000	lb. place pipe and fittings	.24	.25	.20	.12
300,000	cu. ft. pressure grouting foundations	1.75	1.10	1.50	.75
60,000	cu. ft. pressure grouting with packers	2.20	1.90	2.50	1.25
30,000	lb. place metal tub. and ftg., grout. contract. jts.	.30	.25	.35	.35
2,000	cu. ft. press. grout. contr. jts. and cooling sys.	.80	2.90	6.00	2.40
66,000	lin. ft. drill holes, anchor bars and grout bars	1.40	.85	1.25	2.00
1,600	cu. yd. conc., floor of forebay channel	14.75	15.00	20.00	22.00
30,000	cu. yd. conc., slope pav. of forebay channel	36.50	29.00	30.00	22.00
165,000	cu. yd. conc., intake struc. below elev. 647	8.90	11.00	8.00	12.00

(Continued on next page)

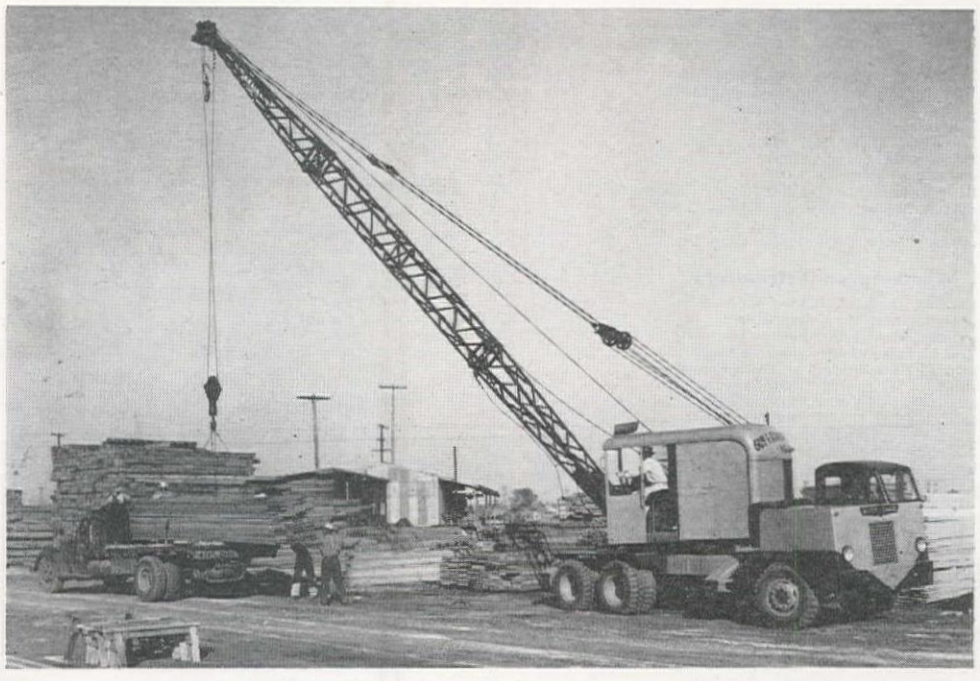
THIS MC-414 MOTO-CRANE IS THE 13th LORAIN for

Another successful operator in this area "goes Lorain". Why are more and more contractors putting new Lorains on the job? Here are a few reasons . . . first, tough jobs demand dependability—freedom from time losses and adjustment. Lorains are the answer because they are engineered far beyond the toughest work ever encountered on the job. Second, contractors want fast, efficient operation for big output . . . operation that responds instantly when clutches are engaged; balanced design that delivers every ounce of power for tough digging in minimum time. Finally, your job is backed by the finest service organization in the field, especially equipped and carefully trained. From Lorain you get all three—dependability, big output, fast service— reasons why you should look to Lorain for your next shovel, dragline, crane or clamshell. Ask your Thew-Lorain Dealer for facts.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

CONTRACTOR GUY F. ATKINSON

Helping speed lumber and other construction materials to the site where they're needed, is one of the jobs done quickly and economically by Guy F. Atkinson's versatile MC-414 Lorain Moto-Crane. This highly mobile unit . . . which also travels with the construction crew and works on the job . . . is one of a fleet of 13 Lorain machines purchased by this successful San Francisco contractor.



CRANES • SHOVELS • DRAGLINES • CLAMSHELLS • MOTO-CRANES

See Your **thew-Lorain** *Dealer*

Le Roi-Rix Machinery Co., Los Angeles 11
Cate Equipment Co., Salt Lake City 4
Liberty Trucks & Parts Co., Denver 1
Coast Equipment Company, San Francisco 1
A. H. Cox & Co., Seattle 4, Washington
Bunting Tractor Co., Inc., Boise, Twin Falls, Gooding, Fairfield, and Burley, Idaho; LaGrande, Oregon
Connelly Machinery Company, Billings and Great Falls, Montana
Sanford Tractor & Equipment Co., Reno, Nevada
The Mountain Tractor Co., Missoula, Montana
The Tractor & Equipment Co., Sidney, Montana
P. L. Crooks & Co., Portland 10, Oregon

6,500 cu. yd. conc., intake struc. above elev. 647	14.50	16.50	40.00	26.00
5,000 cu. yd. conc. trashracks	45.00	65.00	70.00	65.00
350 cu. yd. conc., gate-erection pit	32.75	65.00	40.00	60.00
300 cu. yd. conc., tunnels and shafts	50.00	65.00	50.00	70.00
16,000 cu. yd. conc., left outlet abut. below elev. 647	14.85	20.00	9.00	12.00
2,000 cu. yd. conc., left outlet abut. above elev. 647	20.50	16.00	25.00	26.00
50,000 cu. yd. conc., piers and walls of spillway outl. struc.	13.90	20.00	20.00	25.00
50,000 cu. yd. conc., radial-gate sill and spillway crest	9.15	12.00	10.00	21.00
12,000 cu. yd. conc., floor of spillway and outlet struc.	12.70	11.00	15.00	18.00
5,000 cu. yd. conc., line spillway and outlet channel	17.75	20.00	20.00	30.00
1,200 cu. yd. conc., bridges, walks, etc.	57.00	35.00	80.00	60.00
2,000 cu. yd. conc., superstruc. of spillway	50.00	50.00	80.00	90.00
450 cu. yd. conc., blockouts	34.00	35.00	50.00	70.00
26,000 cu. yd. conc., substruc. of power plant	13.20	15.00	15.00	28.00
18,000 cu. yd. conc., intermed. struc. of power plant	25.00	20.00	32.00	40.00
3,500 cu. yd. conc., superstruc. of power plant	67.50	66.00	90.00	90.00
22,400 cu. yd. 2d stage conc. power plant struc.	17.85	20.00	25.00	20.00
2,100 cu. yd. 3d stage conc. power plant struc.	15.65	36.00	50.00	40.00
28,500 cu. yd. conc., gravity walls	17.90	20.00	13.00	12.00
500 cu. yd. conc., ftgs. of embankment cutoff walls	16.25	30.00	20.00	20.00
400 cu. yd. conc., embankment cutoff walls except ftgs.	45.00	66.00	60.00	48.00
800 cu. yd. conc., sidewalks, curbs and gutters	60.00	66.00	60.00	60.00
700 cu. yd. conc., parapet walls along roadways	55.50	85.00	80.00	60.00
5,000 cu. yd. conc., switchyard strucs.	63.00	85.00	50.00	40.00
15,500,000 lb. place reinf. bars	.033	.035	.043	.045
250,000 lb. place metal tubing ad ftgs., cooling sys.	.15	.20	.25	.20
240,000 cu. yd. cooling conc.	.60	.40	.50	.60
5,000 sq. yd. chip and roughen conc. surfaces	5.20	1.65	2.50	4.50
165 ea. finish lighting recesses	7.00	10.00	10.00	7.50
26,000 lin. ft. pl. metal ceiling strips	.83	.40	1.00	1.50
5,500 lin. ft. pl. metal cover plates	1.00	.80	1.00	1.50
52,500 sq. ft. pl. joint filler	.37	.16	.30	.40
500 lin. ft. const. control joints	1.40	1.65	2.50	4.00
2,250 lin. ft. const. asphalt seals	4.00	5.00	10.00	8.00
55,000 intersec., insul. reinf. bars, elec. conduit and tubing	.17	.16	.20	.12
12,000 sq. ft. insulation on roofs	.54	.40	.25	.50
16,000 sq. ft. bitum. saturated felt roof., with flash.	.53	.35	.45	.60
40,500 sq. ft. membrane waterproofing	.58	.35	.40	.45
8,000 sq. yd. dampproofing outside walls	.85	.80	.80	1.10
970,000 lb. inst. gate frames, guides, sills, etc.	.082	.08	.10	.12
2,160,000 lb. inst. fixed-wheel gates and metal work	.048	.05	.05	.065
435,000 lb. inst. bulkhead gates	.048	.05	.06	.06
410,000 lb. inst. high-head radial-gates	.065	.05	.08	.07
520,000 lb. inst. gate hoists for spillway fix-whl. gates	.033	.05	.05	.04
300,000 lb. inst. gate hoists for penstock fix-whl. gates	.048	.05	.05	.06
90,000 lb. inst. gate hoists for high-head radial gates	.058	.05	.05	.07
1,400,000 lb. inst. trashracks	.048	.04	.05	.025
448,000 lb. inst. stop-log guides	.061	.05	.07	.10
2,125,000 lb. inst. penstocks	.048	.045	.06	.05
150,000 lb. inst. draft-tube pier noses	.041	.05	.08	.025
130,000 lb. erect struc.-stl. roof framing, machine shop	.04	.05	.06	.025
245,000 lb. inst. track rails	.04	.05	.03	.05
1,802,000 lb. inst. cranes	.027	.015	.06	.03
216,000 lb. inst. std. metal pipe, ftgs., valves, under 6-in.	.19	.15	.13	.18
500,000 lb. inst. std. metal pipe, ftgs., valves, over 6-in.	.069	.12	.09	.10
40,000 lb. inst. metal frames for openings, flrs. and walls	.178	.08	.13	.20
10,000 lb. inst. metal inserts	.30	.25	.22	.50
86,000 lb. inst. oil-storage tanks	.20	.035	.12	.025
18,000 lb. install pumps	.096	.17	.12	.10
215,000 lb. install misc. metalwork	.27	.25	.23	.18
250 lin. ft. const. temp. gantry-crane-rail extensions	5.00	10.00	15.00	5.00
2.0 MFBM const. timber gd. and suppt. for conductors	120.00	250.00	200.00	160.00
11,000 lin. ft. inst. embed. elec. met. conduit, 1¼-in. or less	.65	.25	.90	1.00
16,000 lin. ft. inst. embed. elec. met. conduit, 1¼-in. - 3-in.	1.00	.40	1.80	1.50
17,500 lin. ft. inst. elec. non-metallic conduit	1.00	.40	1.20	1.40
14,000 lb. inst. ground wires and ground rods	.25	.15	.20	.75
8,000 lin. ft. inst. elec. cable	.38	.35	.40	.40
2,500 lin. ft. inst. copper tubing, hydraulic piezometers	.60	1.65	.50	.60
13,300 T. transport freight	4.00	6.00	5.00	6.50
Lump sum, deduct for purchase of suppljes, plant and equipt. from govt. by the contractor	$1,140,000	$1,140,000	$1,140,000	$1,140,000

California—Napa County—State—Earthfill

H. Earl Parker, Marysville and N. M. Ball Sons, Berkeley, submitted low bids in joint venture of $1,123,191 for plan No. 1 and $1,222,367 on plan No. 2 to the State Division of Water Resources, Edward Hyatt, state engineer, for the construction of a dam for the Rector Creek reservoir in Napa County. The following is a summary of the work quantities and unit bids submitted:

	Plan No. 1	Plan No. 2
(A) H. Earl Parker, and N. M. Ball Sons	$1,123,191	$1,222,367
(B) Piombo Bros.	1,193,207	1,276,620
(C) Teichert & Co., Inc.	1,420,113	1,235,251
(D) T. E. Connolly, Inc.		1,306,444
(E) Guy F. Atkinson Co.	1,796,211	1,745,000
(F) Morrison-Knudsen Company, Inc.	1,914,643	

ITEMS INCLUDED ONLY IN PLAN 1

(1) 134,000 cu. yd. of excav. under dam, except bedrock, below contour 260 ft. on right abutment and contour 250 ft. on left abutment.
(2) 31,800 cu. yd. excav. under dam, except bedrock, above contour 260 ft. on right abutment and above contour 250 ft. on left abutment; earth and decomposed rock.
(3) 3,000 cu. yd. of bedrock excav. under dam.
(4) 447,500 cu. yd. rolled earth-fill in Zone 1 of embankment.
(5) 428,600 cu. yd. rolled earth-fill in Zone 2 of embankment.
(6) 463,400 cu. yd. rock and boulder fill in Zone 3 of embankment.

ITEMS INCLUDED ONLY IN PLAN 2

(1a) 142,100 cu. yd. excav. under dam, except bedrock, below contour 260 ft. on right abutment and contour 250 ft. on left abutment; earth, gravel, boulders and decomposed rock.
(2a) 83,300 cu. yd. excav. under dam, except bedrock, above contour 260 ft. on right abutment and above contour 250 ft. on left abutment; earth and decomposed rock.
(3a) 3,800 cu. yd. excav. of bedrock under dam.
(4a) 1,146,000 cu. yd. rolled earth-fill in Zone 1 of embankment.
(5a) 141,800 cu. yd. rock and boulder fill in Zone 2 of embankment.

ITEMS INCLUDED IN BOTH PLANS 1 AND 2

(7) 3,900 cu. yd. excav. of cut-off trench under dam.
(8) 1,700 cu. yd. stripping for spillway and outlet works.
(9) 81,900 cu. yd. excav. for spillway.
(10) 5,000 cu. yd. excav. of tunnel approach and outlet channels.
(11) 1,200 cu. yd. excav. of tunnel.
(12) 1,340 cu. yd. conc. for spillway channel.
(13) 315 cu. yd. conc. for outlet tower and outlet pipe cover.
(14) 315 cu. yd. conc. for tunnel lining and portal headwalls.
(15) 25 cu. yd. conc. for outlet pipe support and anchors.
(16) 75 cu. yd. conc. for tunnel plug.
(17) 43 cu. yd. conc. for control house.
(18) 1,400 lin. ft. 4-in. porous conc. drain pipe with gravel envelope in place in spillway channel.
(19) 6,000 lin. ft. drilling grout holes under dam, depths from 0 to 30 ft.; 3,000 lin. ft. drilling grout 30 to 100 ft.; 3,000 lin. ft. drilling holes under dam, depths from 100 to 150 ft.

(Continued on next page)

THIS "LIVE BOOM" PAVER LOWERS COSTS

Let's consider the unique advantages of the boom on a standard 34-E Ransome Blue Brute "Dual Drum" Paver to see why you can lay more yardage . . . more accurately . . . with less manpower . . . than with any other paver.

Because this boom is really a "live boom" just like your crawler crane, it can be power-elevated to allow 9 ft. clearance under the bucket. And the paver can be operated *continuously* with the boom in the elevated position.

Think what that means. Whenever you want, or as often as you want, you can concrete retaining walls, abutments, headwalls, etc. in one operation *at the same time you lay the slab.* You eliminate the extra expense of doing those operations separately.

Moreover, because this "live boom" *spreads as it swings* it covers wider area with each batch . . . cuts down on costly hand shoveling.

OTHER BLUE BRUTE PLUSSES

In addition, a Blue Brute "Dual Drum" Paver has the fastest-charging, self-cleaning skip . . . hydraulically-controlled bucket, eliminating split batches . . . metal-to-metal spiral cut-off for precise water measuring . . . mechanically-operated batchmeter for all-season accuracy. These and other features are described in detail in Bulletin 208. Write for it.

24R5-3

KNOW YOUR BLUE BRUTES

Your Blue Brute Distributor will gladly show you how Worthington-Ransome Blue Brute construction equipment will put your planning on a profitable basis and prove that *there's more worth in Worthington-Ransome.* Act now! His name is listed on page **120.** The number beside his name indicates the Blue Brutes he handles.

1.
Blue Brutes include: Pavers, Concrete Spreaders**, Concrete Mixers, Concrete Placing Equipment, Big Mixers, Finishing Machines**, Pneumatic Placing & Grouting Equipment, Truck Mixers, Plaster & Bituminous Mixers, and accessories.

2.
Blue Brutes also include: Diesel, gasoline and electric driven Portable Compressors from 60 to 500 cu. ft. capacity in mountings to suit all jobs; Rock Drills and Air Tools in a wide range of weights and sizes; Contractors' Pumps.**

**Postwar Products

BUY BLUE BRUTES

Truck Mixers
Capacities:
2, 3, 4½, 5½ cu. yds.

Portable Mixers
Capacities:
3½, 7, 10, 14 cu. ft.

Big Stationary Mixers
Capacities:
28, 56, 84, 126 cu. ft.

Pneumatic Placer
Capacity:
7, 14, 28 cu. ft.

WORTHINGTON

Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division
Holyoke, Mass.

(20) 625 lin. ft. drilling grout holes under spillway weir and abutment wall to depth not more than 20 ft.
(21) 240 holes, furnish and install grout pipe and fittings in grout holes under dam.
(22) 25 holes, furnish and install grout pipe and fittings for spillway weir and abutment wall.
(23) 450 lbs. grout pipe and fittings in place in plug in tunnel.
(24) 3,240 sacks of cem., pressure grouting under dam.
(25) 400 sacks of cement, pressure grouting under spillway weir and abutment wall.
(26) 130 sacks of cement, pressure grouting around tunnel plug.
(27) 131,000 lbs. reinforcing steel in place.
(28) 500 lin. ft. drilling holes for anchor bars and grouting bars in place.
(29) 2 each, 36x30-in. CI reducers in place in outlet tower.
(30) 6 each, 24x18-in. CI reducers in place in outlet tower.
(31) 1 only, 30x24-in. CI reducer in place in control house.
(32) 1 only, 30-in. double disc, square bottom, gate valve for 60-lb. working pressure, with spur gears and grease case in place in outlet tower.
(33) 1 only, 30-in. double disc, square bottom, gate valve for 150-lb. working pressure, with spur gears in place in control house.
(34) 1 only, 24-in. double disc, square bottom, gate valve for 150-lb. working pressure in place in control house.
(35) 6 each, 18-in. double disc gate valves for 75-lb. working pressure, in place in outlet tower.
(36) gate valve extension stems, guides and hand operated floor stands in place in outlet tower.
(37) approx. 68 ft. of 30-in. CI pipe, and one 60-degree elbow, in place in outlet pipelines.
(38) approx. 3,750 ft. of 12-in. welded steel pipe for present water supply line, with connections to present 10-in. and 6-in. CI pipelines, all bends, air valves, blowoff and gate valves in place; change present 6-in. pipeline to Veterans' Home and remove and reinstall present chlorination plant.
(39) approx. 800 ft. of 30-in. welded steel outlet pipe with wye, ells, collars, flanges and couplings and 5 ft. of 24-in. welded steel pipe with flange and collar, in place.
(40) water stage recorder well and fittings and recorder platform in outlet tower, in place.
(41) ladders, steel grille manhole cover, trash rack and 6 trash screens in outlet tower, in place.
(42) metal pipe railing on outlet tower in place.
(43) cableway complete with A-frame on outlet tower, anchor, cable and car, in place.
(44) floor, door, roof and walk for control house, in place.
(45) remove existing 10-in. CI pipeline between Stations RO plus 38 and R36 plus 21.53, plug pipe at Station RO plus 38 and store pipe removed.
(46) remove approx. 3,670 ft. of existing 10-in. CI pipeline between Sta. R36 plus 21.53 and the diversion dam, remove approx. 3,750 ft. of 12-in. welded steel pipe in temporary water supply.

ITEMS IN PLAN ONE	(A)	(B)	(C)	(D)	(E)	(F)
(1)	.70	.69	.50	.45	.....	.315
(2)	.70	1.56	.55	2.00	.....	.49
(3)	4.00	4.15	2.00	4.00	.....	1.35
(4)	.46	1.06	.56	1.10	.....	.475
(5)	.80	1.04	.56	1.00	.....	.475
(6)	.80	.63	.56	.73	.....	.63
ITEMS IN PLAN TWO						
(1a)	.70	.....	.50	.45	1.00	.32
(2)	.70	.....	.55	2.00	1.34	.49
(3a)	4.00	.....	2.00	4.00	1.50	1.35
(4a)	.56	.....	.65	.96	.58	.61
(5a)	.56	.....	.56	.62	.60	.71
ITEMS INCLUDED IN PLANS ONE AND TWO						
(7)	4.00	14.10	1.75	5.30	1.00	1.35
(8)	1.75	2.10	1.15	2.00	1.00	1.30
(9)	1.75	2.47	1.15	1.61	1.85	1.00
(10)	2.00	2.47	3.50	3.00	1.50	1.00
(11)	24.00	31.00	29.00	40.00	30.00	48.00
(12)	30.00	47.90	39.50	35.00	18.00	30.25
(13)	52.00	75.00	58.00	58.00	60.00	56.32
(14)	30.00	62.00	25.00	48.00	27.00	29.25
(15)	30.00	133.00	33.00	90.00	60.00	45.47
(16)	30.00	44.50	40.00	30.00	22.00	30.71
(17)	52.00	73.70	33.00	60.00	45.00	74.94
(18)	2.50	2.27	2.50	1.50	2.00	1.85
(19a)	2.00	.56	1.50	1.80	2.50	3.19
(19b)	3.00	2.54	2.50	2.50	3.00	3.31
(19c)	3.50	2.54	3.00	3.00	3.00	3.57
(20)	1.50	.56	2.00	1.80	2.50	3.19
(21)	5.00	5.60	3.00	6.00	5.00	2.42
(22)	5.00	14.00	4.00	8.00	10.00	9.50
(23)	.50	.28	.50	.30	1.00	.23
(24)	3.00	2.25	2.00	1.50	2.00	3.80
(25)	3.00	2.25	2.00	1.50	2.00	3.80
(26)	4.00	2.80	2.50	2.00	3.00	4.60
(27)	.06	.07	.053	.06	.06	.055
(28)	1.50	1.75	2.50	2.40	1.00	1.73
(29)	500.00	610.00	635.00	400.00	425.00	479.72
(30)	250.00	214.00	315.00	200.00	180.00	143.49
(31)	.....	246.60	440.00	250.00	400.00	359.68
(32)	$1,850	$2,212	$2,075	$1,400	$1,600	$2,361
(33)	$1,850	$2,570	$2,135	$1,500	$1,750	$2,613
(34)	$1,400	$1,550	$1,300	$1,000	$1,040	$1,550
(35)	450.00	600.00	600.00	400.00	350.00	704.25
(36)	$2,750	$4,440	$3,000	$1,750	$3,000	$4,347
(37)	$3,000	$3,410	$14,500	$3,000	$3,100	$3,047
(38)	$7,800	$15,180	$8,650	$3,000	$10,200	$12,660
(39)	$11,500	$18,027	$10,475	$11,000	$11,700	$13,739
(40)	600.00	$1,182	500.00	700.00	600.00	$1,482
(41)	$1,500	$2,132	$1,460	$1,700	$2,000	$2,125
(42)	150.00	312.00	200.00	250.00	200.00	245.13
(43)	500.00	$1,230	600.00	400.00	900.00	$1,480
(44)	350.00	$1,121	900.00	450.00	725.00	675.68
(45)	$1,800	$5,200	$4,500	$7,000	$1,000	$2,531
(46)	$2,500	$7,050	$8,100	$10,000	$2,800	$4,053

Irrigation . . .

Wyoming—Fremont County—Bureau of Reclam.—Earthwork and Structures

W. E. Barling, Meeteetse, submitted the lowest bid of $188,604 to the Bureau of Reclamation, Riverton, for the construction of earthwork and structures on pilot Canal, Sta. 1841 to Sta. 2002 and sublaterals on the Riverton project. The following is a summary of the work involved and the unit bids received:

(A) W. E. Barling $188,604
(B) Malcolm G. Long 220,073
(C) Sharrock & Pursel 229,830
(D) J. H. Cox & V. B. Smith 231,996
(E) Otto B. Ashbock & Sons $243,779
(F) Barnard-Curtiss 244,259
(G) Northwestern Engr. Co. 303,204
(H) Morrison-Knudsen Co., Inc. 322,950

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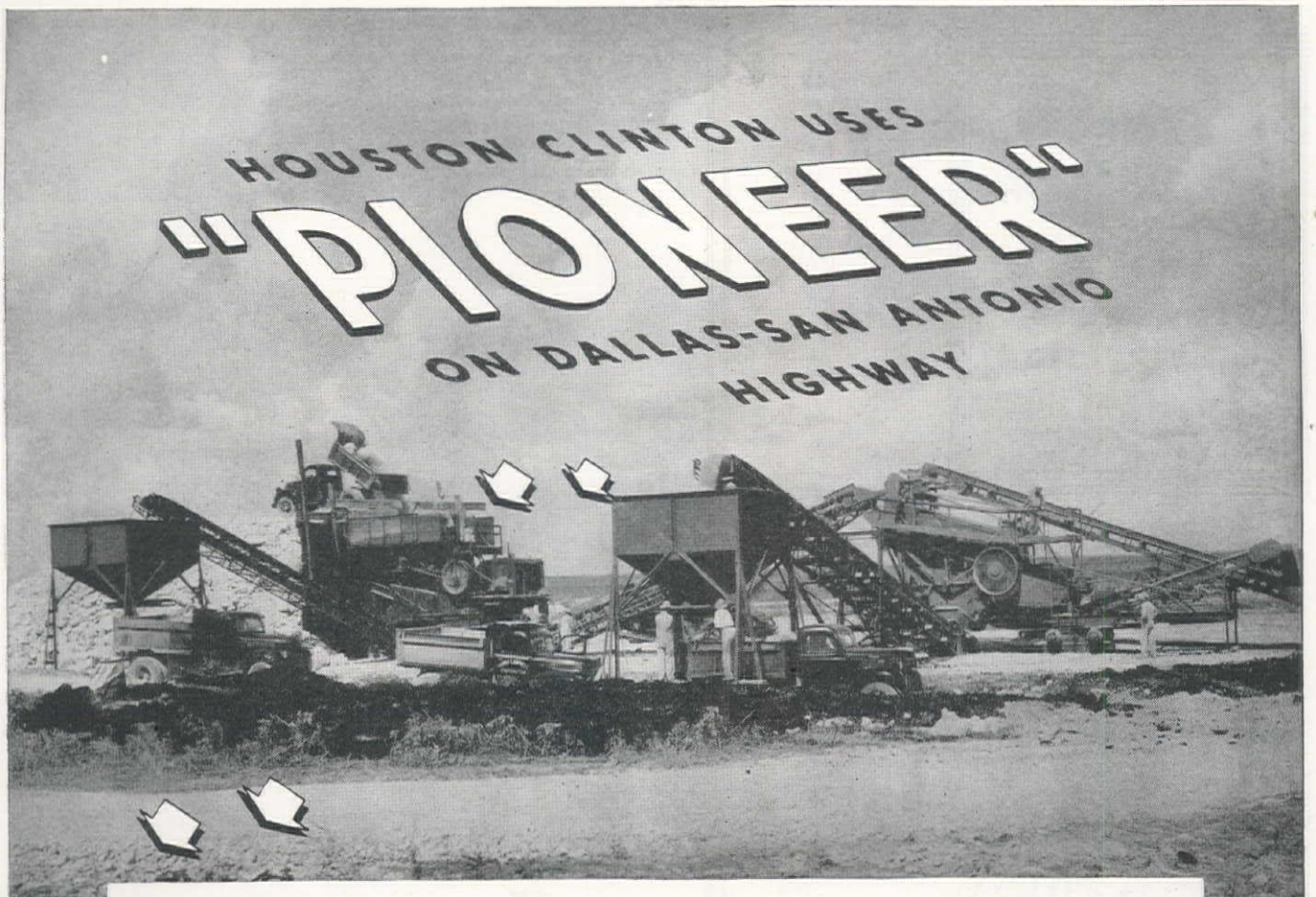

● In his first venture as a supplier of aggregate for highway contractors, Houston Clinton of Texas selected Pioneer equipment for the job. This job, which was an important highway project in Hill County, Texas—a connecting link in the Dallas-San Antonio highway—called for 60,000 yards of limestone crushed to 2½ inch for the base course.

To produce this aggregate a Pioneer 24 x 36 primary crusher with a 42-V reduction was used. Averaging between sixteen and seventeen hundred yards per 10-hour day. The operation consisted of crushing soft, white limestone rock which had seams in it, and some dirt had to be removed to meet Federal specifications as to plasticity and binder content. By having a small vibrator screen immediately under the traveling grizzly feeder on the primary unit, this dirt was removed successfully even though the material was wet.

The job was finished on schedule and the plant was shipped to Coleman County, Texas, and set up for another job of a similar type. Because both Pioneer units are mounted on pneumatic tires, making them highly portable, they were moved with a 2½-ton truck, eliminating high freight rates and holding moving costs to a minimum. An economical and profitable job, reports Houston Clinton—proving once again that you get extra margins of performance with Pioneer equipment.

ENGINEERS AND MANUFACTURERS

Pioneer
ENGINEERING WORKS

for QUARRY MINES GRAVEL

MINNEAPOLIS 13, MINNESOTA

(1) 135,000 cu. yd. excav., common, canal
(2) 2,500 cu. yd. excav., rock, canal
(3) 2,500 sta. cu. yd. overhaul
(4) 20,000 cu. yd. excav., common, structures
(5) 1,200 cu. yd. excav., rock, structures
(6) 14,500 cu. yd. backfill
(7) 4,800 cu. yd. compacting backfill
(8) 2,850 cu. yd. concrete in structures
(9) 234,000 lbs. placing reinforcement bars
(10) 400 sq. yd. grouted paving
(11) 100 cu. yd. cobble riprap
(12) 10 MFBM erecting timber in structures
(13) 850 lin. ft. laying 18-in. concrete pipe
(14) 180 lin. ft. laying 21-in. concrete pipe
(15) 260 lin. ft. laying 24-in. concrete pipe
(16) 170 lin. ft. laying 27-in. concrete pipe
(17) 532 lin. ft. laying 30-in. concrete pipe
(18) 1,178 lin. ft. laying 36-in. concrete pipe
(19) 500 lin. ft. laying 42-in. concrete pipe
(20) 140 lin. ft. laying 45-in. concrete pipe
(21) 140 lin. ft. laying 48-in. cocrete pipe
(22) 10,000 lb. installing gates
(23) 7,000 lb. installing misc. metalwork

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
(1)	.25	.30	.32	.26	.40	.30	.40	.33
(2)	.50	2.50	1.00	1.80	3.75	.90	1.50	2.60
(3)	.05	.03	.02	.02	.05	.05	.02	.05
(4)	1.00	.875	.80	1.50	.85	1.65	1.50	1.70
(5)	3.00	4.00	3.00	3.00	6.00	2.65	3.50	8.80
(6)	.30	.40	.30	.50	.50	.45	.50	.40
(7)	.50	1.00	.80	2.00	1.50	1.10	1.50	2.00
(8)	32.00	38.00	47.00	38.00	40.00	43.50	60.00	58.00
(9)	.04	.04	.035	.06	.05	.05	.05	.06
(10)	7.00	10.00	7.00	8.00	7.00	3.50	2.00	13.00
(11)	7.00	10.00	10.00	5.00	11.00	7.50	5.00	17 00
(12)	50.00	75.00	100.00	112.00	66.00	75.00	110.00	98.00
(13)	2.60	2.00	1.25	2.00	1.60	1.75	1.10	3.25
(14)	2.70	2.00	1.50	2.00	1.75	2.25	1.25	3.90
(15)	3.00	2.00	1.60	2.50	1.90	2.75	1.50	4.50
(16)	3.10	3.00	1.75	2.80	1.95	3.00	1.80	4.80
(17)	3.50	3.50	2.00	3.00	2.15	3.25	2.20	5.25
(18)	5.70	4.25	2.50	3.00	2.45	3.75	2.75	5.85
(19)	6.50	5.50	3.00	3.80	3.00	4.50	3.50	6.55
(20)	6.50	6.00	3.25	4.00	3.10	5.00	3.75	7.10
(21)	7.00	6.00	3.50	4.00	3.25	6.50	5.10	7.80
(22)	.05	.15	.05	.20	.14	.10	.10	.20
(23)	.05	.15	.05	.20	.15	.10	.20	.30

California—San Bernardino County—Bureau of Reclamation—Earthwork and Structures

Morrison-Knudsen Company, Inc., and J. F. Shea, Los Angeles, in joint venture submitted the low bid of $1,228,841 to the Bureau of Reclamation Office in Yuma, Arizona, for the construction of earthwork, concrete lining and structures, Sta. 5.150 plus 00 to Sta. 5.725 plus 00, Coachella Canal, Boulder Canyon Project of the All American Canal System, Specification No. 1113. The following is a summary of the unit bids for the work situated 11 mi. southeast to 2 mi. east of Indio, Calif.

(1) Morrison-Knudsen Company, Inc., and J. F. Shea Co. $1,228,841
(2) Grafe-Callahan, Gunther Shirley Co. and Mark C. Walker and Sons (joint bid) 1,239,557
(3) Rhodes Bros. & Shofner $1,245,586
(4) M. H. Hasler 1,272,920
(5) Bressi-Bevanda Contractors, Inc., and W. E. Kier (joint bid) 1,485,100
(6) Vinnell Co. 1,533,495

	(1)	(2)	(3)	(4)	(5)	(6)
250 acres of clearing and grubbing	25.00	10.00	30.00	20.00	50.00	35.00
485,000 cu. yd. in canal sect. excav.	.21	.15	.24	.18	.20	.30
1,100,000 cu. yd. excav. from borrow areas	.21	.20	.10	.255	.30	. 35
13,300 cu. yd. excav. for structures	1.00	.78	1.10	1.25	.85	1.75
379,500 cu. yd. compacting embankments	.31	.32	.53	.15	.20	.15
374,000 sq. yd. trimming foundations for conc. lining	.27	.34	.28	.27	.20	.30
360 cu. yd. compacted sub-base	2.00	2.85	1.60	3.00	3.60	3.50
11,300 cu. yd. of backfill	.60	.35	.30	.30	.60	.44
9,300 cu. yd. compacting backfill	2.50	1.00	1.40	2.50	3.60	1.75
20,000 cu. yd. of backfill at top of conc. lining	.40	.30	.40	.25	.70	.70
1,669 cu. yd. of conc. in structures	3.50	50.00	41.50	65.00	64.50	42.50
35,900 cu. yd. of conc. canal lining	13.25	13.80	12.50	13.90	15.50	16.75
1,400 cu. yd. of riprap	.03	.05	.03	.038	.07	.0425
204,200 lbs. placing reinf. bars in structs	.035	.04	.015	.038	.07	.0425
1,140,000 lbs. placing reinf. fabric in canal lining	1.00	.75	1.50	.40	2.85	2.50
1,270 sq. ft. placing elastic filler mat'l in joints	1.50	2.30	1.50	3.00	2.85	2.75
1,170 lin. ft. placing rubber water stops in joints	5.00	5.00	3.00	4.00	10.00	5.75
21 MFBM erecting of timber in structs	100.00	100.00	80.00	100.00	199.50	115.00
52 lin. ft. laying of 12-in. diam. asbestos-cement pipe	3.00	2.30	1.50	2.50	7.00	1.50
216 lin. ft. laying of 18-in. diam. conc. pipe	1.50	1.75	1.50	2.50	7.00	1.85
432 lin. ft. laying of 24-in. diam. conc. pipe	2.00	2.30	2.00	3.00	10.00	2.70
216 lin. ft. laying of 30-in. diam. conc. pipe	3.50	2.90	3.00	3.00	14.00	3.50
1,144 lin. ft. laying of 36-in. diam. conc. pipe	4.00	5.20	3.50	4.00	17.00	4.70
22,750 lbs. installing of radial gates	.20	.12	.12	.15	.25	.12
32,250 lbs. install'g radial-gate hoists and oper. mech	.15	.12	.12	.20	.20	.16
12,500 lbs. installing screw-lift gates	.20	.12	.10	.30	.20	.16
3,800 lbs. installing of misc. metal work	.30	.23	.30	.40	.30	.14
128 cwt. placing of bitum. matl. in float dams	10.00	4.60	1.00	2.00	2.00	7.00

Bridge and Grade Separation . . .

Washington—Cowlitz County—State—Steel and Concrete

Kern & Kibbe, Portland, Oregon, were awarded the contract on the low bid of $168,702 by the Department of Highways, Olympia, for the construction of the Coweeman River Bridge on SR No. 1. The following is a summary of work and the unit bids submitted.

(A) Kern & Kibbe $168,702
(B) M. P. Butler 177,908
(C) Rumsey & Company 178,665
(D) The Gilpin Construction Co. 182,092
(E) Paul Jarvis, Inc. $183,192
(F) M. P. Munter Co. 213,495
(G) C. J. Eldon 215,874
(H) MacRae Bros. 217,309

(1) 2,000 cu. yd. structure excav.
(2) 580 yds. conc. Class A in place.
(3) 600 cu. yd. conc. Class F in place.
(4) 190 cu. yd. conc. Class H in place.
(5) 218,000 lb. steel reinf. bars in place.
(6) 435,000 lb. structural steel in place.
(7) 3,900 cast steel in place.
(8) 10 ea. bridge drains complete in place.
(9) 60 lb. copper seals in place.
(10) 764 lin. ft. steel bridge railing in place.
(11) 9,800 lin. ft. furn. steel piling at site.
(12) 266 ea. driving steel piling in place.
(13) 30 ea. pile splices.
(14) 3 ea. furn. and driving steel test piles.

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
(1)	7.00	17.00	10.00	10.00	14.00	22.50	17.00	21.00
(2)	42.70	35.00	45.00	48.00	35.00	55.00	47.00	43.00
(3)	26.50	35.00	40.00	32.00	35.00	28.00	41.00	43.00

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(4)	12.55	35.00	24.00	29.00	25.00	22.50	30.00	43.00
(5)	.07	.06	.06	.07	.09	.062	.08	.07
(6)	.12	.11	.12	.12	.13	.136	.1288	.13
(7)	.37	.40	.35	1.00	.40	.35	.40	.35
(8)	67.50	40.00	50.00	75.00	60.00	75.00	40.00	60.00
(9)	1.00	2.00	1.50	2.00	1.00	2.65	1.00	2.00
(10)	6.60	7.00	7.50	8.00	8.00	6.50	9.00	7.50
(11)	2.22	2.00	2.20	2.50	2.00	2.37	2.20	2.60
(12)	48.88	25.00	30.00	20.00	15.00	33.00	70.00	34.00
(13)	30.00	20.00	15.00	21.00	15.00	30.00	24.00	25.00
(14)	438.00	250.00	350.00	250.00	200.00	900.00	350.00	500.00

Oregon—Multnomah County—State—Concrete

Marine Construction Co., Portland, submitted the low bid of $269,209 to the Highway Department, Salem, for the construction of a reinforced concrete overcrossing of Arthur St. in Portland. Summary of the work and unit bids follows:

(1) Marine Construction Co. $269,209
(2) Kern & Kibbe 302,184
(3) Birkemeier & Saremal 314,592
(4) Gilpin Construction Co. $335,040
(5) Parker-Schram Co. 349,666

	(1)	(2)	(3)	(4)	(5)
170 cu. yd. gravel backfill in place	10.00	3.75	5.00	2.25	3.00
Lump sum, shoring, cribbing, etc.	$6,000	$5,748	$15,000	$5,000	$6,000
2,400 cu. yd. struct. excav., unclass.	3.00	2.00	4.50	2.50	2.75
100 cu. yd. struct. excav. below elev. shown, unclass.	12.00	10.00	8.00	5.00	3.50
4,400 lin. ft. furnish treated piles	1.15	1.25	1.25	1.03	1.20
140 ea. drive treated piles	18.00	25.00	25.00	25.00	23.50
18,000 lin. ft. furnish 10-in. x 42-lb. steel piling	1.50	1.75	2.10	1.75	1.90
240 ea. drive 10-in. x 42-lb. steel piling	55.00	70.00	65.00	50.00	38.50
5,000 lin. ft. furnish 12-in. x 53-lb. steel piling	2.00	2.16	2.65	2.15	2.45
60 ea. drive 12-in. x 53-lb. steel piling	55.00	70.00	85.00	55.00	41.50
3,400 cu. yd. Class A concrete	30.00	39.30	34.00	47.50	47.50
560,000 lb. metal reinforcement	.06	.067	.075	.07	.075
284,000 lb. structural steel	.105	.08	.0775	.09	.11
6,800 lb. copper and bronze	.60	.79	1.00	1.00	1.00
2,460 lin. ft. metal handrail	8.00	7.20	7.00	9.00	10.00
220 lin. ft. 6-in. pipe in place	2.00	.42	2.00	1.00	2.50
14 lin. ft. 8-in. pipe in place	2.25	.60	3.00	1.00	3.50
Lump sum, metal door and screens in place	175.00	150.00	100.00	250.00	250.00
600 lin. ft. 2-in. metal conduit in place	1.60	.90	2.20	1.50	2.00
36 lin. ft. 1½-in. metal conduit in place	2.00	1.15	1.50	1.50	1.50
500 lin. ft. 1-in. metal conduit in place	1.30	.50	.75	1.00	1.50
28 lin. ft. ¾-in. metal conduit in place	.65	1.30	.75	1.00	1.00
16 ea. outlet boxes in place	8.00	3.85	10.00	10.00	10.00
5 ea. transformer boxes in place	75.00	35.00	50.00	50.00	55.00

Highway and Street...

Oregon—Yamhill County—State—Grade & Surface

E. R. Hitchman, Mill City, submitted the low bid of $52,792 to the Highway Department, Salem, for the grading and surfacing of Carlton timber access road. Summary of the bids received is as follows:

(1) E. R. Hitchman $52,792
(2) J. N. & M. J. Conley 60,848
(3) C. J. Eldon 65,015
(4) J. C. Compton $68,700
(5) O. C. Yocom 69,021
(6) Vernie Jarl 76,530

	(1)	(2)	(3)	(4)	(5)	(6)
Lump sum, clearing and grubbing	$2,000	$2,500	$3,500	750.00	$1,000	$2,000
200 cu. yd. trench excav., unclass.	1.50	2.00	2.00	1.00	1.00	2.00
8,800 cu. yd. general excav., unclass.	.40	.50	.42	.55	.48	.35
19,000 yd. stas. short overhaul	.02	.02	.02	.02	.03	.02
25 yd. stas. long overhaul	.30	.36	1.00	.50	.40	.50
80 hours underwater excav. with shovel	9.00	12.50	15.00	13.50	13.50	15.00
Lump sum, grader work, Stas. 75 to 29	960.00	920.00	500.00	500.00	360.00	690.00
1.09 mi. finishing roadbed and slopes	300.00	300.00	500.00	500.00	500.00	500.00
1,100 cu. yd. rock slope protection	1.50	1.40	2.00	2.00	2.00	5.00
80 lin. ft. 8-in. perf. metal drain pipe, coated	1.85	1.20	1.30	1.50	1.50	1.50
530 lin. ft. 12-in. corrugated metal pipe	2.00	1.30	1.60	1.75	1.50	2.00
250 lin. ft. 18-in. corrugated metal pipe	2.47	2.00	2.50	2.50	2.00	3.50
14 lin. ft. 36-in. corrugated metal pipe	6.60	5.50	8.00	10.00	8.00	7.50
170 lin. ft. salvaging culvert pipe	2.00	1.00	1.00	1.00	1.00	1.00
15 cu. yd. rock or gravel backfill in drains	5.00	4.00	4.00	5.00	4.00	3.50
10,200 cu. yd. 4-in. - 0-in. rock in subbase	1.60	2.25	2.50	2.95	3.00	3.20
5,000 cu. yd. 1½-in. - 0-in. rock in base	1.75	2.50	2.60	2.95	3.00	3.20
3,600 cu. yd. 1-in. - 0-in. material in surfacing	4.00	3.25	3.00	2.95	3.00	3.00
450 M. gals. sprinkling	2.50	1.40	3.00	1.50	1.50	2.00

Montana—Roosevelt County—State—Grade and Surface

Inland Construction Co., Omaha, Nebraska, offered the low bid of $193,326 and was awarded the contract by the State Highway Commission, Helena, for the construction of 5 mi. of Section I of the Glacier Park Trail road. Work quantities and unit bids received by the Commission are as follows:

(1) Inland Construction Co. $193,326
(2) Albert Lalonde Co. 205,974
(3) Big Horn Construction Co. 220,848
(4) A. T. Noland 224,494
(5) Union Construction Co., Inc. $225,554
(6) S. Birch & Sons Const. Co. 227,515
(7) McLaughlin, Inc. 253,924
(8) Nolan Bros. 273,901

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
358,728 cu. yd. unclass. excav. and borrow	.198	.21	.20	.25	.21	.20	.24	.33
1,899 cu. yd. culvert excavation	.62	1.50	1.00	1.25	1.00	1.00	1.50	1.50
708,720 sta. yd. overhaul	.015	.015	.01	.01	.02	.01	.01	.01
11,750 cu. yd. sel. bor. base crse. mat.	.62	.75	1.10	.65	1.00	.98	1.25	.80
44,699 tons base crse. cr. grav. sur. mat.	.72	.90	1.10	.90	1.00	1.03	1.20	1.00
9,468 tons Gr. A top crse. cr. grav. sur. mat.	.89	1.25	1.50	1.10	1.35	1.12	1.20	1.35
1,150 tons stone chips	5.20	3.50	4.00	5.00	4.00	7.00	6.00	6.00
2,000 cu. yd. binder	.12	.50	.01	.20	.05	.01	.10	.15
4,000 yd. mi. overhaul on binder	.12	.05	.01	.10	.05	.01	.10	.15
6,872 M. gal. watering	.90	2.00	2.00	2.00	2.00	3.50	3.00	1.50
313 units rolling	6.80	5.00	6.50	7.00	6.00	6.00	7.00	6.00
31,900 gal. pr. coat oil (SC-1 A rd. oil)	.104	.10	.09	.17	.12	.13	.15	.15
31,900 gal. seal coat oil (150-200 A cmt.)	.104	.12	.09	.17	.14	.15	.15	.15
32 lin. ft. 18-in. corr. metal pipe culv.	3.20	2.32	2.50	1.75	2.00	2.00	2.50	3.25

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1,042 lin. ft. 24-in. corr. metal pipe culv.	4.40	3.12	3.50	3.25	3.00	3.05	3.50	4.50
116 lin. ft. 30-in. corr. metal pipe culv.	5.60	3.64	4.50	4.00	3.50	4.00	4.50	6.50
680 lin. ft. 36-in. corr. metal pipe culv.	7.40	5.25	6.50	6.00	6.00	6.00	6.50	8.50
668 lin. ft. 48-in. corr. metal pipe culv.	10.80	6.71	8.50	7.50	10.00	8.00	10.00	12.00
172 lin. ft. 36-in. corr. metal pipe culv. 10 gauge	8.40	6.80	8.00	7.25	7.00	7.50	7.50	11.50
680 lin. ft. 48-in. corr. metal pipe culv. 8 gauge	15.60	10.00	13.00	11.00	12.00	12.00	14.00	20.00
20.20 MFBM treated lumber	176.70	150.00	200.00	200.00	200.00	200.00	200.00	250.00
.94 MFBM untreated lumber	152.00	100.00	200.00	200.00	150.00	200.00	200.00	250.00
16 pile 25 ft. treated timb. piles	52.00	32.00	70.00	45.00	50.00	50.00	50.00	75.00
18 pile 30 ft. treated timb. piles	62.00	37.50	80.00	50.00	50.00	60.00	60.00	85.00
10,350 lin. ft. wood slat snow fence	.28	.25	.42	.40	.40	.45	.35	.40
190 sq. yd. grouted riprap	9.15	5.00	3.50	5.00	6.00	6.00	7.00	5.50
32 each conc. r/w monuments	4.00	1.85	5.00	3.00	3.00	4.50	4.00	3.00
27 each conc. station markers	6.00	3.50	10.00	5.00	6.00	6.50	5.00	6.00
770 tons stock piled gravel	.94	1.25	1.10	1.10	1.25	1.10	1.10	1.00

California—Los Angeles County—City—Building

C. L. Peck, Los Angeles, submitted the low bid of $192,666 to the Los Angeles Water and Power Department for the construction of the main substructure for the Harbor Steam Plant, turbine foundation, and steam generator foundation. The summary of the unit bids follow:

(A) C. L. Peck $192,666
(B) Contracting Engineers Co. 215,321
(C) Grafe-Callahan Const. Co., and Gunther & Shirley Co. 236,500
(D) Spencer-Webb 241,960
(E) W. C. Smith, Inc. $242,173
(F) Guy F. Atkinson 260,200
(G) Transpacific Constr. Co. 268,700
(H) Oilfield Const. Co. 297,600

(1) Addtl. conc., includ. forms, furn. per cu. ft.
(2) Addtl. reinf. steel, furn., bent & placed, per lb.
(3) Addtl. excav. and disposed of, per cu. yd.
(4) Addtl. backfill outside bldg. area, per cu. yd.
(5) Addtl. backfill inside bldg., area, per cu. yd.
(6) Addtl. miscl. iron and steel., furn and installed, per lb.
(7) Addtl. waterpr. will be applied, per cu. yd.
(8) Addtl. waterpr. membrane will be applied, per cu. yd.

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
(1)	12.82	.10	1.00	.....	1.18	.90	45.00	2.00
(2)	.05		.06	.05	.073	.05	.07	.03
(3)	.70	1.50	1.00	1.20	.85	1.10	1.75	1.50
(4)	1.25	1.00	2.00	.75	1.50	.90	.75	2.00
(5)	4.00	3.00	2.00	2.00	4.80	2.50	1.90	4.50
(6)	.23	.25	.50	.30	.22	.20	.32	.20
(7)	.36	2.50	.50	.25	.29	.60	.35	.60
(8)	4.50	2.50	2.50	.50	.54	.90	.70	2.75

Idaho—Benewah-Kootenai Counties—State—Grade and Surface

Nyberg Construction Co., Yardley, Wash., submitted the low bid and was awarded the contract for $57,935 by the Bureau of Highways, Boise, for the resurfacing with crushed rock of 7.6 mi. of U. S. 95 (Alt.) between St. Maries and Mission Point. Unit bid summary follows:

(1) Nyberg Construction Co. $57,935
(2) Max J. Kuney Co. 62,870
(3) Colonial Construction Co. $63,135
(4) Engineer's Estimate 52,612

	(1)	(2)	(3)	(4)
5,250 mi. yd. haul on binder	.12	.10	.15	.20
25 days rolling, power roller	30.00	40.00	35.00	30.00
500 M. gal. watering base and surface courses	1.00	2.00	1.10	1.50
850 cu. yd. binder	.30	.20	.35	.25
23,500 tons cr. rock surface course ¾-in. max.	1.60	1.85	1.75	1.50
5,000 tons cr. gr. in stkp. ¾-in. max., site No. 2	1.40	1.00	1.50	1.00
3,000 tons cr. rk. in stkp. ¾-in. max., site No. 1	1.40	1.15	1.50	1.20
5,000 tons cr. rk. in stkp. ¾-in. max., site No. 2	1.40	1.65	1.50	1.20

California—San Bernardino County—State—Paving

Matich Bros., Colton, offered the low bid of $309,541 to the Division of Highways, Sacramento, for the paving of 2.8 mi. of SR 26 in the City of Redlands between State Street and the east city limits. The following is a summary of the unit bids submitted for this Portland cement concrete pavement.

(1) Matich Bros. $309,541
(2) Egglestone & Root 313,533
(3) Basich Bros. Const. Co. 363,901
(4) N. M. Ball & Sons 365,297
(5) Chas. Dorfman $368,705
(6) J. E. Haddock, Ltd. 375,474
(7) Griffith Co. 401,624

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1,300 cu. yd. removing concrete	5.00	4.50	4.50	4.00	3.00	3.85	5.00
147 sta. clearing and grubbing	10.00	15.00	10.00	37.00	10.00	15.00	9.00
1,500 each, removing trees	4.00	4.00	7.50	7.00	5.00	6.00	9.00
100,100 cu. yd. roadway excav.	.38	.36	.30	.45	.45	.49	.35
3,000 cu. yd. structure excav.	2.00	2.50	3.00	2.00	2.80	1.95	2.10
400 cu. yd. ditch and channel excav.	1.50	1.50	2.50	2.00	.75	3.00	1.60
78,600 sq. yd. compacting orig. ground	.03	.05	.05	.04	.025	.035	.05
570,000 sta. yd. overhaul	.005	.005	.005	.006	.005	.007	.005
38,000 cu. yd. imported borrow	.70	.85	1.25	1.10	.90	1.30	1.50
55,500 sq. yd. preparing subgrade	.16	.12	.08	.10	.10	.10	.18
Lump sum, dev. water sup. and furn. watg. equipt.	$2,500	$2,000	$8,000	$7,500	$4,000	$3,250	$6,700
4,000 M. gal. applying water	1.50	1.25	2.10	1.25	1.50	2.00	1.80
157 sta. finishing roadway	14.00	10.00	10.00	8.00	17.00	23.00	12.00
4,400 tons mineral aggregate (P.M.S.)	4.40	4.75	5.65	4.50	5.00	5.60	5.00
210 tons paving asphalt (P.M.S.)	13.00	16.00	18.75	15.00	16.00	19.60	16.00
2 tons asph. emulsion (paint binder)	75.00	200.00	50.00	75.00	100.00	60.00	100.00
800 lin. ft. raised bars	.75	1.30	.75	.50	2.00	1.00	.60
12,860 cu. yd. Class "B" P.C.C. (pavement)	9.20	9.25	10.10	9.95	11.00	10.00	12.10
290 cu. yd. Class "A" P.C.C. (structs.)	24.00	29.00	50.00	37.00	35.00	46.00	39.00
1,200 cu. yd. Cl. "A" P.C.C. (curbs, gutters and sidewalks)	24.00	22.00	22.50	30.00	35.00	25.00	24.00
32 each, monuments	5.00	5.00	5.00	4.00	5.00	6.00	5.00
160 lin. ft. laminated guard railing	2.50	2.50	3.00	3.00	3.00	2.40	2,25
46 each, culvert markers	5.00	5.00	5.00	3.50	4.00	3.60	5.00
32 each, guide posts	5.00	4.00	5.00	3.50	4.00	3.00	4.00
1.62 miles new fence (Type 1)	$2,000	$1,500	$1,600	$2,000	$2,000	$2,500	$1,700
1.15 miles new fence (Type 2)	800.00	$1,000	$1,050	$1,450	800.00	$1,700	$1,000
106 lin. ft. 8-in. C.M.P. (16 ga.)	1.40	1.50	1.50	1.50	1.50	1.20	1.50
130 lin. ft. 18-in. C.M.P. (16 ga.)	2.25	2.50	2.60	2.60	2.60	2.20	2.40
1,830 lin. ft. 24-in. C.M.P. (14 ga.)	3.00	3.00	4.00	3.55	3.80	3.25	3.40
80 lin. ft. 36-in. C.M.P. (12 ga)	7.00	6.50	5.30	6.00	6.50	6.40	6.20
170 lin. ft. 6-in. plain conc. pipe	.75	1.00	.85	2.00	1.00	.50	.70
200 lin. ft. 8-in. plain conc. pipe	1.00	1.20	1.00	2.10	1.20	.65	.80
500 lin. ft. 10-in. plain conc. pipe	1.20	1.50	1.25	2.25	1.50	.80	.90

(Continued on next page)

The New W4-5 Athey MobiLoader

Athey APCOR Products

More than 500 Athey MobiLoaders on tough loading jobs today are proving Athey MobiLoader performance and dependability. Now comes the greatly improved Model W4-5—a product resulting from intensive engineering research and two years of grueling field tests.

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HIGHLIGHTS OF THE NEW W4-5

☆ MORE STABILITY ☆ HYDRAULIC "FINGER-TIP" CONTROL ☆ BETTER VISIBILITY ☆ GREATER PRODUCTION ☆ SIMPLIFIED DESIGN ☆ OPERATES WITH "CATERPILLAR" DIESEL D4 TRACTOR. ☆

Athey

96 lin. ft. 8-in. perf. metal pipe underdrains (16 ga.)	1.50	1.50	1.60	1.60	2.00	1.25	1.50
20 cu. yd. filter material	5.00	5.00	3.75	4.50	5.00	6.40	7.20
90 lin. ft. salvaging exist. pipe culverts	1.00	1.50	1.00	1.00	2.00	.75	1.30
36 lin. ft. salv. exist. spillway assembly downdrains	.50	1.00	.75	1.00	1.00	.75	1.00
5 each, salv. existing spillway assemblies	5.00	5.00	6.50	15.00	15.00	10.00	7.00
3,500 lin. ft. rem. and dispos. of exist. conc. and vitr. clay irrig. pipes	.50	.50	1.60	1.00	.20	.70	1.00
9,300 each tie bolt assemblies	.60	.60	.60	.60	.70	.65	.80
13,500 lbs. bar reinf. steel	.10	.07	.08	.07	.10	.08	.08
14 tons straw (slope erosion protection)	75.00	50.00	75.00	60.00	50.00	50.00	130.00

Arizona—Pinal County—State—Grade and Surface

Tanner Construction Co., Phoenix, was awarded the contract on the low bid of $23,815 by the Highway Department, Phoenix, to replace existing dips with three concrete box culverts and approach fills, 14 mi. west of Casa Grande on the Gila Bend road. A summary of the unit bids submitted follows:

(A) Tanner Construction Co. $23,815
(B) Wallace & Wallace 24,156
(C) Packard Const. Co. 24,794
(D) P. D. O. C., General Contractors 25,482
(E) Tiffany Construction Co. $28,095
(F) Phoenix-Tempe Stone Co. 28,142
(G) H. L. Royden, Contractors 28,386
(H) Mesa Concrete Products Co. 29,241

(1) 749 cu. yd. rdwy. excav. (unclass.)
(2) 90 cu. yd. drainage excav. (unclass.)
(3) 450 cu. yd. structural excav. (unclass.)
(4) 5,172 ton imported borrow (CIP)
(5) 3,950 ton select material (CIP)
(6) 310 M. gal. sprinkling (CIP)
(7) 97 hour rolling
(8) 219 cu. yd. Class "A" conc. (incl. cement)
(9) 24,240 lb. reinforcing steel (bars) (CIP)
(10) 676 ton mineral aggregate (CIP)
(11) 51 ton road oil (SC-2) (for roadmix) (CIP)
(12) 0.43 mile processing roadmix
(13) 67 ton screenings (CIP)
(14) 10 ton emul. asphalt (Class "A")
(15) 50 hour mechanical tamping

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
(1)	.45	.60	.50	.50	.80	1.45	1.00	.90
(2)	.45	.70	.50	.50	.80	.75	1.00	.90
(3)	2.25	2.50	2.00	2.00	2.00	1.50	3.50	3.00
(4)	.75	.55	.52	.50	.80	.65	.80	.75
(5)	1.20	1.00	1.10	1.65	1.60	1.45	1.50	1.95
(6)	2.25	2.00	2.00	3.00	3.00	1.65	1.50	3.00
(7)	5.50	5.50	6.50	6.00	5.00	4.75	6.00	7.00
(8)	28.50	36.00	40.00	35.00	32.00	45.00	38.00	35.00
(9)	.10	.09	.08	.08	.10	.09	.07	.08
(10)	1.60	2.25	3.30	2.00	2.00	1.65	2.80	2.00
(11)	25.00	28.50	23.00	25.00	35.00	25.00	24.00	35.00
(12)	$1,000	900.00	700.00	$1,000	$1,000	$1,000	$2,000	500.00
(13)	7.50	7.50	5.00	6.00	6.00	8.50	5.00	7.00
(14)	45.00	39.00	35.00	4.00	15.00	7.50	4.00	3.00
(15)	3.40	5.00	2.00	4.00	15.00	7.50	4.00	3.00

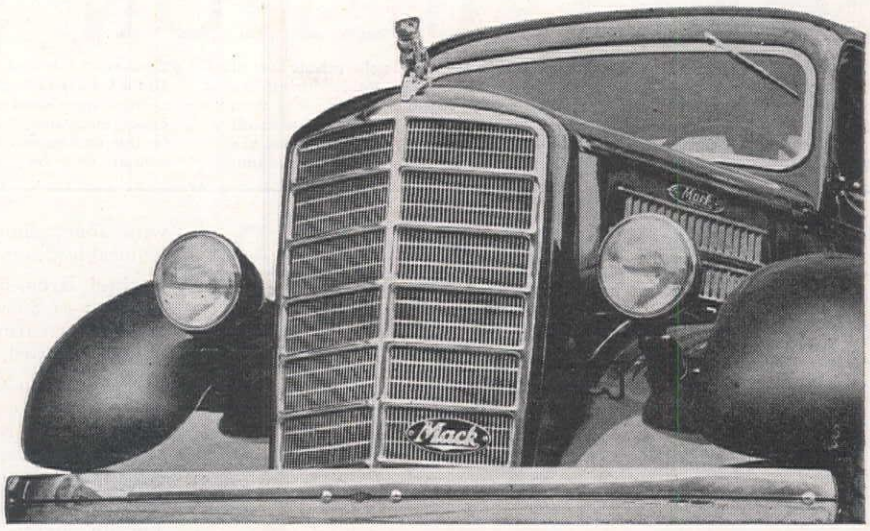
Arizona—Navajo County—State—Grade and Surface

W. J. Henson Construction Co., Prescott, submitted the low bid of $474,734 to the Highway Department, Phoenix, for grading and bituminous surfacing of 13 mi. of the Showlow-Holbrook highway. Unit bids submitted for this project follow:

(A) W. J. Henson Const. Co. $474,734
(B) Phoenix-Tempe Stone Co. 479,758
(C) Tanner Construction Co. 487,874
(D) Fisher Const. Co. 492,956
(E) Lee Moor $496,457
(F) W. E. Orr 508,076
(G) Packard Const. Co. 510,624
(H) J. E. Skousen 524,910

(1) 88,188 cu. yd. roadway excavation
(2) 5,338 cu. yd. drainage excavation
(3) 50,450 lin. ft. grader ditches
(4) 1,998 cu. yd. struct. excavation
(5) 130,417 sta. yd. overhaul
(6) 6,171 cu. yd. mile haul
(7) 46,849 cu. yd. imported borrow
(8) 102,217 tons aggregate base
(9) 7,330 M. gal. sprinkling
(10) 2,518 hrs. rolling
(11) 1,710 cu. yd. Class A concrete
(12) 221 cu. yd. Class D concrete
(13) 229,196 lbs. reinforcing steel
(14) 8,340 lbs. structural steel
(15) 84 lin. ft. 18-in. CMP
(16) 272 lin. ft. 24-in. same
(17) 796 lin. ft. 60-in. same
(18) 246 lin. ft. 36-in. same
(19) 84 lin. ft. 18-in. bitum. coated CMP
(20) 452 lin. ft. 24-in. same
(21) 298 lin. ft. 30-in. same
(22) 240 cu. yd. plain riprap
(23) 140,065 lin. ft. std. line fence
(24) 13 each, wire gates, Type 2
(25) 322 each, guide posts
(26) 88 ea., right-of-way markers, Type E
(27) 23,849 tons plant mix
(28) 1,075 tons road oil, SC-6, plant mix
(29) 118,670 gal. road oil, SC-1, prime coat
(30) 12,013 miles place plant mix
(31) 2,675 tons screenings
(32) 396 tons emul. asphalt, Class A
(33) 97 sq. yd. place intersections.

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
(1)	.90	.76	.75	.80	.90	1.00	.90	1.03
(2)	.60	.80	.65	1.00	.60	1.00	.50	.80
(3)	.05	.05	.10	.10	.08	.15	.14	.05
(4)	5.50	2.00	3.50	2.50	2.00	4.00	3.50	3.00
(5)	.03	.015	.01	.02	.02	.02	.02	.03
(6)	.40	.40	.20	.35	.30	.30	.28	.40
(7)	.55	.50	.60	.55	.60	.40	.50	.43
(8)	1.00	1.09	.95	.95	.98	.90	.98	.90
(9)	2.00	2.35	2.50	4.00	2.00	3.25	3.00	2.75
(10)	5.00	4.00	5.00	5.50	5.00	5.00	5.75	4.75
(11)	30.00	30.00	32.00	33.00	31.00	32.00	30.00	36.00
(12)	31.00	30.00	40.00	35.00	35.00	34.00	32.00	36.00
(13)	.07	.07	.08	.08	.07	.08	.08	.075
(14)	.20	.20	.20	.15	.18	.16	.35	.20
(15)	3.25	2.30	3.00	3.00	3.25	2.30	2.30	3.50
(16)	4.25	3.50	3.90	3.75	3.75	3.60	3.60	4.00
(17)	5.00	4.40	4.60	4.80	5.00	4.35	4.40	5.25
(18)	7.50	7.00	6.80	6.75	7.00	6.50	7.00	7.00
(19)	3.25	2.65	3.60	3.25	4.00	2.42	2.40	4.50
(20)	4.50	4.00	4.60	4.00	4.50	3.75	3.75	5.00
(21)	5.50	5.00	5.40	5.15	6.00	4.50	4.65	6.25
(22)	7.50	4.00	8.00	8.00	6.00	6.00	4.00	6.00
(23)	.12	.13	.18	.10	.12	.14	.14	.12
(24)	10.00	13.00	15.00	15.00	12.00	15.00	15.00	15.00
(25)	4.50	4.70	6.50	5.00	5.00	5.50	5.00	4.50
(26)	6.00	6.00	6.00	8.00	5.00	5.50	6.00	5.50
(27)	2.00	2.40	2.20	2.20	2.60	2.50	2.90	2.75
(28)	22.00	27.00	23.00	25.00	25.00	26.00	23.00	30.00
(29)	.10	.10	.10	.105	.11	.11	.11	.11
(30)	350.00	470.00	600.00	500.00	800.00	300.00	700.00	800.00
(31)	4.00	4.00	5.00	5.00	4.50	5.00	4.00	6.00
(32)	27.00	34.00	33.00	30.00	29.00	35.00	28.00	32.00
(33)	1.00	.65	1.00	1.00	1.00	1.00	.85	1.00



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CONSTRUCTION SUMMARY

The following pages contain the most complete available tabulation of construction contracts awarded in the eleven western states during the past month. Except for certain instances, contracts amounting to less than $10,000 are not listed. Space is not available to list more than a small proportion of the proposed projects. For your convenience, all items are prepared in an identical manner to provide the following information: County of job location (capital letters); name and address of contractor (bold face); bid price; brief description of work; awarding agency; and approximate date of award. More detailed information may be secured concerning employment conditions, wage rates, etc., by writing directly to the contractor. When available, the names of the supervisory personnel will be published in the "Supervising the Jobs" columns.

CONTRACTS AWARDED

Large Western Projects . . .

Utah Construction Co., San Francisco, Calif., was awarded the $21,462,505 contract for construction of Davis Dam on the Arizona-Nevada border by the Bureau of Reclamation. In Pyramid canyon, Mohave Co., Ariz., the dam will have a reservoir capacity of 1,820,000 ac. ft. of Colorado River water.

Griffith Co. of Los Angeles, Calif., will receive $1,386,769 for 9.8 mi. of grading and paving in San Bernardino Co. between Mulberry St. and Colton, from the State Division of Highways, Sacramento, Calif.

P. A. Bradbury, Aberdeen, S. Dak., has a $515,844 contract for grading, constructing base and surface on 17.2 mi. of U. S. Highway 10 in Burleigh Co., N. Dak., by the Public Roads Administration, Washington, D. C.

M. W. Kellogg Co. of New York will remodel and construct a refinery for the Texas Co. costing $6,000,000. It will be located east of Casper in Natrona Co., Wyo.

Carl B. Warren of Spokane, Wash., has a $442,751 contract for excavating trenches and laying steel pipe on a 4½-mi. section of Salt Lake aqueduct in Utah, by the U. S. Bureau of Reclamation.

Ross B. Hammond Construction Co., Portland, Ore., will build a $1,500,000 12-story office building of reinforced concrete faced with sheet aluminum and thermapane glass, in Portland, for Equitable Savings and Loan Association.

Bechtel Bros.-McCone, San Francisco, Calif., was awarded a contract of $669,038 for sewer collecting system, pumping station and treatment plant in Oildale, Kern Co., Calif., by the Sanitary Board, District No. 1, Kern Co.

M. H. Golden Construction Co., San Diego, Calif., will receive $1,892,075 for constructing piers No. 10, 11, and 12 for the U. S. Naval Repair Base, San Diego, from the Bureau of Yards and Docks, Washington, D. C.

Roscoe & Land, Los Angeles, Calif., have a $1,250,000 contract for a private housing project at Pima Rd. and Maple Blvd. in Tucson, Ariz., by the Frontier Construction Co. of Phoenix.

General Construction Co. of Vancouver and Comox, British Columbia, have a contract for $200,000 to clear a right-of-way for transmission line from Campbell River to Nanaimo in British Columbia, by the B. C. Power Commission, and a contract for $611,900 for building an administrative wing at the mental hospital in Essondale, British Columbia.

Johnson, Drake & Piper, Oakland, Calif., was awarded a $5,060,000 contract for a two-story administration and laboratory building and a one-story shops building, Naval Ordnance Testing Station, Inyokern, Calif., by the Bureau of Yards and Docks, Washington, D. C.

Larry H. Imig, Inc., San Diego, Calif., will build for himself a 3,000-unit private housing project and business district in Fletcher Hills area west of El Cajon Valley, San Diego Co.

K. L. House of Albuquerque, N. Mex., will construct a $1,000,000

concrete and brick plant for the manufacture of costume and Indian-type jewelry in Albuquerque, for Jack Michelson of Bell Indian Trading Post, and Louis McRae of Chief Weavers, Albuquerque.

Morrison-Knudsen Co., Inc., Boise, Ida., has a $3,000,000 contract for a 16,500 kilowatt hydroelectric generating plant and 120 mi. of transmission line from Hagerman Valley to Emmett and Boise, by the Idaho Power Co., Boise.

A. Farnell Blair, Los Angeles, Calif., will receive $2,238,000 for buildings, services and paving at Chappo Flats, Camp Pendleton, Oceanside, Calif., from the Bureau of Yards and Docks, Washington, D. C.

Lee Aikin, Corpus Christi, Tex., was awarded a $2,225,000 contract for constructing a 20,000 kilowatt steam electric turbo generating plant addition at the La Palma power station in San Benito, Tex.

A. G. Raisch Co. and **Harms Bros.,** San Francisco, Calif., were awarded $1,555,096 to do 11.9 mi. of grading and paving, and construct bridges across San Antonio and Novato Creeks in Sonoma and Marin Cos., by the State Division of Highways, Sacramento.

Platt Rogers, Inc., Pueblo, Colo., will construct an $800,000 women's dormitory, five residence halls for $900,000, a $50,000 women's club wing and a service building at Colorado University, Boulder. The contract was awarded by the Board of Regents, Colorado University.

Peter Kiewit Sons Co., Los Angeles, Calif., has received a contract at $1,333,066 for 1.6 mi. of the Santa Ana freeway, betw. Kearney and Soto Sts., Los Angeles, from Calif. Division of Highways, Sacramento.

Highway and Street...

Arizona

COCHISE CO.—**R. H. Martin Contracting Co.,** Box 934, Tucson—$319,060 for Douglas-Safford Hwy.—by Ariz. Hwy. Dept., Phoenix. 1-4

COCONINO CO.—**J. E. Skousen,** 243 W. 1st Ave., Mesa—$216,829 for 6.23 mi. on Project Arizona FH 3-1—by Public Works Admin., Washington, D. C. 1-2

GILA CO.—**Evans & Sprawls,** 412 W. 3rd St., Winslow—$86,256 for 2.8 mi. on Project Arizona FH 9-F, Tonto Natl. Forest—by Public Roads Administration, Washington, D. C. 1-11

MARICOPA CO.—**The Phoenix-Tempe Stone Co.,** Box 1670, Phoenix—$17,054 for improvement of part of E. half of 7th St., Phoenix—by City Council, Phoenix. 1-18

NAVAJO CO.—**W. J. Henson,** Box 471, Prescott—$474,734 for Show Low-Holbrook Hwy.—by Ariz. Hwy. Dept., Phoenix. 1-4

PINAL CO.—**The Tanner Construction Co.,** Box 1832, Phoenix—$23,815 for Casa Grande-Gila Bend Hwy.—by Ariz. Hwy. Dept., Phoenix. 1-4

California

FRESNO CO.—**Marshall S. Hanrahan,** Box 429, Redwood City—$337,722 for 2.1 mi. grade., and paving betw. Calwa Overpass and Fresno—by State Division of Hwys., Sacramento. 1-21

KINGS CO.—**W. C. Railing,** 27 Lowell St., Redwood City—$70,408 for 1.5 mi. of grade. and surf. betw. 5th standard parallel S. and 1.5 mi. N.—by State Division of Hwys., Sacramento. 1-23

LASSEN CO.—**Utah Construction Co.,** 1 Montgomery St., San Francisco—$229,057 for 7.5 mi. of grade. and surf. betw. 1.5 mi. W. of Bird Flat and Doyle—by State Division of Hwys., Sacramento. 1-21

LOS ANGELES CO.—**Peter Kiewit Sons Co.,** 650 S. Grand Ave., Los Angeles—$1,333,066 for 1.6 mi. section of Santa Ana Parkway betw. Kearney and Soto Sts., Los Angeles—by State Division of Highways, Sacramento. 1-15

LOS ANGELES CO.—**Vinnell Co.,** 1145 Westminster, Alhambra—$27,844 for .75 mi. of improvements along Los Nietos Rd. S. of Whittier betw. Imperial Highway and Leffingwell Rd.—by Los Angeles Co. Board of Supervisors, Los Angeles. 1-4

LOS ANGELES CO.—**R. A. Wattson Co.,** 5528 Vineland Ave., N. Hollywood—$13,537 for improvement of Sylmar Ave., from Valleyheart Dr. to Millbank St.—by Board of Public Works, Los Angeles. 1-28

SAN BERNARDINO CO.—**Griffith Co.,** 502 L. A. Railway

Bldg., Los Angeles—$1,386,769 for 9.8 mi. of grade. and pave. betw. Mulberry St. and Colton—by State Division of Hwys., Sacramento. 1-11

SAN BERNARDINO CO.—**Geo. Herz & Co.,** Base Line and Lytle Creek, San Bernardino—$12,000 for surf. 105,000 sq. ft. of parking area betw. E, F, 4th and 5th Sts., San Bernardino—by N. E. Van Ness, F. M. Sandefur and R. C. Ringholz, San Bernardino. 1-25

SAN DIEGO CO.—**McClanahan & Mulleneaux,** Box 217, Arlington—$18,670 for armor coating access road at Camp Pendleton, Oceanside—by Bureau of Yards and Docks, Washington, D. C. 1-16

SAN DIEGO CO.—**Mittry Bros. Construction Co.,** 4801 San Fernando Rd., W. Los Angeles—$1,338,002 for 2.9 mi. of grade. and surf. betw. "A" St. and 4 mi. S. of Mission Valley Rd.—by State Division of Hwys., Sacramento. 1-14

SAN FRANCISCO CO.—**Chas. L. Harney,** 625 Market St., San Francisco—$7,817 for improvement of Rivera St. betw. 42nd and 43rd Aves., San Francisco—by Dept. of Public Works, San Francisco. 1-18

SAN FRANCISCO CO.—**Chas. L. Harney,** 625 Market St., San Francisco—$20,875 for improvement of 28th Ave. betw. Pacheco and Quintara Aves.—by Dept. of Public Works, San Francisco. 1-2

SAN JOAQUIN CO.—**M. J. B. Construction Co.,** 322 Elks Bldg., Stockton—$372,813 for 3.8 mi. grade. and paving betw. Grant Line Rd. and Mossdale—by State Division of Hwys., Sacramento. 1-25

SANTA CLARA CO.—**Fredrickson & Watson Construction Co.,** 873 81st Ave., Oakland—$86,988 for concrete slab taxiway at Moffett Field—by Ames Aeronautical Laboratory, Moffett Field. 1-8

SOLANO CO.—**Fredrickson Bros. Construction Co.,** 1259 65th St., Emeryville—$1,035,012 for 6.1 mi. grade. and paving betw. Midway and 2 mi. N. of Dixon, and constructing bridges across Sweeney and McCune Creeks—by State Division of Hwys., Sacramento. 1-21

SONOMA AND MARIN COS.—**A. G. Raisch Co.** and **Harms Bros.,** 2048 Market St., San Francisco—$1,555,096 for 11.9 mi. grade. and paving, and bridges across San Antonio and Novato Creeks, betw. 1 mi. S. of Petaluma-Ignacio Wye—by State Division of Hwys., Sacramento. 1-21

TEHAMA CO.—**Oilfield Trucking Co.,** and **Phoenix Construction Co.,** Box 751, Bakersfield—$508,837 for 7.1 mi. of grade. and surf. betw. 6 mi. N. of Red Bluff and Shasta Co. line—by State Division of Hwys., Sacramento. 1-23

Nevada

CHURCHILL CO.—**Silver State Construction Co.,** Fallon—$189,734 for construction of a portion of state highway, from junction with U. S. 50, 5 mi. W. of Fallon to 8 mi. S.E.—by State Highway Division, Carson City. 1-7

New Mexico

BERNALILLO CO.—**Miller & Smith,** Albuquerque—$46,266 for construction of underpass for Federal Aid Project FAGH 96, De Baca Canyon on U. S. Hwy. 60, betw. Fort Sumner and Taiban—by State Hwy. Dept., Santa Fe. 1-21

COLFAX CO.—**Frank M. Kenney,** 1635 Clay, Denver, Colo.—$189,616 for Federal Aid Project No. FAGM 208-D on Hwy. 72, Raton—by State Hwy. Dept., Santa Fe. 1-11

QUAY CO.—**G. I. Martin,** Albuquerque—$50,498 for FAP F-109 betw. Tucumcari and Clovis—by State Hwy. Dept., Santa Fe. 1-11

SANTA FE CO.—**Skousen Construction Co.,** Albuquerque—$284,291 for FAP No. FI-90, U. S. Hwy. 85 betw. Santa Fe and Glorieta—by State Hwy. Dept., Santa Fe. 1-11

SOCORRO CO.—**Brown Bros. Construction Co.,** Albuquerque $303,194 for FAP No. F-126, U. S. Hwy. 380, betw. San Antonio and Carrizozo—by State Hwy. Dept., Santa Fe. 1-11

UNION CO.—**W. T. Bookout Construction Co.,** Las Vegas—$77,701 for FAP No. F-196, betw. Clayton and N. Mex.-Okla. state line—by State Hwy. Dept., Santa Fe. 1-11

North Dakota

BURLEIGH CO.—**P. A. Bradbury,** Aberdeen, S. Dakota—$515,844 for 17.2 mi. of grade., base and surf. on U. S. Hwy. 10, McKenzie E.—by Public Roads Admin., Wash., D. C. 1-12

FACTORY AND GENERAL OFFICES
LOS ANGELES, CALIF. BRANCHES:
SAN FRANCISCO HOUSTON PORTLAND

Oregon

CROOK AND DESCHUTES COS.—**Struss & McCoy,** Redmond—$26,160 for Redmond Rock Production Project on 4 state hwys.—by State Hwy. Commission, Salem. 1-21

LINCOLN CO.—**Tom Lillebo,** Reedsport—$180,141 for 2 bridges over Siletz River on Siletz secondary hwy., each with grade. and surf. of roadway approaches—by State Hwy. Commission, Salem. 1-21

LINCOLN AND TILLAMOOK COS.—**E. C. Hall Co.,** Rt. 1, Portland—$28,200 for Cloverdale-Oceanlake rock production project, Ore. Coast Hwy.—by State Hwy. Commission, Salem. 1-8

LINN CO.—**Harrisburg Sand & Gravel Co.,** Harrisburg—$22,350 for Halsey-Holley Rock Production Project on Halsey-Sweet Home secondary hwy.—by State Hwy. Commission, Salem. 1-21

MALHEUR CO.—**Newport, Kern & Kibbe,** Portland—$21,880 for Cairo Junction-Adrian Rock Production Project on 3 state hwys.—by State Hwy. Commission, Salem. 1-21

MORROW CO.—**Newport, Kern & Kibbe,** Portland—$128,520 for 8 mi. section of Wasco-Heppner secondary hwy.—by State Hwy. Commission, Salem. 1-21

POLK CO.—**O. C. Yocum,** 902 S.E. 11th St., McMinnville—$152,869 for grade., surf. Buell-Salt Creek-Dolph Corner section of Dallas-Coast hwy.—by Hwy. Commission, Salem. 1-19

WASHINGTON CO.—**Sound Construction & Engineering Co.,** 1403 W. 45th, Seattle 7—$150,759 for grade. Berger Ranch—Barnes Rd., section of Wolf Creek hwy.; $173,126 for Davies-N. Plains section of Wolf Creek hwy. and $45,881 for N. Plains-Gardner Ranch section of Wolf Creek hwy.—by State Hwy. Commission, Salem. 1-21

WHEELER CO.—**Vernie Jarl,** Gresham—$37,212 for Porcupine Butte-Chichester Gulch section of Shaniko-Fossil secondary hwy.—by State Hwy. Commission, Salem. 1-8

Texas

BEXAR CO.—**Sunset Servicing Co.,** 310 N. Center St., San Antonio—1.804 mi. of paving on Culebra Rd., W. of Callaghan Rd. to Leon Creek—by Charles W. Anderson, county judge, Bexar Co. 1-2

BOSQUE & McLENNAN COS.—**F. M. Reeves & Son** and **Spencer Construction Co.,** Carrollton—$363,420 for 8.66 mi. of grade., structs., flexible base and single asph. surf. treat., Valley Mills to Crawford—by State Hwy. Dept., Austin. 1-2

BRISCOE CO.—**Ned B. Hoffman,** Mid-Continent Bldg., Fort Worth, and **Ernest Loyd,** P. O. Box 1120, Fort Worth—$138,597 for 205 mi. of flexible base and triple asph. surf. treat. on Hwy. 207, Floyd Co. line to Silverton—by State Hwy. Dept., Austin. 1-2

CASTRO CO.—**Plains Construction Co.,** Plainview—$101,468 for 7.28 mi. grade., flexible base and double asph. surf. treat. on Hwy. 51—by State Hwy. Dept., Austin. 1-2

EL PASO CO.—**Public Construction Co.,** Denton—$86,406 for 17.11 mi. grade. and surf. treat. on Farm Hwy. 76—by State Hwy. Dept., Austin. 1-11

HILL CO.—**Oran Speer** and **T. M. Brown & Son,** Alvord—8.43 mi. grade., structs., and roadbed treat. on U. S. Hwy. 81, Itasca S. to N.E. of Hillsboro—by State Hwy. Dept., Austin. 1-2

JACK CO.—**R. W. McKinney,** Nacagdoches—$90,981 for 5.21 mi. grade., structs., flexible base and double asphalt surf. treat. on Hwy. 148—by State Hwy. Dept., Austin. 1-2

TARRANT CO.—**Spencer, Towles & F. M. Reeves & Son,** Carrollton—1.92 mi. of grade., structs., and conc. pave. at Village and Rush Creek, and approaches on U. S. Hwy. 89—by State Hwy. Dept., Austin. 1-2

TAYLOR & NOLAN COS.—**Oran Speer & T. M. Brown & Son,** Alvord—$131,109 for 8.43 mi. of grade., structs., flexible base and double asph. surf. treat., from 17 mi. S.W. of View to Runnels Co. line on Hwy. 158—by State Hwy. Dept., Austin. 1-2

Washington

CLALLAM CO.—**Peter Kiewit Sons,** Seattle—$28,130 for surf. and stockpiling on 9.6 mi. of State Hwy. 9-A, Twin to Pysht—by Dept. of Hwys., Olympia. 1-1

COWLITZ CO.—**Peter Kiewit Sons,** Seattle—$121,091 for grade. 1.41 mi. of State Hwy. 1, Coweman River S.—by Dept. of Hwys., Olympia. 1-1

FRANKLIN CO.—**Carbon Bros.,** P. O. Box 5025, Sta. C, Spo-

kane 13—$233,276 for grade., surf., and stockpiling mineral aggregate on 10.5 mi. of State Hwy. No. 11, Sagemoore to Connell —by Dept. of Hwys., Olympia. 12-27

GRANT CO.—**C. E. O'Neal,** Box 268, Ellensburg, Wash.—$222,866 for surf. and constructing a light bitu. surf. on 8.1 mi. of State Hwy. No. 7, Stratford vicinity to Wilson Creek—by Dept. of Hwys., Olympia. 12-27

LEWIS CO.—**Rumsey & Co.,** 3810 Airport Way, Seattle—$66,835 for grade., surf. and constructing reinf. conc. bridge on State Hwy. No. 5, Steffins Creek bridge and approaches near Kosmos —by Dept. of Hwys., Olympia.

STEVENS CO.—**F. R. Hewitt Co.,** 420 W. 22d St., Spokane—$148,682 for grade., surf. and light bitu. surf. treat. on 5.3 mi. of State Hwy. No. 3, Chewelah to Blue Creek; and $213,925 for 6 mi. on Hwy. No. 3, Addy to Arden—by Dept. of Hwys., Olympia. 1-9

WAHKAIKUM CO.—**Leonard & Slate,** 7805 S.W. 40th Ave., Portland, Ore.—$229,991 for grade. and surf. 2.76 mi. of Hwy. 12, K-M Mountain Summit-East—by Dept. of Hwys., Olympia. 1-21

Bridge & Grade Separation...

California

HUMBOLDT CO.—**Mercer-Fraser Co.,** 2nd and Commercial Sts., Eureka—$204,868 for steel girder bridge and 0.2 mi. grade. and surf. of road approaches at Mad River—by State Division of Hwys., Sacramento. 1-8

LOS ANGELES CO.—**Byerts & Dunn,** 1131 N. Orange Grove Ave., Los Angeles—$128,290 for reinf. conc. overcrossing on Santa Ana Parkway, 4th St., Los Angeles—by State Division of Hwys., Sacramento. 1-8

LOS ANGELES CO.—**Oberg Bros.,** 401 W. Redondo Blvd., Inglewood—$141,946 for reinf. conc. overcrossing on Hollywood Parkway at Rosemont Ave., Los Angeles—by State Division of Hwys., Sacramento. 1-29

PLACER CO.—**H. W. Ruby,** Northrup Ave., Sacramento—$60,720 for construction of bridge and incidental grade. work across East St., Auburn, and $88,550 for steel beam span overhead crossing over So. Pacific tracks, Auburn—by State Division of Hwys., Sacramento. 1-11

PLACER CO.—**Wm. E. Thomas Construction Co.,** Box 624, Tustin—$30,553 for reinf. conc. undercrossing at Walsh St., Auburn—by State Division of Hwys., Sacramento. 1-8

SAN DIEGO CO.—**Walter H. Barber,** P. O. Box 1523, San Diego—$74,794 for bridge 6 mi. W. of Camp, across Camp Creek—by Division of Hwys., Sacramento. 1-11

SAN DIEGO CO.—**Fred D. Kyle,** 714 W. Olympic Blvd., Los Angeles—$87,848 for structural steel overcrossing over tracks of Santa Fe Railway, 1 mi. N. of Oceanside—by Division of Hwys., Sacramento. 1-11

SAN MATEO CO.—**Macco Construction Co.,** Freight and Ferry Sts., Oakland—$281,956 for structural steel overcrossing over Bay Shore freeway, Peninsular Ave., San Mateo—by State Division of Hwys., Sacramento. 1-23

TEHAMA CO.—**J. D. Proctor** and **Dragline Rentals Co.,** 451 Monadnock Bldg., San Francisco—$378,765 for 5 reinf. conc. slab bridges and widening of 2 bridges betw. Los Molinos and Red Bluff—by State Division of Hwys., Sacramento. 1-23

Montana

CARBON CO.—**W. P. Roscoe Co.,** Box 663, Billings—$38,800 for 2 bridges to replace Chance and Allen bridges over Clark Fork river on Belfry-Clark hwy.—by County Clerk, Red Lodge. 1-11

North Dakota

MORTON CO.—**Rue Construction Co.,** Bismarck—$89,831 for replacing bridge washed out by flood across Heart River at Sunny—by Public Roads Adm., Washington, D. C. 1-12

Oregon

MARION CO.—**J. F. Johnson,** Newburg—$140,000 for replacing narrow bridge across Pudding river on Pacific Hwy. 99E—by State Hwy. Commission, Salem. 1-10

MULTNOMAH CO.—**Marine Contractors, Inc.,** Box 4199, Portland 8—$269,000 for construction of Arthur St. overcrossing near Portland—by State Hwy. Commission, Salem. 1-2

WASHINGTON CO.—**C. J. Eldon,** Portland—$14,249 contract for bridge work—by Hwy. Commission, Portland.

Texas

BELL CO.—**F. M. Reeves & Son,** Box 972, Austin—$191,830 for 6.47 mi. of Leon bridge and roadway approaches, 13.2 mi. NW. of Temple on Highway No. 36—by State Highway Dept., Austin. 1-2

Washington

CLALLAM CO.—**Guy J. Norris,** Seattle—$154,484 for surf. treat., constructing reinf. conc. bridge 132 ft. long on 9.4 mi. of State Hwy. 9, Beaver to jct. secondary State Hwy. 9-B—by Dept. of Hwys., Olympia. 1-23

COWLITZ CO.—**Kern & Kibbe,** 8607 N. Bradford St., Portland 3—$168,702 for steel bridge, 388 ft., across Coweman river on State Hwy. 1 near Kelso—by Dept. of Hwys., Olympia. 1-1

COWLITZ CO.—**Longview Bridge Co.,** Longview—$399,507 to replace wooden trestle approach to Longview-Rainier bridge on Longview side—by City Council, Longview. 1-2

WHATCOM CO.—**C. B. Croy,** Bellingham—$94,684 for grade., surf., constructing reinf. conc. pile and slab bridge approaches to Nugent's Bridge and flat slab bridge over channel of Nooksack River on State Hwy. 1, Austin Pass Branch—by Dept. of Hwys., Olympia. 1-23

YAKIMA CO.—**Strong & MacDonald, Inc.,** 4045 Ruston Way, Tacoma 2—$117,902 for grade. and constructing 2 reinf. conc. slab bridges and 1 reinf. conc. T-Beam bridge on 2.35 mi. of State Hwy. 5, Summit to Dog Lake—by Dept. of Highways., Olympia. 1-23

Water Supply . . .

California

CONTRA COSTA CO.—**Pacific Pipeline Const. Co.,** 2128 San Pablo Ave., El Cerrito—$23,955 for addition to filtration plant, municipal water plant, Pittsburg—by City Council, Pittsburg. 1-22

LOS ANGELES CO.—**F. W. Case,** 7121 Hayvenhurst Ave., Van Nuys—$99,676 for reinf. conc. reservoir on Melwood Dr., Glendale—by City Council, Glendale. 2-5

LOS ANGELES CO.—**Nathan A. Moore,** 2951 Valley Blvd., Alhambra—$204,290 for reinf. conc. reservoir, Rossmoyne district, Glendale—by City Council, Glendale. 2-5

SAN MATEO CO.—**Edwin J. Tobin,** 1000 Carleton St., Berkeley—$3,331 for bell and spigot pipe water main with gate valves, Sevier Ave., betw. Newbridge Ave. and Hamilton Ave., Newbridge Park—by Co. of San Mateo, Redwood City.

SAN FRANCISCO CO.—**F. T. Fairey,** 1874 25th Ave., San Francisco—$2,534 for 6- and 8-in. water mains on 42nd Ave. betw. Quintara and Rivera, San Francisco—by Public Utilities Commission, San Francisco. 1-16

SAN FRANCISCO CO.—**Piombo Bros. & Co.,** 1571 Turk St., San Francisco—$157,274 for excavation and embankment at Sutro Reservoir, San Francisco—by Public Utilities Commission, San Francisco. 1-3

Colorado

DENVER CO.—**Lock Joint Pipe Co.,** Denver—$380,000 to replace with conc. conduit the wood stave conduit No. 2 which delivers filtered water from Littleton to distributing mains at E. 4th Ave. and York St., Denver—by City Water Board, Denver. 1-22

Nevada

WASHOE CO.—**John B. Powers Pipeline Construction Co.,** Saviers Bldg., 2nd and West Sts., Reno—$45,156 for installation of pipe under So. Pacific tracks, Reno—by City Council, Reno. 1-1

Oregon

MULTNOMAH CO.—**Empire Construction Co.,** Portland—$64,220 for 21,100-ft. water supply main to connect Metzger water district with Portland water supply system—by Metzger Water District. 1-25

MULTNOMAH CO.—**O. L. Soule,** Elma, Wash.—$120,634 for installation of 55,100 ft. of cast iron pipe, 2-12 in. in diameter, and 900 ft. of ¾-in. copper tubing, Powell Valley—by Powell Valley Roads and Water District, Portland. 1-23

WASHINGTON CO.—**Eugene Ruedy Co.,** 2919 NW. Nicolai, Portland—$198,566 for construction of water system in Huber,

Aloha, and intervening area—by Aloha Huber Water District, Aloha. 1-10

Utah

SALT LAKE CO.—**Carl B. Warren,** Spokane, Wash. — $442,751 for excavating trenches and laying steel pipe of 4½-mi. section of Salt Lake aqueduct—by U. S. Bureau of Reclamation, Provo. 1-1

Washington

KING CO.—**American Pipe & Construction Co.,** Portland, Ore.—$38,395 for cleaning and relining with cement the 32-in. steel pipe on Roosevelt Way and other sts., Seattle—by Board of Public Works, Seattle. 1-14

WHATCOM CO.—**Pittsburgh-De Moines Steel Co.,** 530 First Ave. S., Seattle—$26,475 for 200,000-gal. steel elevated water tank—by town of Lynden. 1-9

Sewerage . . .

California

ALAMEDA CO.—**Fred J. Early Jr. Co., Inc.,** 369 Pine St., San Francisco—$136,578 for construction of San Pablo filter plant extension—by East Bay Municipal Utility District, Oakland. 1-11

KERN CO.—**Bechtel Bros.-McCone,** 155 Sansome St., San Francisco—$669,038 for construction of sewer collecting system, pumping sta. and treat. plant in Oildale to serve N. of river communities—by Sanitary Board, District No. 1, Kern Co. 1-7

LOS ANGELES CO.—**P. & J. Artukovich,** 13305 S. San Pedro St., Los Angeles—$22,999 for sewers in Virginia Ave. and other sts. in Clearwater vicinity—by Board of Supervisors, Los Angeles. 1-4

LOS ANGELES CO.—**Bob Bosnyak,** 3014 Worthen Ave., Los Angeles—$22,000 for installation of sewers, house connections, manholes and lampholes in Lynwood sts.—by City Council, Lynwood.

LOS ANGELES CO.—**J. L. Kruly,** 1785 N. Eastern Ave., Los Angeles—$79,863 for sanitary sewers in Temple Hills Sewer Dist., Laguna Beach—by City Council, Laguna Beach. 1-7

LOS ANGELES CO.—**Martin Construction Co.,** 721 S. Ford Blvd., Los Angeles—$16,163 for installation of sewers in Montana and Bristol Aves. district—by Board of Public Works, Los Angeles. 1-8

LOS ANGELES CO.—**A. R. Milosevich,** 303 N. Alma St., Los Angeles—$3,820 for installation of sewers in Barry Ave. betw. Victoria Ave. and Venice Blvd.—by Board of Public Works, Los Angeles. 1-8

LOS ANGELES CO.—**Ralph E. Thrane,** 1915 W. Gage, Los Angeles—$6,713 for installation of septic tanks, grease trap, sewer piping and leaching trenches, La Tuna Camp for Younger Boys—by Los Angeles Co. Board of Supervisors, Los Angeles. 1-1

SAN BERNARDINO CO. — **Ormande Seccombe** and **Gus Johnson,** 230 E. 4th St., San Bernardino—$10,785 for sewer, 5th St., Gardena and Flores Sts., San Bernardino—by City Council, San Bernardino. 12-28

SAN FRANCISCO CO.—**Eaton & Smith,** 715 Ocean Ave., San Francisco—$179,676 for construction of Lake Merced sewer system, section A—by Dept. of Public Works, San Francisco. 1-7

SAN FRANCISCO CO.—**Fay Imp. Co.,** 760 Market St., San Francisco—$4,636 for Hubbell St. sewer betw. 16th and 17th Sts., San Francisco—by Dept. of Public Works, San Francisco. 1-23

SANTA BARBARA CO. — **A. C. Dinsmore** and **J. L. McCoy,** 909 Carpenteria, Santa Barbara—$33,940 for sewage disposal plant at Santa Barbara Co. General Hospital, San Antonio Rd.—by Board of Supervisors, Santa Barbara. 1-22

SANTA CLARA CO.—**A. J. Peters & Son,** 410 N. 10th St., San Jose—$1,258 for storm sewers, $3,942 for sanitary sewers, and $1,690 for water system, for trailer units on city property betw. Polhemus and Ashbury Sts., Spring and Irene Sts., Victory Village, San Jose—by City Council, San Jose. 1-16

Texas

DALLAS CO. — **O. J. Parrott Construction Co.,** Tower Petroleum Bldg., Dallas—$45,794 for storm sewer improvements on Lemmon and Herschel Aves., Dallas—by City Council, Dallas. 12-20

DALLAS CO.—**Williams & Whittle,** 5422 Mockingbird Lane, Dallas—$178,752 for storm sewer improvements on Sharon lateral of Jim Town Fork from Marlborough to Franklin—by City Council, Dallas. 1-18

GRAY CO.—**Allred & Enix,** Houston—$88,796 for sewerage improvements, Pampa—by City Council, Pampa. 1-18

Washington

KING CO.—**Valley Construction Co.,** 7708

Rainier Ave., Seattle 3—$8,139 for sewers in W. Bertona St. and other sts. and aves., Seattle—by Board of Public Works, Seattle. 1-14

Waterway . . .

California

SAN DIEGO CO.—**M. H. Golden Construction Co.,** 1485 Noell, San Diego—$1,892,075 for construction of Piers No. 10, 11 and 12, U. S. Naval Repair Base, San Diego — by Bureau of Yards and Docks, Washington, D. C. 1-3

SOLANO CO.—**Paris Bros.,** 2415 Oregon St., Berkeley—$54,031 for reserve fleet berthing dredge spoil discharge line and alterations to sewer outfalls at Navy Yard, Mare Island—by Bureau of Yards and Docks, Washington, D. C. 1-4

Washington

PACIFIC CO.—**Grays Harbor Construction Co.,** 412 S. Park St., Aberdeen—$177,320 for dredging shoals in Willapa river and harbor at Raymond and South Bend—by U. S. Engineer Office, Seattle. 1-21

Dam . . .

Arizona

MOHAVE CO.—**Utah Construction Co.,** 1 Montgomery St., San Francisco, Calif.—$21,462,505 for construction of Davis Dam, in Pyramid canyon, 35 mi. W. of Kingman, Ariz., and near Searchlight, Nev., earth and rock-fill structure with reservoir capacity of 1,820,000 ac. ft.—by Bureau of Reclamation, Washington, D. C. 1-19

Irrigation . . .

California

FRESNO CO.—**George Pollock Co.,** Box 903, Sacramento—$207,500 for conc. aggregates for use in Friant-Kern canal—by Bureau of Reclamation, Washington, D. C. 1-22

FRESNO CO.—**Santa Cruz Portland Cement Co.,** San Francisco—$97,541 for 50,000 bbl. of modified portland cement for structs. and lining, Friant-Kern canal—by Bureau of Reclamation, Washington, D. C. 1-22

Washington

YAKIMA CO.—**Goodfellow Bros.,** Wenatchee—$89,132 for construction of pipeline structures and earthwork distribution system for Roza division, Yakima project—by U. S. Bureau of Reclamation, Washington, D. C. 1-11

Wyoming

FREMONT CO.—**W. E. Barling,** Meeteetse—$188,604 for structures and earthwork on Pilot canal and lateral extension of Riverton project—by Bureau of Reclamation, Washington, D. C. 1-8

Building . . .

Arizona

COCHISE CO.—P. W. Womack Con-

struction Co., Box 2412, Phoenix — construction of 2-story modern bank, 137½ x 75 ft., corner of First Ave. and Monroe St., Douglas—by Frank C. Brophy, president, Bank of Douglas. 1-11

MARICOPA CO.—**P. V. Hauskens,** Phoenix—$35,000 for two-story apartment bldg., 1407 N. First St., Phoenix—by J. M. Williams, Phoenix. And $25,000 for store bldg., 702 N. Seventh St.—by Henry Krakover, Phoenix. 1-1

MARICOPA CO. — **Del E. Webb Construction Co.,** Box 4066, Phoenix—$450,000 for warehouse and merchandising bldg., 1,603,000 cu. ft., at 7th and Grant Sts., Phoenix—by General Sales Co., Phoenix. 1-5

PIMA CO.—**Roscoe & Land,** 1725 Silver Lake Blvd., Los Angeles—$1,250,000 for private housing project at Pima Rd. and Maple Blvd., Tucson — by Frontier Construction Co., Phoenix. 1-18

California

ALAMEDA CO. — **Barrett & Hilp,** 918 Harrison St., San Francisco—$102,600 for interior and exterior alterations to Leamington Hotel, Franklin and 19th Sts., Oakland — by Board of Directors, Hotel Leamington, Oakland. 1-7

ALAMEDA CO.—**Christensen & Lyons,** 3454 Harlan St., Oakland—$50,000 for one-story class C industrial bldg., 53rd and Horton, Emeryville — by Abbott Electric Co., San Francisco. 1-9

ALAMEDA CO.—**McGah and O'Shea,** Oakland — $525,000 for 70 homes, 105th Ave. district, Oakland—by self. 1-28

ALAMEDA CO.—**Moore & Roberts,** 693 Mission St., San Francisco—$197,100 for addition to mausoleum bldg., Holy Sepulchre Cemetery—by Roman Catholic Archbishop of San Francisco, San Francisco. 1-15

ALAMEDA CO.—**G. Peterson & Son,** 1841 Bancroft Ave., San Leandro—$100,000 for fertilizing plant and office bldg. at Hayward—by Swift & Co., Chicago, Ill. 12-28

ALAMEDA CO.—**G. W. Williams Co.,** 10 Calif. Dr., Burlingame—$90,000 for 1-story reinf. conc. office bldg., Wells Ave., Newark—by James Graham Mfg. Co., Newark. 12-28

CONTRA COSTA CO.—**Howes & Whitaker,** Russ Bldg., San Francisco—$150,000 for 2-story reinf. conc. office bldg., 59x160 ft., Shell Point, Pittsburg, Calif.—by Shell Chemical Co., San Francisco. 1-7

CONTRA COSTA CO. — **C. F. Parker,** 1644 Monterey Blvd., San Francisco—$93,927 for prefabricated school bldg. on conc. foundation and floor, Williams Elementary School, Concord—by Concord Elementary School District, Concord. 1-24

CONTRA COSTA CO.—**Swinerton & Walberg Co.,** 225 Bush St., San Francisco 4—$252,553 for class B industrial plant, small office bldg., washroom bldg., NW. corner of Rd. 20 and Rd. 21, Richmond—by Niagara Sprayer & Chemical Co., San Jose. 1-7

KERN CO.—**Johnson, Drake & Piper,** 1736 Franklin St., Oakland—$5,060,000 for two-story reinf. conc. administration and laboratory bldg. and one-story shops bldg., Naval Ordnance Testing Station, Inyokern —by Bureau of Yards and Docks, Washington, D. C. 1-3

LOS ANGELES CO.—**Aetna Construction Co.,** 631 Witmer St., Los Angeles—

$100,000 for 2 24-room apartment-hotel bldgs., 627 and 631 S. Witmer St., Los Angeles—by self. 1-4

LOS ANGELES CO.—**Guy F. Atkinson Co.**, 1103 Heartwell Bldg., Long Beach—$139,654 for auxiliary service bldgs., harbor steam plant, Island Ave. and B St., Wilmington—by Dept. of Water and Power, Los Angeles. 1-22

LOS ANGELES CO.—**William C. Atwater**, 12345 Magnolia Blvd., Van Nuys—$75,000 for 2-story frame and stucco medical store bldg., 17001-05 Ventura Blvd., Van Nuys — by Dr. G. Stanley Gordan, Van Nuys. 1-4

LOS ANGELES CO.—**Austin Co.**, 777 E. Washington Blvd., Los Angeles—$500,000 for 2-story admin. bldg. and 1- and part 2-story warehouse bldg., 3900 Medford St., Belvedere—by Premier Oil & Lead Works, Los Angeles. 1-4

SAN BERNARDINO CO.—**C. J. Bakker**, 240 17th St., San Bernardino—$120,000 for store and warehouse bldg., 348 S. E St., San Bernardino—by W. P. Fuller & Co., San Bernardino. 1-11

LOS ANGELES CO.—**Homer W. Bale**, 15502 Crenshaw Blvd., Los Angeles—$75,000 for 10 bldgs. in commercial development, Los Angeles—by self. 1-4

LOS ANGELES CO.—**Z. B. Barker**, 121 S. Euclid Ave., Pasadena—$66,000 for garage bldg., 801 E. Main St., Alhambra—by Bewley Allen, Alhambra. 1-18

LOS ANGELES CO.—**H. W. Baum**, 1816 Doras St., Burbank—$75,000 for alterations and additions to 3-story masonry and conc. factory bldg., 925 S. Maple St., Los Angeles—by Maurice Holman, Inc., Los Angeles. 1-21

LOS ANGELES CO.—**Paul M. Bear & Sons**, 2400 Hyperion, Los Angeles—$125,000 for 4-story reinf. conc. store and office bldg., 6085-87 Sunset Blvd., Los Angeles—by Bain Dayman, Los Angeles. 1-4

LOS ANGELES CO.—**Bershon Realty Co.**, 6633 W. Manchester Ave., Venice—$360,000 for 21 3- and 4-family apartment bldgs., 5900 Guthrie Ave., Venice—by Nate Bershon, Venice. 1-4

LOS ANGELES CO.—**Beverly Medical Center**, Geo. A. Cordingly, 9615 Brighton Way, Beverly Hills—$200,000 for 4-story and basement medical office bldg., 403 N. Bedford Dr., Beverly Hills—by self. 12-28

LOS ANGELES CO.—**Jack Biffle**, 925 Lyndon Way, S. Pasadena—$148,000 for 1-

story market and store bldg., 2634-70 E. Colorado St., Pasadena—by self. 1-11

LOS ANGELES CO.—**Brunzell Construction Co.** and **V. O. Brunzell,** 14715 La Salle, Gardena, Calif.—$112,769 for construction of administration and classroom bldgs. at Riverside Dr. School, 13061 Riverside Dr., Van Nuys—by Board of Education, Los Angeles. 1-9

LOS ANGELES CO.—**Buttress & McClellan,** 1013 E. 8th St., Los Angeles—$200,000 for factory bldg., 5450 W. Jefferson Blvd., Los Angeles—by Refrigerator Engineering Co., Los Angeles. 1-11

LOS ANGELES CO.—**Buttress and McClellan,** 1013 E. 8th St., Los Angeles—$50,000 for office bldg. and warehouse, 46th St. and Pacific Ave., Vernon—by Electric Steel and Foundry Co., Vernon. 1-18

LOS ANGELES CO.—**J. Paul Campbell,** 417 S. Hill St., Los Angeles—$1,030,200 for 87 4- and 5-room frame and stucco homes, in Venice—by Homes At Wholesale, Los Angeles. 1-18

LOS ANGELES CO.—**Clement Construction Co.,** 2222 S. Charlotte St., San Gabriel—for construction of 1-story reinf. conc. commercial bldg., corner of E. Colorado and San Gabriel Blvds., Pasadena—by Garland Jack Biffle, Pasadena. 1-15

LOS ANGELES CO.—**Contracting Engineers Co.,** 2310½ W. Vernon Ave., Los Angeles—$50,000 for 2-story wood frame and stucco studio bldg., Venice Blvd. and Cherry Lane, Los Angeles—by Sass-Dorne & Children's Wish Co., Los Angeles. And $55,000 for 1-story store bldg., S. Market and Kelso Sts., Inglewood—by Earl Cohen & Associates Inc., Los Angeles. 1-11

LOS ANGELES CO.—**John H. Cope,** 605 E. Glenoaks Blvd., Glendale—$90,000 for 26-unit apartment court, 1501-07 E. Broadway, Glendale—by self. 1-11

LOS ANGELES CO.—**R. J. Daum,** 6803 West Blvd., Inglewood—$170,000 for 2-story reinf. conc. semi-industrial bldg., Romaine St., and Highland Ave., Los Angeles—by C. E. Toberman Co., Hollywood. 1-21

LOS ANGELES CO.—**Robert C. Davis,** 6440 Lankershim Blvd., and **Homer B. Davis,** 5155 W. Park Dr., Los Angeles—$50,000 for market and store bldg., 7218-32 Reseda Blvd., Reseda—by selves. 1-18

LOS ANGELES CO.—**Dixon Bldg. Co.,** 1407 W. Glenoaks Blvd., Glendale—$75,000 for 14-unit apartment court, 718-20D N. Concord St., Glendale—by F. A. Hilliard, Glendale. 1-4

LOS ANGELES CO.—**L. E. Dixon Co.,** 609 S. Grand Ave., Los Angeles—$795,000 for reinf. conc. store bldg., 2100 N. Long Beach Blvd., Compton—by Sears, Roebuck & Co., Chicago, Ill. 1-10

LOS ANGELES CO.—**The Drake Craft Boat Building Co.,** 162 Glendora Ave., Long Beach—$100,000 for showroom and plant for manufacture of boats, Avalon Blvd. and 223rd St., Wilmington—by self. 1-4

LOS ANGELES CO.—**Sam Duff,** 733 W. 14th St., Long Beach—$90,000 for 100x180 ft. furniture store, 4141 Atlantic Ave., Long Beach—by W. B. Scott, Long Beach. 1-7

LOS ANGELES CO.—**H. J. Farrington,** 1649 N. Lakewood, Rivera—$118,500 for facilities for housing juveniles at sheriff's training center, 1060 N. Eastern Ave., City Terrace—by Los Angeles Co. Board of Supervisors, Los Angeles. 1-21

LOS ANGELES CO.—**Sam L. Fink,** 443 S. La Cienega Blvd., Los Angeles—$110,000 for 2-story, reinf. conc. medical bldg., 439 S. La Cienega Blvd., Los Angeles—by John Bello and Alvin C. Gershenson, Los Angeles. 12-28

LOS ANGELES CO.—**Griffith Co.,** 502 L. A. Railway Bldg., Los Angeles—$700,000 for dept. store bldg., Colorado St., 4th St., Olympic Blvd. and 3rd St., Santa Monica—by Sears Roebuck & Co., Los Angeles.

LOS ANGELES CO.—**J. E. Haddock, Ltd.,** 3538 E. Foothill Blvd., Pasadena—$250,000 for addition to mausoleum, 2300 N. Marengo Ave., Altadena—by Mountain View Mausoleum, Altadena. 1-21

LOS ANGELES CO.—**Halper Construction Co.,** 739 N. Highland Ave., Los Angeles—$65,000 for 13 6-room dwellings, 4300 and 4400 blocks Corinth Ave., Venice—by Coolidge Construction Co., Los Angeles. 1-18

LOS ANGELES CO.—**Olaf Helland,** 1424 E. California Ave., Glendale—$67,000 for office bldg., 213 S. Orange St., Glendale—by So. Calif. Telephone Co., Glendale. 1-4

LOS ANGELES CO.—**J. & B. Construction Co.,** 5572 Valley Blvd., Los Angeles—4-story light manufacturing bldg., 1119 S. Los Angeles St., Los Angeles—by Maier Bros., Los Angeles. 1-21

LOS ANGELES CO.—**Jackson Bros.,** 2475 W. 8th St., Los Angeles—$90,000 for 1-story masonry store bldg., 6517 Atlantic Ave., Bell—by J. C. Penney Co., Los Angeles. 1-25

LOS ANGELES CO.—**M. S. Jepsen,** 1540 S. Robertson Blvd., Los Angeles—$113,000 for 4-family bungalow court, 3147 Halm Ave., Los Angeles—by self. 1-18

LOS ANGELES CO.—**Willard L. Kreps,** 13251 Lucille Ave., Venice—$52,000 for 16-unit apartment court, 2600-24 11th St., Santa Monica—by self. 1-11

LOS ANGELES CO.—**Henry Larsen,** 3252 W. Euclid Ave., Lynwood—$80,000 for 3-story reinf. conc. office, store and apartment bldg., 11818 Long Beach Blvd., Lynwood—by C. J. Shrock, Lynwood. 1-4

LOS ANGELES CO.—**L. A. Lefevre,** 4916 Ben Ave., N. Hollywood—$250,000 for 2-story reinf. conc. parochial grammar school, 10848 Moorpark St., N. Hollywood—by St. Charles Catholic Parish, N. Hollywood. 1-29

LOS ANGELES CO.—**Tom Lillebo,** Reedsport—$62,067 for grade school bldg., 1-story furnace room, 8 classrooms and office, near High School, Florence—by School Board, Florence. 1-1

LOS ANGELES CO.—**Lund Construction Co.,** 3736 W. Slauson Ave., Los Angeles—$64,200 for 6 8-room double dwellings, 6700 W. 86th Pl., Venice—by David Lund, Venice. 1-4

LOS ANGELES CO.—**MacIsaac & Menke,** 3440 E. 22nd St., Los Angeles—$200,000 for factory and office bldg., 127 N. San Vicente Blvd., Los Angeles—by Buzza & Cordoza, Los Angeles. 12-28

LOS ANGELES CO.—**Robert E. Millsap,** 437 S. Hill St., Los Angeles—$200,000 for 6-story reinf. conc. factory bldg., 528 E. 8th St., Los Angeles—by Ross & Co., Beverly Hills. 1-7

LOS ANGELES CO.—**Modern Builders Construction Co., Inc.,** 2812 Long Beach Blvd., Long Beach—$50,000 for chapel at San Antonio Dr. and Cherry Ave., Long Beach—by Sunnyside Mausoleum, Long Beach. 1-18

LOS ANGELES CO.—**Myers Bros.,** 3407 San Fernando Rd., Los Angeles—$376,000 for 2-story reinf. conc. factory bldg., Wilmington, Randolph and Gage Aves., Los Angeles—by Superior Sleeprite Corp., Chicago, Ill. 1-11

LOS ANGELES CO.—**J. O. Oltmans & Son,** 810 E. 18th St., Los Angeles—construction of 1- and part 2-story factory and office bldg., 50th and Soto Sts., Vernon, Calif.—by Morris Rosenberg, Vernon. 1-7

LOS ANGELES CO.—**Myers Bros.,** 3407 San Fernando Rd., Los Angeles—construction of youth recreation center on 2-ac. site, E. Olympic Blvd. and Grande Vista Ave., Los Angeles—by Lou Costello and Bud Abbott, Los Angeles. 1-24

LOS ANGELES CO.—**C. L. Peck,** 354 S. Spring St., Los Angeles—$56,000 for two-story store and office bldg., 9754 Wilshire Blvd., Beverly Hills—by Western Improvement Co., Beverly Hills. 12-28

LOS ANGELES CO.—**C. L. Peck,** 354 S. Spring St., Los Angeles—$160,000 for reinf. conc. 3-story factory and office bldg., 820 Mission Rd., S. Pasadena—by National Technical Laboratories, S. Pasadena. 1-7

LOS ANGELES CO.—**C. L. Peck,** 354 S. Spring St., Los Angeles—$150,000 for 1-story, reinf. conc. store bldg. with mezzanine and basement, Santa Barbara Ave. and Crenshaw Blvd., Los Angeles—by Lerner Shops, Inc., Los Angeles. 1-18

LOS ANGELES CO.—**A. V. Perkinson,** 1149 N. Las Palmas, Los Angeles—$150,000 for theater bldg., 9820 Washington Blvd., Culver City. Stadium type auditorium with balcony, kitchen and restaurant; 100 x 155 ft.—by Principal Theaters, Inc., Los Angeles. 1-4

LOS ANGELES CO.—**Spiros G. Ponty,** 1728 W. 108th St., Los Angeles—$248,400 for 36 dwellings, part of private housing project on 136-acre tract bounded by W. 108th St., Western Ave., Normandie Ave. and Imperial Hwy., Los Angeles—by Sunset Homes, Los Angeles. 12-28

LOS ANGELES CO.—**Dr. Philip W. Reames,** 1015 E. Compton Blvd., Compton—$70,000 for 1-story medical dental bldg., 1230 E. Carson St., Long Beach—by self. 1-18

LOS ANGELES CO.—**J. D. Riddell,** 1623 N. Formosa Ave., Los Angeles—$50,000 for 9-unit apartment court, 7755 Hollywood Blvd., Hollywood—by I. J. Haley, Los Angeles. 1-18

LOS ANGELES CO.—**Albert Rothernberg,** 2162 Talmadge St., Los Angeles—$58,200 for 3 4-family apartment bldgs., 1436, 1440 and 1446 Sherbourne Dr., Los Angeles—by self. 1-18

LOS ANGELES CO.—**J. P. Rumar,** 112 S. La Brea Ave., Los Angeles—$60,000 for 2-story, reinf. conc. and brick store bldg., 4901 S. Vermont Ave., Los Angeles—by Samuel L. and Floria S. Shabo, Los Angeles. 1-4

LOS ANGELES CO.—**Kenneth P. Schmidt,** 140 N. Glendale Ave., Glendale—$100,000 for market bldg., 200 N. Garfield Ave., Alhambra—by Cecil H. Eshleman, Los Angeles. 12-28

LOS ANGELES CO.—**Steed Bros.,** 714 Date Ave., Alhambra—$120,000 for addition to factory bldg., 5700 E. Olympic Blvd., Los Angeles—by Willard Storage Battery Co., Los Angeles. 1-8

LOS ANGELES CO.—**Stronach Construction Co.,** 115 N. Robertson Blvd., Los Angeles—$150,000 for 2-story and basement hotel bldg., corner Orange and Crescent Heights Blvd., Los Angeles—by Chas. Wagner, Los Angeles. 1-9

LOS ANGELES CO.—**Stronach Construction Co., Inc.,** 115 N. Robertson, Los Angeles—$500,000 for 8-story loft and office bldg., S. Los Angeles St., Los Angeles—by Samuel B. Gerry, Los Angeles. 1-4

LOS ANGELES CO.—**T-S Construction Engineers, Inc.,** 530 W. 6th St., Los Angeles—$1,250,000 for 5-story steel frame and conc. addition to store bldg., 6067 Wilshire Blvd., Los Angeles—by May Co. Dept. Stores Co., Los Angeles. 12-28

LOS ANGELES CO.—**Stan Thompson Golf Club Co.,** 163 N. La Cienega Blvd., Los Angeles—$50,000 for brick and conc. commercial bldg., 249 S. La Cienega Blvd., Beverly Hills—by self. 1-18

LOS ANGELES CO.—**H. B. Tyler,** Miramar Hotel, Santa Monica—$64,000 for 2-story, 26-room frame and stucco motel, 10966 Wilshire Blvd., Los Angeles—by self. 1-11

LOS ANGELES CO.—**P. L. Van Brundt,** 8415 Hillside Ave., Los Angeles—$70,000 for 2 9-family, frame and stucco apartment bldgs., 4100 and 4094 Leimert Blvd., Los Angeles—by self. 1-11

LOS ANGELES CO.—**Vinnell Co.,** 108 W. 6th St., Los Angeles—$70,000 for alterations to 6 floors of office bldg., 620 W. 6th St., Los Angeles—by Transcontinental & Western Air Inc., Los Angeles. 1-11

LOS ANGELES CO.—**P. J. Walker Co.,** 3900 Whiteside Ave., Los Angeles—$100,000 for 40-room temporary classroom bldg. of wood frame construction, 929-47 35th Place, Los Angeles—by University of Southern California, Los Angeles. 1-8

LOS ANGELES CO.—**P. J. Walker Co.,** 3900 Whiteside Ave., Los Angeles—construction of factory and office bldg. on 17-acre site on N. side of Valley Blvd. betw. Rio Hondo Ave. and Ellis Lane, Rosemead—by Clayton Manufacturing Co., Alhambra. 1-21

LOS ANGELES CO.—**Earl L. White,** 3300 W. Magnolia Blvd., Burbank—$65,000 for reinf. brick bldg., for 6 stores and theater, 7500 Lankershim Blvd., Van Nuys—by Longwood Investment Co., Van Nuys. 1-4

LOS ANGELES CO.—**William Wyatt,** 728 20th St., Santa Monica—$95,000 for restaurant bldg., SE. corner of Wilshire Blvd. and 22d St., Santa Monica—by H. A. Klabunde, Santa Monica. 1-4

RIVERSIDE CO.—**L. P. Scherer** and **T. C. Prichard,** 3964 Orange St., Riverside—reinf. conc. factory bldg., Kansas Ave.,

betw. Mass. Ave. and Roberta St., Riverside — by Colonial Radio Corp., Buffalo, N. Y. 1-8

SACRAMENTO CO. — **Markwart Co.,** Box 2104, Sacramento—$120,000 for two-story frame and stucco office bldg., Broadway, Sacramento—by Associated Oil Co., San Francisco. 1-8

SAN BERNARDINO CO.—**C. J. Baker,** 240 17th St., San Bernardino—$120,000 for store and warehouse bldg., 348 S. E St., San Bernardino—by W. P. Fuller & Co., San Bernardino. 1-10

SAN DIEGO CO.—**A. Farnell Blair,** 7052 Santa Monica Blvd., Los Angeles—$2,238,000 for bldgs., services, pave. at Chappo Flats, Camp Pendleton, Oceanside — by Bureau of Yards and Docks, Washington, D. C. 1-28

SAN DIEGO CO. — **W. D. Haxton,** 515 Broadway Bldg., San Diego—$131,565 for 1-story frame and stucco school bldg., Chula Vista—by Chula Vista Union High School District. 1-18

SAN DIEGO CO.—**Larry H. Imig., Inc.,** 610 F. T. Scripps Bldg., San Diego—3,000-unit private housing project and business district in Fletcher Hills area W. of El Cajon valley—by self. 1-18

SAN DIEGO CO.—**H. H. Johnson,** 626 Spreckels Theater Bldg., San Diego—cost-plus contract for construction of 30 5- and 6-room houses, a drive-in restaurant and 100 x 100 ft. reinf. conc. market bldg., National Ave. and E St., Chula Vista—by Walter Steel Works, San Diego. 1-7

SAN FRANCISCO CO. — **Henry Arian Construction Co.,** 4142 Geary Blvd., San Francisco—$50,000 for remodeling interior and exterior of office bldg., 86 Commercial St., San Francisco—by Marine Cooks and Stewards Assoc., same address. 12-28

SAN FRANCISCO CO.—**Cahill Bros.,** 206 Sansome St., San Francisco—$750,000 for reinf. conc. and structural steel theater and recreation bldg., Geary St. and 1st Ave., San Francisco — by San Francisco Theaters, Inc., San Francisco. 1-28

SAN FRANCISCO CO.—**H. H. Larson Co.,** 64 S. Park St., San Francisco—remodel store into modern 3-story bldg. for women's apparel, Grant Ave. at Maiden Lane, San Francisco—by Hale Bros., San Francisco. 1-21

SAN FRANCISCO CO.—**W. C. Tait Co.,** 461 Market St., San Francisco—$500,000 for amusement center: roller skating arena, theater restaurant and bowling alley, Great Hwy. and Balboa St., San Francisco—by George K. Whitney, San Francisco. 1-4

SAN MATEO CO. — **Geo. Arthur and Sons,** 941 S. Claremont St., San Mateo—$80,000 for San Mateo roller skating rink, Poplar Ave. and Bayshore Hwy., San Mateo—by Edward W. Stollery, San Mateo. 1-29

SAN MATEO CO.—**H. H. MacDonald,** 2562 S. El Camino Real, San Mateo—$2,000,000 for 150 residences S. of Beresford Country Club, San Mateo—by self. 1-11

SAN MATEO CO.—**MacDonald, Young & Nelson,** 127 Montgomery St., San Francisco—$95,000 for 1- and part 2-story reinf. conc. garage and auto sales bldg., California Dr., Burlingame—by James W. McAllister, Inc., San Francisco. 1-25

SAN MATEO CO.—**Peter Sartorio,** 262 Clementina St., San Francisco—$81,568 for 1-story frame and stucco addition to Edgemont School, San Bruno—by San Bruno Elementary School District. 1-21

SANTA BARBARA CO.—**Robert D. Peterson,** 1911 San Andreas St., Santa Barbara—$150,000 for 2-story, 34-unit motel, NE. corner of Cabrillo Blvd. and Chapala St., Santa Barbara — by George Gage, et al., Santa Barbara. 1-15

SANTA CLARA CO. — **Earl W. Heple,** 494 Delmas Ave., San Jose—$57,800 for 1-story and part mezzanine conc. store bldg., S. First St., San Jose—by Richard Hartman, San Jose. 1-28

SANTA CLARA CO.—**J. M. Montgomery & Co., Inc.,** 306 W. 3rd St., Los Angeles—$125,000 for cold storage bldg., San Jose—by Tri-Valley Packing Assn., San Jose. 1-18

SANTA CLARA CO.—**Carl N. Swenson Co.,** 355 Stockton Ave., San Jose—$552,935 for reinf. conc. fruit and vegetable cannery: main manufacturing bldg., boiler house, finished stock warehouse and cold storage unit, corner Phelan Ave. and Senter Rd., San Jose—by Beechnut Packing Co., Canajoharie, N. Y. 1-22

Colorado

BOULDER CO.—**Platt Rogers, Inc.,** Box 153, Pueblo—$800,000 for women's dormitory, $900,000 for 5 residence halls, $50,000 for women's club wing; and a service bldg. at Colo. Univ., Boulder—by Colo. Univ. Board of Regents, Boulder. 1-11

Idaho

NEZ PERCE CO.—**J. A. McNeil,** 714 W.

Olympic Blvd., Los Angeles 15, Calif.—$250,000 for nurses' home, room for 100 nurses and students, labs and classrooms, St. Joseph's Hospital, Fifth Ave. and Sixth St., Lewiston—by Board of Directors of St. Joseph's Hospital, Lewiston. 1-23

Montana

LEWIS AND CLARK CO. — **George Jacoby,** Helena—$200,000 for over 1,000-seat theater of steel and conc. in Hale Square, Helena—by W. E. Toy, Lincoln, and Mrs. Howard Hawk, Great Falls. 1-15

Nevada

CLARK CO. — **J. Walter Johnson,** 5205 Hollywood Blvd., Los Angeles, Calif.—$65,000 for frame and stucco church with 350 seats, kitchen, Sunday School and social hall, 9th and Bridger St., Las Vegas—by First Baptist Church, Las Vegas. 1-9

CLARK CO.—**Pioneer Construction Co.,** 403 W. Bonanza Rd., Las Vegas—$250,000 for addition to El Cortez Hotel, 600 E. Fremont Ave., Las Vegas—by Moe Sedway, Gus Greenbaum and Edward Berman, Las Vegas. 12-28

WASHOE CO.—**T. P. Moorhead & Co.,** Reno—More than $1,000,000 for 10-story modern hotel bldg., First and Virginia Sts., Reno—by Mapes Hotel Const. Co., Reno. 1-22

New Mexico

BERNALILLO CO.—**K. L. House,** Albuquerque—$1,000,000 for conc. and brick plant for manufacture of costume and Indian type jewelry, 1503 West Central, Albuquerque—by Jack Michelson, Bell Indian Trading Post, and Louis McRae, Chief Weavers, Albuquerque. 1-20

BERNALILLO CO.—**S. V. Patrick,** Albuquerque — $50,000 for 24-unit tourist court, 5715 East Central, Albuquerque—by H. T. Swortwood, Midco Tool and Supply Co., Oklahoma City, Okla. 1-3

Oregon

LINN CO.—**Edwards Brothers,** Albany—$125,000 for agricultural equipment agency 1 mi. S. of Albany—by Howard-Cooper Corp., Albany. 1-20

MARION CO.—**L. H. Hoffman,** 715 SW. Columbia, Salem — construction of reinf. conc. bank, granite and marble facing, Liberty and Chemeketa Sts., Salem—by 1st Natl. Bank of Portland, Salem. 1-25

MULTNOMAH CO. — **Edwin Balgemenn,** 50 NE. Cook St., Portland—$60,000 for 1-story and basement reinf. conc. garage and warehouse bldg., Portland — by Farmers Dairy Cooperative, Portland. 1-25

MULTNOMAH CO.—**The Donald M. Drake Co.,** 904 Lewis Bldg., Portland 4—$135,000 for 3-story science bldg. — by Lewis & Clark College, and 2-story conc. and steel bottling plant—by Canada Dry Ginger Ale Co., Portland.

MULTNOMAH CO.—**J. M. Gordh,** 2205 SE. Stark St., Portland—$55,000 for construction of Mocks Crest Evangelical Church, Portland, by church board of directors. 1-7

MULTNOMAH CO. — **Ross B. Hammond Co.,** 1241 N. Williams, Portland—$400,000 for 3-story and basement reinf. conc. office bldg., Sandy Blvd. betw. 17th and 18th Sts., Portland—by Farmers Automobile Inter-Insurance Exchange, Portland. 1-4

MULTNOMAH CO. — **Ross B. Hammond Co.,** 1241 N. Williams, Portland—$1,500,000 for 12-story office bldg. of reinf. conc. faced with sheet aluminum and thermapane glass, 6th Ave. betw. Washington and Stark Sts., Portland — by Equitable Savings & Loan Assn., Portland. And $300,000 for truck terminal on entire block at NW. 20th and Savier, Portland — by Consolidated Freightways, Portland. 1-14

MULTNOMAH CO. — **L. H. Hoffman,** 715 SW. Columbia St., Portland 1—More than $1,000,000 for four mill bldgs., Portland—by Crown Zellerbach Corp., 343 Sansome St., San Francisco. 1-3

MULTNOMAH CO. — **Reimers & Jolivette,** Railway Exchange Bldg., Portland—Betw. $60,000 and $70,000 for reinf. conc. steel plant bldg., NW. 25th Pl. and Nicolai, Portland—by Mercer Steel Co., Inc., Portland. 1-4

UMATILLA CO.—**Hoyen & Koch,** Portland—$7,000-$9,500 each for 10 houses of project in Pendleton—by Curry-Phelps Co., Pendleton. 1-16

Texas

BEXAR CO.—**John Cunningham,** Box 155, Grayson St. Sta., San Antonio—one-story warehouses and garage, repair shop, N. Flores and Elmira Sts., San Antonio—by Royal Crown Cola Bottling Co., San Antonio. 1-3

BEXAR CO.—**A. Gianotti,** 803 W. Salinas St., San Antonio—33x100 factory of fireproof construction—by Alamo Potato Chip Co., San Antonio. 1-2

BEXAR CO.—**D. G. Janssen,** 321 Essex St., San Antonio—$55,000 for church bldg., corner Cincinnati and Natividad Sts., San Antonio. 12-31

BEXAR CO.—**Judson H. Phelps, Ltd.,** 317 Insurance Bldg., San Antonio — general contract for warehouse addition—by Magnolia Petroleum Co., 227 Broadway, San Antonio. And warehouse contract—by Ben Mindes, San Antonio. 1-4

BEXAR CO.—**Ernest Scrivener, Sr.,** 535 Alta St., San Antonio—$100,000 for Seven Oaks night club, Austin Hwy., near Alamo Heights—by Col. B. F. Chadwick, San Antonio. 1-8

DALLAS CO.—**Cedric Burgher Construction Co.,** 3027 Main St.—$50,000 for 2-story and basement stone and brick residence, 4135 Turtle Creek Parkway, Dallas — by Royal A. Ferris, Jr., Dallas. 1-14

DALLAS CO.—**Cowdin Brothers,** 411 S. Haskell St., Dallas—$125,000 for 2-story brick veneer and reinf. conc. school and auditorium, 6117 Colgate St., Dallas—by Rev. Bishop Lynch, Dallas. 1-2

DALLAS CO.—**Lloyd D. Epperson,** Dallas—$50,000 for 1-story brick store bldg., 3200 block Davis St., Dallas. 1-16

DALLAS CO.—**Grover Jones,** 4203 Delmar, Dallas—$60,000 for 1-story church, Penrose and Delmar Sts., Greenland Hills —by Greenland Hills Methodist Church, Dallas. 1-22

DALLAS CO.—**J. E. Morgan and Sons,** 219 N. Campbell St., El Paso—$300,000 for 6-story department store bldg., Elm and Akard Sts., Dallas—by Franklins Inc., Dallas. 1-3

DALLAS CO.—**A. J. Rife Co.,** 2808 Inwood Rd., Dallas—$100,000 for brick and stone girls' dormitory, 4300 Davis St., Dallas—by Catholic Church Sisters of Our Lady of Charity, Dallas. 1-10

DALLAS CO.—**Watson Co.,** 1927 Akard St., Dallas—$300,000 4-story and basement business bldg., 1513-15 Main St., Dallas—by James K. Wilson, Dallas. 1-10

GRAY CO.—**L. K. Stout,** Pampa—$57,000 for 1-story creamery bldg. of brick, tile and reinf. conc., Pampa—by Northwest Dairy, Pampa. 1-15

MIDLAND CO. — **J. W. Bateson Co.,** Irwin-Keasler Bldg., Dallas—contract for brick stone and reinf. conc. office. bldg., Wall and Spring Sts., Midland—by Magnolia Petroleum Co., Midland. 1-7

TARRANT CO. — **Broughton Construction Co.,** Petroleum Bldg., Fort Worth—11 1-story residences, 3500 block Biddison, Fort Worth—by self. 1-22

TAYLOR CO.—**Balfans Construction Co.,** Abilene—$265,000 for brick and reinf. conc. dormitory, 103 rooms—by Abilene Christian College. 1-10

Utah

SALT LAKE CO.—**Fritz Anderson,** Seattle, Wash.—$150,000 for store bldg., NW. corner of Main and 2nd S. Sts., Salt Lake City—by C. D. Stimson, Seattle. 1-24

SALT LAKE CO.—**Olson Construction Co.,** Box 366, Salt Lake City 8—$200,000 for ice-making plant, 430 W. 2nd N., Salt Lake City—by Utah Ice & Storage Co., Salt Lake City. 1-22

Washington

CLARK CO. — **George H. Buckler,** 704 Lewis Bldg., Portland, Ore.—$225,000 for 7-story reinf. conc. bldg. for beer storage tanks at Vancouver—by Interstate Brewery Co., Vancouver. 12-11

JEFFERSON CO.—**William Gorsegner Construction Co.,** Port Angeles — $86,987 for gym and auditorium at Quilcene high school—by State Board of Education, Olympia. 1-23

KING CO. — **Balch & Setzer,** 6800 48th Ave., NE., Seattle—construction of 90 residences in Wedgewood Rock addition, 40-acre tract W. of E. 80th St., betw. E. 70th and E. 75th Sts., Seattle—by self. 1-25

KING CO. — **Birger Petersen,** Kirkland, cost-plus contract for construction of automobile sales and service bldg., Bellevue—by Ulrich-Masten Motor Co., Bellevue. 1-5

KING CO.—**Strand & Sons,** 3939 University Way, Seattle 5—$322,240 for 55 housing units for married students, and dormitories for 864 single veteran students, Univ. of Wash.—by Univ. of Wash. Board of Regents. 1-9

KING CO.—**J. B. Warrack Const. Co.,** Securities Bldg., Seattle—$225,000 for 130x 111 ft. addition to Seattle Labor Temple, Broad St., Seattle—by Architects McLelland and Jones, Seattle. 12-27

KITSAP CO.—**John H. Sellen Const. Co.,** 228 Ninth Ave. N., Seattle—$100,000 for 1-story and basement bldg., for clinic, and offices and plant of daily newspaper, 535

Fifth St., Bremerton—by Dr. K. P. Jackson, Bremerton. 1-15

KITSAP CO.—**Henrik Valle Co., Inc.,** 407 Third Ave. W., Seattle — $400,000 for 5-story office bldg., 243-49 Fourth St., Bremerton—by Joseph and Herbert Haas, Port Orchard. 1-17

LEWIS CO.—**The Austin Co.,** Dexter Horton Bldg., Seattle—cost-plus contract for $200,000 factory, 52,000 sq. ft., Chehalis—by Lewis-Pacific Dairymen's Assn., Chehalis. 1-15

PIERCE CO. — **Walker Stone Co.,** Tacoma—$200,000 for exterior stone pieces for Cathedral of St. John the Evangelist, Tacoma — by congregation of St. John the Evangelist, Tacoma. 1-20

SPOKANE CO.—**Clyde M. Ludberg Co.,** Box 2211, Spokane 7—$150,000 for wood flour manufacturing plant, Havana and Alki, Spokane. 1-22

Wyoming

NATRONA CO.—**M. W. Kellogg Co.,** 225 Broadway, New York—$6,000,000 for remodeling and construction of refinery, E. of Casper—by Texas Co. 1-16

Territories

ALASKA—**O. M. Lien,** Ketchikan—$70,000 for rebuilding part of cold storage plant destroyed by fire, and for addition, Ketchikan—by Ketchikan City Council. 12-27

HAWAII — **McNeil Construction Co.,** 5860 Avalon Blvd., Los Angeles—$250,000 for conc. and steel warehouse bldg., 50,000 sq. ft., Honolulu — by Sears, Roebuck & Co., Chicago. 1-24

Canada

BRITISH COLUMBIA—**Campbell Contracting Co., Ltd.,** Vancouver — $100,000 for warehouse and storage bldg., 34,840 sq. ft., 2-story, SW. corner of Main and Fourth Sts., Vancouver—by Ferguson Truck and Equipment Co., Ltd. 1-5

BRITISH COLUMBIA — **Commonwealth Construction Co., Ltd.,** 700 Taylor St., Vancouver—$132,800 for wing at Royal Inland Hospital, Kamloops—by Board of Directors, Royal Inland Hospital, Kamloops. 1-12

BRITISH COLUMBIA—**Dominion Construction Co., Ltd.,** 150 W. First Ave., Vancouver—$85,000 for theater bldg., snack bar, Market Basket and 3 stores, part of suburban shopping center at 16th Ave. and Arbutus St., Vancouver—by David Macfarlane, Vancouver. 1-12

BRITISH COLUMBIA — **General Construction Co., Ltd.,** Vancouver and Comox —$611,900 for administrative wing at Mental Hospital, Essondale—by Government of British Columbia, Vancouver. 1-26

BRITISH COLUMBIA — **Northwest Construction Co.,** Prince Rupert—$100,000 for framework of theater, girls' residence and 6 duplex blocks, Ocean Falls — by Pacific Mill Ltd., Ocean Falls. 1-12

Miscellaneous . . .

Arizona

NAVAJO CO.—**The Vyne Bros. Electric Co.,** Prescott—$200,000 for labor only on 60 mi. of 3-phase electric transmission line betw. Flagstaff and Winslow — by Ariz. Light & Power Co., Flagstaff. 1-21

California

KERN CO.—**H. B. Nicholson,** 1511 S. Broadway, Los Angeles—$213,658 for spur trackage, China Lake to K-2 Plate Range, Naval Ordnance Test Station, Inyokern—by Bureau of Yards and Docks, Washington, D. C. 1-28

LOS ANGELES CO.—**All-State Wrecking & Salvage Co.,** and **Maurice Katleman,** 1831 Pasadena Ave., Los Angeles—demolition of shipways, outboard ways and removal of all piling and appurtenances of shipways at California Shipbuilding Corp. yards, Terminal Island, San Pedro — by California Shipbuilding Corp., San Pedro. 1-25

ORANGE CO.—**Macco Construction Co.,** 815 N. Paramount Blvd., Clearwater—$81,000 for installation of 30,000 lin. ft. of 6-in. steel pipeline for oil, gas, gasoline, etc., on Bushard and Quincy Sts. — by Board of Supervisors, Santa Ana. 1-29

Nevada

HUMBOLDT CO.—**Charles Butler,** Oreana—grade. and graveling of 6-mi. stretch of track betw. Battle Mountain and N. Battle Mountain — by Southern Pacific Co., Winnemucca.

Oregon

COOS AND CURRY COS.—**Rural Electrification Authority,** Washington, D. C.—$500,000 for 300 mi. extension of lines—by

self, because required number of bids were not received. 1-14

Texas

CAMERON CO.—**Lee Aikin,** Box 2350, Corpus Christi—$2,225,000 for 20,000-kw. steam electric turbo generating plant addition, La Palma power sta., San Benito—by city of San Benito. 1-16

KAUFMAN CO.—**B & C Construction Co.,** 1308 Seevers Ave., Dallas—$94,899 for 119.3 mi. of rural elec. lines—by Kaufman Co. Electric Co-operatives, Fort Worth. 1-10

Washington

BENTON CO.—**Mohawk Wrecking Co.,** Detroit, Mich.—$103,003 for dismantling the Hanford construction camp which housed 50,000 atomic bomb workers—by U. S. Govt. 1-10

KING CO.—**Paul Jarvis, Inc.,** 3951 Sixth Ave., NW., Seattle—$164,016 for replacing portion of Cedar Falls penstock No. 5 with 78-in. electrically welded steel penstock—by Board of Public Works, Seattle.

SPOKANE AND STEVENS COS.—**Roy L. Bair & Co.,** 1220 Ide, Spokane—$63,650 for clearing 167 mi. of right-of-way for Spokane-Colville 115-kv. transmission line—by Bonneville Power Administration, Portland. 1-10

Canada

BRITISH COLUMBIA—**General Construction Co., Ltd.,** Vancouver and Comox—$200,000 for clearing right-of-way for transmission line from Campbell River to Nanaimo—by B. C. Power Commission, Vancouver. 1-12

PROPOSED PROJECTS

Waterway . . .

Oregon

CLATSOP CO.—Construction of a mooring basin for over 500 ships at Tongue Point, costing betw. 6 and 7 million dollars, will be started soon, according to 13th Naval District Public Works Officer, Seattle, Wash.

Building . . .

California

CONTRA COSTA CO.—Pacific Gas and Electric Co., 245 Market St., San Francisco, will build a $3,368,000 main substation, warehouse, shop bldg. and 2 operators' cottages in Moraga. Plans are by the company's engineering department.

SAN FRANCISCO CO.—Sears, Roebuck & Co. plans to build a new department store at NW. corner of Calvary Cemetery, Masonic Ave. and Geary St. in San Francisco. A 2-story and basement structure with parking space for 900 cars, it will cost about $5,000,000.

SAN MATEO CO.—Two $1,000,000 high schools are planned for Redwood City.

TRADE WINDS

News of Men Who Sell to the Construction West

CALIFORNIA

C. W. Kraft, president of KRAFTILE COMPANY, announces that his company has been appointed distributor in Northern California for Stran-Steel "Quonset" type structures, manufactured by GREAT LAKE STEEL CORPORATION. A wide variety of sizes is available in the "Quonset" huts. The company has been for many years a manufacturer of clay products, bricks and allied items.

☆ ☆ ☆

HOFFMAN & HEARTT have taken over the machine tool division of SMITH BOOTH USHER COMPANY at Los Angeles, Calif., and will operate the new firm under their joint name. Hoffman was for many years vice-president of SMITH BOOTH USHER COMPANY and Heartt was manager of the machine tool division. The new plant will be at 2011 Santa Fe Ave.

☆ ☆ ☆

Howard G. Vesper has been elected president of CALIFORNIA RESEARCH CORPORATION, subsidiary of STANDARD OIL COMPANY OF CALIFORNIA. He succeeds **Ralph A. Halloran,** who retires after 26 years directing Standard's research activities. In addition, **Alois Kremser** leaves as vice-president of CALIFORNIA RESEARCH CORPORATION to become personal adviser to **R. G. Follis,** president of Standard, and **L. P. Elliott** and **A. L. Lyman** become vice-presidents.

☆ ☆ ☆

FRUEHAUF TRAILER COMPANY has opened a new branch in San Diego, Calif., to service truck users in the southern

counties of California and Lower California. The new branch covers a ground area of 84,000 sq. ft. and was built at a cost of $150,000.

☆ ☆ ☆

INTERNATIONAL HARVESTER COMPANY, Motor Truck Branch, has appointed **Barr Crawford** retail sales manager for Los Angeles, Calif., succeeding **W. P. Elder,** who has accepted the position of manager of the motor truck department of HAROLD V. RAYMOND at Compton, Calif. **J. P. Crotty,** formerly at San Francisco, Calif., has been appointed sub-branch manager at San Diego, Calif., Crawford's former position.

☆ ☆ ☆

John M. Olmsted, for many years vice-president in charge of sales on the Pacific Coast for WALWORTH COMPANY, manufacturers of valves and pipe fittings, retired on December 31, 1945. **Fred J. Chittenden,** for 17 years manager of the company's San Francisco offices, became manager of West Coast sales upon Olmsted's retirement.

☆ ☆ ☆

Joseph L. Turner has been appointed director of industrial relations for COLUMBIA STEEL COMPANY, San Francisco, Calif., a U. S. STEEL CORPORATION subsidiary. He succeeds **Henry T. Lintott,** who resigned.

☆ ☆ ☆

The staff of CALAVERAS CEMENT COMPANY, San Francisco, Calif., has been expanded by the following appointments: **William P. Schwindt** has been named assistant vice-president and sales manager; **A. A. Hoffman,** consulting engineer; **Lewis A. Parsons,** consulting technologist; and **M. J. London,** traffic manager.

☆ ☆ ☆

Philip E. Rice has been appointed manager of the Los Angeles Synthetic Rubber Plant operated by the UNITED STATES RUBBER COMPANY. He has been connected with the company as a research chemist since 1923 and has developed many processes and chemicals used in the successful production of synthetic rubber.

☆ ☆ ☆

"Ernie" Daniels, and **"Ed" Williams** have been elected vice presidents of VICTOR EQUIPMENT CO., San Francisco. Daniels, with the firm 18 years and formerly sales manager, will be in charge of sales. Williams, with the company 18 years

DANIELS WILLIAMS

and formerly district manager, is now manager of the Southern California district.

☆ ☆ ☆

George J. Sussman, traffic agent for BETHLEHEM STEEL CO., has been promoted to district traffic manager, with headquarters at San Francisco, having jurisdiction over sub-offices at Seattle and Los Angeles. **Frank Hubert, Jr.,** has been transferred from Houston, Tex., to be traffic representative at Los Angeles.

☆ ☆ ☆

PACIFIC NORTHWEST

DEVENNY EQUIPMENT COMPANY, Seattle, Wash., has been operated as a co-partnership by **J. S. Devenny** and **Gordon Prentice.** However, on Jan. 1 the

Prentice interest was sold to **M. H. Fruhling** and the business will continue under the same name. Fruhling was an employee of the former company and has had many years' experience in the heavy equipment field.

☆ ☆ ☆

Marion H. Freedman has been appointed division manager of the Seattle office of COLUMBIA STEEL COMPANY, a U. S. STEEL CORPORATION subsidiary, succeeding **E. J. Howay,** who is retiring after 39 years of service with the corporation.

☆ ☆ ☆

STEWART & HUDSON, Victoria, B. C., have purchased the builders' supply business of W. T. Corbishley at Duncan, B. C., and have appointed **Hector Marsh** as manager of the Duncan branch. The firm is already engaged in the lumber and builders' supply business at Victoria and have another branch at Nanaimo.

☆ ☆ ☆

INTERMOUNTAIN

E. J. MacDONALD COMPANY, Reno, Nev., has been appointed Nevada and Eastern California distributor for Edco Phosphor Bronze Electrodes, product of Eccles & Davies Machinery Company, Los Angeles, Calif. The MacDonald Company (successor to Bergstrom Alloys, who will devote full time to manufacturing) represents a complete line of nationally known welding supplies and electrodes.

☆ ☆ ☆

ARIZONA EQUIPMENT SALES, INC., Phoenix, Ariz., has been named the distributor for R. G. LeTourneau, Inc. in Arizona and in the northern part of Sonora, Mexico. The president of the firm is **Joseph Koza,** and **Glen Tirrell** is engineering consultant, who has had 25 years' construction experience in the West. Koza,

KOZA **TIRRELL**

during five years with Army Ordnance, was in charge of rebuilding Army equipment for nine western states. Other officers of the firm are **Pat Quain,** vice-president in charge of operations; **Harold Olson,** vice-president in charge of parts; and **Lloyd Jarrett,** secretary and treasurer.

☆ ☆ ☆

A series of branch organization changes by MINNEAPOLIS-HONEYWELL REGULATOR COMPANY include the opening of new offices in Denver, Colo. and Salt Lake City, Utah, and expansion of existing offices in Washington, D. C., Los Angeles, Calif. and Spokane, Wash. The Denver branch will be under the direction of **George D. Maves,** formerly located in the Houston, Texas, branch. **Eldon I. Richardson** has been appointed district representative at Salt Lake City and will

operate under the supervision of the Denver branch. During the war Richardson was field engineer on the West Coast for the company's Aeronautical Division. At Los Angeles the office will handle the complete line of the company's equipment and **Gavin Younkin** has been made branch manager. **H. S. Jennings,** district representative in Spokane, will handle an expanded territory in Washington, Idaho and Montana.

☆ ☆ ☆

R. J. (Bob) Cleary has been appointed western district sales manager for THE BUFFALO-SPRINGFIELD ROLLER CO., Springfield, Ohio. His territory will cover Washington, Oregon, California, Idaho, Montana, Nevada, Utah, Arizona, New Mexico, Colorado, and Wyoming. He was recently production administrator for the production branch of the Military Supply Dept. of the U. S. Engineers, Cincinnati Dist. Just prior to this position he was a civilian administrator for the Army Engineers at Fort Belvoir. His broad experience covering more than 15 years in the construction field in various sections of the country before the war will be invaluable to contractors and public officials needing help with rolling problems.

☆ ☆ ☆

P. L. Daily, head of a roofing contracting firm bearing his own name at Tucson, Ariz., has been appointed licensee for Arizona by the HOLLYWOOD TERMITE CONTROL COMPANY, to serve architects, builders and home owners in that State. Plans are under way for appointing licensees over the entire nation.

☆ ☆ ☆

Charles H. Morse III has been elected vice-president of FAIRBANKS, MORSE & COMPANY. He is a son of **Col. Robert H. Morse,** president, and will be in charge of research patents, traffic, the company's western pump division, and the Inland Utilities Company, a subsidiary with properties in 41 cities in Colorado, Kansas and New Mexico. His headquarters will be in Chicago, Ill.

☆ ☆ ☆

AMONG THE MANUFACTURERS

Marshal B. Taft, formerly of the Aero Division, MINNEAPOLIS - HONEYWELL REGULATOR CO., has been made assistant to **Henry F. Dever,** president of the BROWN INSTRUMENT CO., Philadelphia industrial division of the Honeywell organization. Taft was for three years administrative assistant to the vice president of the Aero Division in Chicago. Prior to that time he practiced law in Minneapolis.

☆ ☆ ☆

Weldon O. Yocum has been appointed director of advertising for AMERICAN-MARIETTA COMPANY and eight divisions of the firm in the United States and in Canada. **Harry Ault** has been appointed advertising manager and **Robert Ornberg,** just released from the Army, has been appointed assistant advertising manager. The firm manufactures paints for all uses.

☆ ☆ ☆

THE CUMMINS ENGINE COMPANY, INC., former manufacturers of high speed diesel engines, has organized its sales department, appointing **Norman E. Palmer** general sales manager; **J. D. Allen,** sales manager of dealer organizations; and **Fred W. Sparks,** sales manager of manufacturing accounts. Palmer has been Washington, D. C., representative for the firm and the two sales managers have had many years' experience in the diesel engine field.

☆ ☆ ☆

R. P. (Bob) McKenrick has been appointed manager of construction equipment sales of BLAW-KNOX COMPANY, Pittsburgh, Pa. For the past ten years he has been in charge of construction equipment sales in the mid-western states, with headquarters at Chicago, Ill.

☆ ☆ ☆

Norman Bel Geddes, noted industrial designer, has been retained by GAR WOOD INDUSTRIES, INC., Detroit, Mich., to restyle its entire varied line of products, with special emphasis on postwar motor boats. Long famous as a pioneer in functional design, the Norman Bel Geddes organization designed the first streamline motor car and first streamline train.

☆ ☆ ☆

D. W. Vernon, general manager of sales for A. LESCHEN & SONS ROPE CO., St. Louis, Mo., since March of last year, was recently elected to the Board of Directors of the company.

☆ ☆ ☆

Knute Petersen has been appointed comptroller of the RICHKRAFT COMPANY, Chicago, Ill. He was formerly general production manager of BELL & HOWELL CO.

☆ ☆ ☆

H. J. French has resigned as assistant director for Raw Materials and Facilities of the Steel Division, War Production Board, at Washington, D. C., and has resumed his duties as assistant manager of the development and research division of

THE INTERNATIONAL NICKEL CO., INC., at New York. French joined the WPB in 1942 when he organized and became chief of the metallurgical section, and was appointed assistant director of that section in 1944. He leaves Washington after forty-two months' service with the board.

☆ ☆ ☆

George H. Kimber has been appointed managing director of the CALCIUM CHLORIDE ASSOCIATION, with headquarters in Detroit, Mich. For the past 25 years he has been manager of calcium chloride sales for the SOLVAY SALES CORPORATION, and has been an active participant in the association.

☆ ☆ ☆

Major H. Berkey Bishop has been appointed general manager of the KOTAL COMPANY, Summit, N. J., after four years in the Army. **Charles H. Welling,** who has been acting as general manager of the company, will continue his interest in the Kotal organization.

☆ ☆ ☆

Weston G. Frome has been appointed general manager of the Explosives Department of ATLAS POWDER CO., succeeding **F. S. Pollock,** vice president, who has been elected a member of the executive committee of the company. Frome has been with Atlas since 1913.

☆ ☆ ☆

W. C. Dillon, founder and president of W. C. DILLON & COMPANY, INC., Chicago, Ill., has associated with him in management of the company his six sons: Roy, an electrical engineer; George, in charge of mechanical and electrical research; William, supervisor of construction of thermometers; Edwin, financial and

patent advisor; Robert, sales and advertising manager; and Ralph, the youngest, chief engineer. The company manufactures precision instruments for weighing, measuring and testing. It is a research and development center for new ideas and patents. Many inventors have launched their devices through the medium of this firm.

☆ ☆ ☆

Bruce A. Royer, formerly field engineer and director of market research for R. G. LETOURNEAU, INC., has joined the general staff of the CATERPILLAR TRACTOR COMPANY, and has been assigned to the Sales Training Division.

☆ ☆ ☆

Harry A. Feldbush, formerly works manager of the Holyoke, Mass., plant of WORTHINGTON PUMP AND MACHINERY CORP., has been named vice president in charge of engineering for the entire corporation. His duties cover engineering activities of all works and domestic

subsidiary companies, with headquarters at the general offices in Harrison, N. J. **Ralph M. Watson,** formerly chief engineer of the Centrifugal Engineering Division, has been appointed assistant to Feldbush.

☆ ☆ ☆

W. M. Walworth has been elected vice-president and chief engineer of MACK MANUFACTURING COMPANY, having been acting chief engineer since March, 1945. He has been with the firm since 1939.

☆ ☆ ☆

William Kearn has joined the sales staff of KEYSTONE ASPHALT PRODUCTS COMPANY, and will be headquartered at Chicago, Ill. He is an experienced engineer in airport and highway construction. After having been discharged from the Canadian army he served as a civilian technician for the United States War Department on the Alcan Highway.

LE ROI COMPANY, Milwaukee, Wis., manufacturers of engines, compressors, generators and other equipment, announces the appointment of **John M. Dolan** as vice-president in charge of sales and **Cecil W. Brown** as general sales manager, Dolan's former position. Dolan joined LE ROI in October, 1943, having been for many years previously associated with the Sullivan Machinery Company. Brown has been with the firm since 1938. Another recent LE ROI appointment is that of **Arthur A. Ladwig** as vice-president in charge of manufacturing. He commenced his association with the company in 1923 and has progressively advanced to the position of works manager, which he has held since 1942.

☆ ☆ ☆

C. C. Gerow, first director of sales for HERCULES POWDER COMPANY, retired on Dec. 31, 1945, after more than 47 years in the explosives industry. Gerow was one of the first three men employed by HERCULES when the company was formed in October, 1912.

☆ ☆ ☆

Expanding activities have necessitated moving the office of the NATIONAL TRUCK LEASING SYSTEM to larger quarters at 111 West Jackson Blvd., Chicago, Ill. Its annual meeting was held on Jan. 24-25 at the Hotel Sherman. **Martha Dunlap** is executive secretary of the association.

☆ ☆ ☆

LANDIS **KNEEN**

H. F. Kneen has been named vice-president in charge of manufacturing, and **G. G. Landis,** vice-president in charge of engineering for THE LINCOLN ELECTRIC COMPANY, Cleveland, Ohio.

☆ ☆ ☆

Dr. Lawton A. Burrows has been named assistant manager in charge of research, Technical Division of the Explosives Dept., for E. I. du PONT de NEMOURS & CO., Wilmington, Del. He succeeds **Dr. W. E. Lawson,** a former director of Eastern Laboratory, Gibbstown, N. J., who is assigned to special duties. **Dr. Wesley M. Nagle** was appointed assistant director at Eastern Laboratory. Dr. Burrows was employed by the Du Pont Co. in 1934 as a chemist on explosives research. Dr. Nagle also went with Du Pont in 1934 as a chemist. His first assignment was on development work in the engineering section of the Explosives Dept. He served as a section head until his appointment as assistant director at Eastern Laboratory.

☆ ☆ ☆

Frank B. Carbone has been elected to the post of assistant to the president of ROGERS DIESEL AND AIRCRAFT CORP., New York, N. Y. Carbone has been associated with the Colonial Sand and Stone Corp. and its affiliates for the past nine years as vice president. He is also a member of the New York and Queens County Bar Association.

☆ ☆ ☆

W. A. Finn, just released from the U. S. Navy, has been appointed export manager of WORTHINGTON PUMP AND MACHINERY CORP., Harrison, N. J., succeeding **George Gellhorn** who will become general manager of C. E. Jalaby, a Worthington industrial machinery dealer in Colombia, South America. Before the war, Finn was manager of Worthington's Boston district office. Another Navy veteran, **Paul La France,** has been assigned as a sales engineer for the construction equipment division of Worthington. His headquarters will be in Washington, D. C.

☆ ☆ ☆

John J. B. Fulenwider and **J. B. Johnson** were elected directors of the HERCULES POWDER CO., Wilmington, Del., at a

recent meeting of the board of directors. Fulenwider was named general manager of the Cellulose Products Dept., and Johnson general manager of the Explosives Dept. Prior to these appointments, each had been assistant general manager of his department.

☆ ☆ ☆

Roy A. Bass has recently been appointed director of distribution of DRESSER INDUSTRIES, INC., Cleveland, Ohio, a new post. In this position he will be responsible for the national program of Dresser and its member companies in the establishment and expansion of distribution in industrial centers. Bass has been active in both sales and marketing for a number of years. Before assuming his present duties, he was Buffalo district sales manager for Ross Heater & Mfg. Co., Inc., of Buffalo, N. Y., with whom he had been connected for the past 11 years.

☆ ☆ ☆

Andrew Van Beek, manager of the Hercules-operated Radford Ordnance Works in Virginia, has been appointed assistant director of purchases for HERCULES POWDER CO., and assumed his duties on December 1.

☆ ☆ ☆

E. T. Tuller has been appointed domestic sales manager for ATHEY PRODUCTS CORPORATION. He has been with the company since 1940 and since 1943 he has been district representative for the Central Sales Division.

☆ ☆ ☆

MARSHALL-ECLIPSE division of BENDIX AVIATION CORP., Troy, N. Y., has recently begun an extensive expansion of plant facilities to meet the anticipated demands for brake linings for postwar passenger cars and trucks. The new plant, now under construction, will be four times larger than all of the present buildings of the division, and when the plant begins operating next spring, employment will be considerably above the wartime peak.

☆ ☆ ☆

A "Marsh Clan" was organized at a recent celebration of the JAS. P. MARSH CORP., Chicago, on the 80th anniversary of the founding of this company which manufactures pressure gauges and heating specialties.

CHARLIE LUBECK, oldest employee of the Marsh Corp., is presented with diamond Clan pin by BARRETT SCUDDER, president.

W. H. Hammond has been promoted to a newly-created post as vice president in charge of sales of GAR WOOD INDUSTRIES, INC., of Detroit, Mich. He has been with the company since 1921 and has lately been director of branches.

☆ ☆ ☆

Arthur T. Stanton has been named to the post of general sales director, with supervision over all domestic and export sales, sales promotion, merchandising and advertising, for MASTER VIBRATOR CO., Dayton, Ohio, manufacturers of gas-electric generator plants, concrete vibration equipment, electric power hammers and other industrial products. Stanton, former director of sales of the Chrysler Corp., and a mechanical and industrial engineer, returns to private industry after nearly four years in Washington, where he was called from Willys-Overland, to help organize the Division of Contract Distribution, one of the first war agencies. More recently he served as chief of operations in WPB's Production Facilities Bureau.

☆ ☆ ☆

Gilbert Soler, superintendent of the Quality Control Departments at Steel and Tube Division of the TIMKEN ROLLER BEARING CO., has been named assistant general superintendent of the division. Soler has a brilliant background in the field of mining and metallurgical engineering, and is at present vice chairman of the Iron and Steel Division Executive Committee of the American Institute of Mining and Metallurgical Engineers. Soler will maintain his offices at Canton, Ohio.

☆ ☆ ☆

L. M. Cassidy and **T. K. Mial** are new vice presidents in the JOHNS-MANVILLE CORP., New York, N. Y. Cassidy

was formerly a vice president in charge of building materials and general department of JOHNS-MANVILLE SALES CORP., a subsidiary. Mial was also a vice president in the Sales Corp., in charge of the power products and industrial department. Their appointments followed the retirement of **L. R. Hoff,** vice president in charge of sales.

☆ ☆ ☆

Fred D. Livingston has returned as sales manager of R. H. SHEPPARD CO., INC., Hanover, Pa., manufacturers of Sheppard Diesel engines. During the war, Livingston was in the Navy serving in Washington and at the Charleston Navy Yard, where he gained valuable experience observing Diesel engines at work.

☆ ☆ ☆

Frederick W. Beardslee and **John H. Middlekamp** have been elected vice presidents of MACK-INTERNATIONAL MOTOR TRUCK CORP., New York, N. Y. Beardslee is in charge of the motor fire apparatus division, and Middlekamp is in charge of the general bus department. Beardslee joined the firm in 1919, was made manager of the Bridgeport branch in 1927, and manager of the fire apparatus division in 1940. His headquarters will be in Long Island City. Middlekamp joined Mack a year ago after Army service, where he was a lieutenant-colonel in charge of truck production in the Ordnance Department. Later he directed the automotive division of War Production Board. His headquarters will be in the Empire State Bldg., New York City.

☆ ☆ ☆

BROWN INSTRUMENT CO., New York, N. Y., has added 24 sales and 11 service engineers to its staff and assigned them to branch office of MINNEAPOLIS-HONEYWELL REGULATOR CO., of which Brown is the industrial division. Western sales engineers and their new offices are: **J. A. Rorex,** Houston, Tex.; **D. F. DeVine,** Portland, Ore.; **A. T. Challman,** San Francisco, and **J. F. Stein,** St. Louis, Mo., Western service engineer is **M. T. Glass,** Dallas, Tex.

☆ ☆ ☆

Charles N. Karr, with the ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis., for 27 years, has

been appointed new Sales Promotion Manager of the Tractor Division. Karr succeeds **E. L. Aikins** who was placed in charge of the company's Seattle, Wash., tractor division. He opened the first Allis-Chalmers tractor branch in Bloomington, Ill. He moved to Peoria as branch manager in 1931 when the firm purchased the Rumely Co.

R. C. Alley has been appointed manager of the newly-formed Alco-GE Diesel-Electric Locomotive division of GENERAL ELECTRIC transportation division, Apparatus department, in Erie, Penn. Alley has had nearly 15 years in the field of design, application, sales and servicing of electric propulsion for all types of motive power. He started in the transportation equipment test department in Erie in 1929.

☆ ☆ ☆

H. C. Maurer, president of NATIONAL CLAY PIPE MANUFACTURERS, INC., died Jan. 16 in Columbus, O., at the age of 53. He was also president of Clay Sewer Pipe Assoc. Previously he was president and general manager of Sewer Pipe Manufacturers of Uhrichsville, O.; vice president and sales manager of Universal Sewer Pipe Co., Cleveland; and had served in executive capacities with American Vitrified Products Co., Akron, O., Dunlop Rubber Co., Buffalo, and McGraw Motor Co., Wheeling, W. Va.

☆ ☆ ☆

Eugene Holland, former president of FLORENCE STOVE CO., has been elected president and a director of the MASONITE CORP., Chicago, Ill. He succeeds **M. P. McCullough,** a founder of the company who is retiring. Holland began with Florence Stove Co. in 1940 as vice president in charge of operations until his election as president in 1945. He resigned that position and the presidency of MARSHALL STOVE CO. of Louisburg, Tenn., a subsidiary, to become president of Masonite. Also retiring from Masonite Corp. is **R. G. Wallace,** executive vice president and director.

NEW EQUIPMENT

MORE COMPLETE information on any of the new products or equipment briefly described on these pages may be had by sending your request to the Advertising Manager, Western Construction News, 503 Market Street, San Francisco 5, California.

Riveting Hammer

Manufacturer: Ideal Commutator Dresser Co., Sycamore, Ill.

Equipment: Pneumatic riveting hammer.

Features claimed: New line of small-size, light-weight, rugged riveting hammers, pneumatically operated. One-piece barrel, with all-steel construction; piston is alloy

steel for long and heavy service. Valve block and sleeve have large wearing surfaces for long life. The hammer can also be used for caulking, chipping, scaling, etc., when used with proper tool, and is available in three sizes with either grip or offset handle. An air throttling regulator valve is included with every hammer, permitting fine adjustment.

Booster Pump

Manufacturer: Martin Wells, Los Angeles, Calif.

Equipment: A high-pressure oil hydraulic pump.

Features claimed: A trouble-free high-pressure booster pump developing pressures up to 5,000 psi. that can be used to furnish dependable power for the operation of presses for plastic, rubber, drawing, coining and bending. Positive displacement—no slippage. Model No. 6 delivers 6 quarts of oil per minute at 5,000 lb. psi. It requires only four square feet for installation, weighs 300 lb., and stands 23 in. high. This pump is available in other models delivering up to 24 quarts per minute.

Mechanical Pencil

Manufacturer: Charles Bruning Company, Chicago, Ill.

Equipment: Mechanical draftsman's pencil.

Features claimed: The Bruning refillable lead pencil has a new type clutch fabricated of rubber that holds the lead firmly in a non-slip grip. This new grip prevents the usual nicking and scoring of the lead which cause breakage. Its long barrel will take any standard drafting lead, from .079 in. to .070. A properly tapered point and well proportioned knurled grip provides a firm hold and promotes finger comfort. An adjustable cap provides easy identification of the degree of lead used. Price $1.00.

Anti-Fog Preparation

Manufacturer: American Optical Company, Southbridge, Mass.

Equipment: Preparation to prevent goggles and face shields from fogging and steaming.

Features claimed: New AO anti-fog material, made from a scientific formula to penetrate the ultramicroscopic pores of glass, and deposit a thin film over the glass, which helps prevent fogging, steaming or frosting of all types of glass surfaces. In addition, it removes grease and dirt from glass and allows good visibility. Fog on lenses is annoying, but more important, it is actually dangerous since it obscures vision and increases accident frequency.

Wire Rope Connectors

Manufacturer: Electroline Company, Chicago 9, Ill.

Equipment: Electroline-Fiege wire rope connectors.

Features claimed: The Fiege type connector has a record of versatile usefulness, easy to install, even in inexperienced hands. Frequently when wire lines were carried away by bombs or shell fire these simple, rugged fittings were quickly salvaged and immediately reinstalled by men in the armed forces with no previous experience

with wire rope connectors. The vibration damper built into the Fiege-type connector appreciably lengthens the life of wire rope.

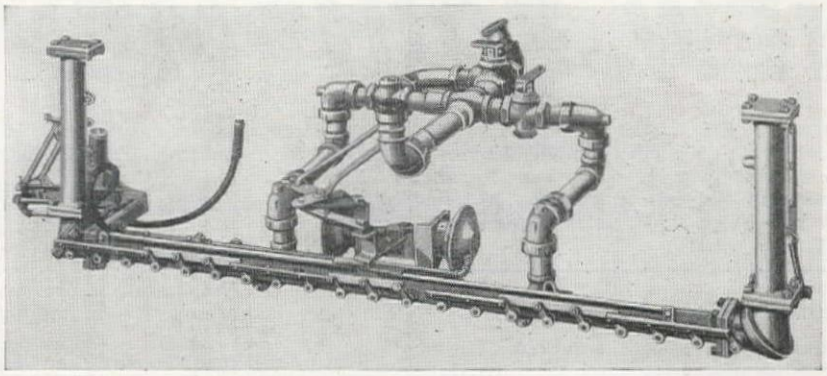
Truck Mixer

Manufacturer: Jaeger Machine Co., Columbus 16, Ohio.

Equipment: Truck concrete mixer.

Features claimed: The "Speed Merchant," latest model equipped with sealed top-loading drum which is not only specially recommended for handling wet-mix concrete but is also highly efficient for other types of ready-mix plant. The top loading feature enables the drum to take a full load in one quick drop, the fastest method, and also assures the proper distribution of the

various materials, with ample void space provided for fast, thorough mixing. The drum, sealed by quick-opening and closing discharge door, retains heat in winter and protects the concrete from bad weather at all times. In combination with use of the slow drum speed provided by Jaeger's exclusive 2-speed transmission, it also maintains the pre-determined slump of the materials on long-haul deliveries. Lighter weight, lower center of gravity and ease of cleaning are further advantages of the top-loading type. The new unit is equipped with water tank low mounted on the main frame, high pressure water pump and positively clog-proof water jet, positive aligned transmission and center drive to internal drum gear, and enclosed front end providing weather protection and winter warmth for engine, transmission, water system and drum.



Hot Spray Bar

Manufacturer: Cartwright Asphalt Equipment Co., North Robinson, Ohio.

Equipment: Asphalt spray bar.

Features claimed: The bar is of double construction, the material entering the inner pipe, which carries it to the extreme ends of the bar, from which it circulates back through the outer pipe and out the nozzles, or back into the supply tank. Full circulation throughout the entire length is made possible by a patented joint connecting the end sections to the main bar. The joint is set at an angle of 45 deg., and both the inner and outer tubes have a cone-shaped metal-to-metal contact, permitting the two end sections to swing from a vertical to horizontal position without interfering with the circulation of the material. Furthermore, the end sections can swing free if they hit any solid obstruction. Another important feature is the valves, which are located at the spray nozzles, giving instantaneous full-on or shut-off control without dripping. A rotary positive pump keeps the asphalt flowing through the bar under a positive pressure at all times. The bar is available in several different lengths, to suit differing needs.

Shovel-Crane

Manufacturer: American Steel Dredge Company, Inc., Fort Wayne, Ind.

Equipment: Wayne crane multi-utility power shovel-trench hoe unit.

Features claimed: Independent or simul-

taneous operation of boom, shovel or trench hoe, or propulsion mechanism. The unit has a self-leveling chassis which permits operation on uneven ground. It has a full-vision cab, from which the operator can see in all directions. No center-pin; the cab revolves on a 48-inch ball-race outside the swinggear. The power plant is a 62 ph. gasoline engine which drives all four wheels and digging motions. The shovel is ½ cu. yd. capacity, crane capacity is 4 tons at 10 ft. radius. Weight of any working unit is about 25,000 lb.

Two-color Spray Gun

Manufacturer: Sherwin-Williams Company, Cleveland, Ohio.

Equipment: A new two-color spray gun.

Features claimed: The two-color equipment will simulate hammered finishes and spatter, metalescent and wrinkle patterns with the Dimenso unit. It sprays two colors simultaneously through one nozzle. Other pattern styles include smooth finish color over color, color over metallic, metallic, and a combination of metallic enamels producing hammered finish effects. The new Dimenso spray guns are obtainable only on lease from Sherwin-Williams Company. New patterns and enamels formulated for customers will be registered for exclusive use in their field.

Parts Cleaner

Manufacturer: Kelite Products, Inc., Los Angeles, Calif.

Equipment: Parts cleaner chemicals to aid shop and maintenance work.

Features claimed: Packaged in an open-topped 5-gallon can, with or without parts basket, it simplifies fleet maintenance problems. This new Kelite cleaner is extremely effective for the removal of grease, dyes, gums and carbon. Carbon deposits, normally difficult to remove even by such methods as wire brushing, are now softened by a soak in Kelite parts cleaner so that it can be wiped off with a cloth. The cleaner is safe for all metals, odorless, and has no flash point, but the operator should wear neoprene gloves to protect his hands.

Portable Flexible Power Conveyor

Manufacturer: Island Equipment Corp., New York, N. Y.

Equipment: A portable conveyor system.

Features claimed: These units can operate separately or may be coupled together to make as long a conveyor system as may be wanted. It will convey on the level, up or down grades. It is quite flexible so that two sections can be set up to make a 30-degree turn, and four sections will make a 90-degree turn. When coupled together the entire system can be controlled by a push button control system from one end of the conveyor. Each unit is capable of carrying and distributing loads up to 400 lb. No guides are required to keep material on the belt. Units are equipped with 12, 16, and 20-in. belts as desired.

Underwater Cutting Torch

Manufacturer: Chicago Tool and Engineering Co., Chicago, Ill.

Equipment: Arc-oxygen cutting equipment.

Features claimed: Perfected through intensive research and use during the war, this method of underwater cutting utilizes steel tubular electrodes which enable an operator to cut 1-in. plate at the rate of one ft. per min. The technique of arc-oxygen cutting of metal is not involved and divers can be taught to use the method to its approximate capacity after just a few hours of training. With the sudden ending of hostilities it is expected arc-oxygen method of under-water cutting will be widely used in salvage work to recover valuable cargo and in clearing harbors of the hazard of sunken vessels.

High-Pressure Lubricator

Manufacturer: Balcrank Inc., Cincinnati Ohio.

Equipment: Self-contained pressure lubricator for construction equipment.

Features claimed: "Minit" lubricator is a handy 30-lb. capacity unit with quickly in-

terchangeable adapters to make it available in a few seconds for lubricating machines equipped with button-head, hydraulic or pin-type fittings. The unit is enclosed to prevent contamination by water, dust, or other foreign matter. It is also adapted to pump the container dry without a sputter. This is accomplished with the "Padl-Pak Tamping Blade," which positively eliminates air pockets without the use of bleeder valves. The Minit lubricator is furnished with an accessory mounting bracket so the unit can ride with any road equipment and be readily available for use in servicing the equipment.

Cargo Crane

Manufacturer: Link-Belt Speeder Corp., Chicago, Ill.

Equipment: Self-propelled cargo crane.

Features claimed: New model YC-5 Cargocrane is a one-man operated machine of exceptional maneuverability, ample power, which makes it applicable to the material handling problems of practically every plant.

Fully hydraulic operated, it is furnished with boom swinging a full 210 degrees, with short turning radius of chassis. The crane is capable of lifting 2,900 lbs. at a 15 ft.

radius, and up to 15,000 lbs. at 3½ ft. radius. The wheel base of 10 ft. 9 in. permits this cargo crane to work fast in narrow spaces.

Steering is accomplished by dual-wheels operating on a pivoted axle. The entire unit is operated by a three-speed transmission from a 57 h.p. gas engine, for traveling, swinging, hoisting and boom hoist.

Floor Surfacing

Manufacturer: Continental Asbestos & Refining Corp., New York, N. Y.

Equipment: Stonoleum, a non-dusting resilient floor covering.

Features claimed: This flooring has many of the favorable characteristics of concrete, but it does not dust, crack, pit or crumble. Because of a special colloidal composition it is resilient and hence highly resistant to vibration as well as direct impact and wear and tear of traffic. Because of these properties it is being widely used to repair floors—especially in plants undergoing reconversion. Holes left after removal of machinery can be patched with a minimum of effort.

Sand Blaster

Manufacturer: Sanstorm Manufacturing Co., Fresno, Calif.

Equipment: Sand blasting machine.

Features claimed: A sand blasting machine built in 4 and 7-cu. ft. sizes, mounted on wheels or stationary stand, which has no valves, mixing chambers, or other accessories to get out of order. The hose swivels to whatever direction the work is located,

and the correct amount of sand is always discharged, once the machine has been adjusted. It will not plug with any material small enough to pass the nozzle.

Wellpoint Pump

Manufacturer: Griffin Wellpoint Corp., New York, N. Y.

Equipment: Diesel wellpoint pump.

Features claimed: A stronger wellpoint pump, powered with an International Diesel engine. Since wellpoints operate 24 hr. per day, they are well suited for operation by Diesel power. This is the first wellpoint pump so powered, and is available both for sale and for rental on wellpoint operations. Another improvement over earlier models is removal of all packing from the stuffing box.

All-Purpose Excavator

Manufacturer: Bucyrus-Erie Company, South Milwaukee, Wisconsin.

Equipment: New 1½-cu. yd. Model 38-B fully convertible excavator.

Features claimed: Thorough field testing has proved this new model to have a remarkably fast operating cycle, and demonstrated it can produce record-breaking output for users. Selection of the most modern materials, widespread use of selection hardening and scientific weight distribution have made the 38-B amply strong for tough digging, with excess weight eliminated. The recent extensive field tests show the new 38-B matched the cycle speed of a much smaller machine. This amazing performance of the larger machine has been attained by careful synchronization of speed and power of the various functions and excellent distribution of weight. Big ultra-responsive clutches and brakes with direct control give the operator exceedingly accurate "feel" so desirable for continuous large output. Fundamentally constructed

for equal effectiveness as a shovel, dragline, crane or clamshell, the new 38-B offers a number of operating refinements. As a dragline, it has big working ranges with a new mast-type suspension available for long booms, full rotating fairlead, selection of wide, long and tapered end crawler mountings for ample bearing area and superior performance in soft going. The shovel includes a strong but light boom with large diameter point sheaves for effective application of digging force, independent positive twin rope crowd and high lip all-welded dipper for fast filling and dumping in rock or dirt. The crane offers long booms with optional jib extensions, two-clutch-operated independent boom hoist with full, accurate power control and optional independent two-speed propel.

Flash Welding Machines

Manufacturer: Progressive Welder Company, Detroit, Michigan.

Equipment: Butt-flash welding machines.

Features claimed: An entirely new line of butt-flash welding machines in five standard sizes embodying numerous new designs and operating features to provide maximum flexibility as to application, ease of maintenance and operation, and safety and reliability has just been placed on the market. The design of these machines permits them to be furnished for hand, air, hydraulic or motor operation or any combination of these controls, that is, the work may be clamped to the electrodes by air and the upset and flash controlled by hydraulic or motor control.

Traffic Control Unit

Manufacturer: General Electric Company, San Francisco, Calif.

Equipment: Traffic control.

Features claimed: A new program device which permits changes in timing of traffic

control systems as often as every 12 minutes a day for six days without repetition. The device supervises the master controller in an interconnected traffic control system. With a six-circuit device, a selection of three resets, three cycle changes, and three dials can be made, a total of twenty-seven combinations. The device has a weekly program cylinder which permits the six different programs to be spread out over a weekly period by making one of the programs do for two days. In addition a program which takes into account seasonal special events, and holiday variations in traffic conditions can be set up several weeks in advance on the weekly cylinder.

Cable-Pipe Markers

Manufacturers: Western Lithograph Company, Los Angeles, Calif.

Equipment: Transferable standard labels for electric cables and pipe.

Features claimed: E-Z Code standardized labels for use in marking cable, conduit, and pipes in buildings, plants or ships by simply peeling from the card and applying to the cables or pipes. Made of tough, durable material, with markings coated for permanence, they are supplied

on separate cards, always ready to use, stick quickly, and require no moistening. Furthermore, dispensers or attaching tools are unnecessary. The wide stock designs permit you to buy just what you need for a wide range of standard code identifications for all cables in your plant. The use of this new marker offers an opportunity to executives, engineers and superintendents to bring their factories up to date and make conversion easy with this time-saving device.

Portable Generator

Manufacturer: Homelite Corporation, Port Chester, New York.

Equipment: Portable light and power unit.

Features claimed: Designed to operate in a wide range of temperatures and altitudes, the engine is equipped throughout with gasoline-resistant synthetic rubber seals and gaskets, developed by Hycar Chemical Co. It has proven equally effective in the Arctic, in equatorial areas and at sea level as well as at 30,000 ft. elevations. The unit is extremely portable and capable of furnishing current for several floodlights or an electric drill, skillsaw or other power hand tools.

LITERATURE FROM MANUFACTURERS . . .

Copies of the bulletins and catalogs mentioned in this column may be had by addressing a request to the *Western Construction News*, 503 Market Street, San Francisco, California.

Koehring Co., Milwaukee, Wis.—A complete detailed description of the new Koehring 605 Excavator with 1½-yd. shovel and 30-ton crane, is in the 605 catalog by Koehring. All important operating advantages of the excavator are illustrated by 65 photographs. Also described are the hardened cast alloy shoes, a power clutch which retains the "feel" of the load, adjustable hook rollers, one-piece turntable, straight splined shafting and movable engine mounting.

* * *

Mine Safety Appliances Co., Pittsburgh, Pa.—Catalog 6-B has 178 pages of description and illustrations of the complete range of M.S.A. safety equipment for industrial application, including many new products. An introductory section is devoted to the company's research laboratories and plant facilities. The regular edition is in the usual 8½ x 11 in. size, and there is also a new pocket-size edition, 5 x 6½ in.

* * *

Athey Products Corp., Chicago, Ill.—An Athey broadside describes their new PD-10 rubber-tired trailer, the companion

unit for "Caterpillar's" DW-10 tractor. The large broadside is illustrated with huge photographs, and diagrams show design features, applications and specifications.

* * *

Link Belt Speeder Corp., Chicago, Ill.—Series "300" of shovels, cranes and draglines from this company are well illustrated and their proficiency described in a new 24-page catalog No. 2098. The Series "300" machines can be applied to a wide variety of excavating, steel erecting and material handling jobs.

* * *

Nunn Manufacturing Co., Evanston, Ill.—Cabl-ox, the new positive clamp for all wire rope applications, is illustrated and described in a bright broadside. Cabl-ox is stronger, surer, faster, safer and economical. A price list is included in the broadside.

* * *

R. G. LeTourneau Inc., Peoria, Ill.—The company's new 6-page folder shows various on or off-the-road uses of the Tournacrane and shows the crane's wide range of industrial adaptability. There is also a chart of lifting capacities at various reaches, and description of Tournapull interchangeability with Carryall Scrapers, Tournatrucks and Tournatrailers.

* * *

Littleford Bros., Cincinnati, Ohio—Well illustrated with photographs, a new folder from Littleford shows Model No. 102 and Model No. 103 supply tanks which are made in semi-trailer frameless construction. These models are furnished with heating systems or without. Special truck mounted semi-trailer, or four-wheel trailer models can also be had.

* * *

Air Reduction Sales Co., New York, N. Y.—An up-to-date catalog and price list of Airco arc welding accessories has been published by the company in a 12-page booklet. Another section is devoted to Airco Heliwelding equipment—the answer to a better method of welding magnesium.

* * *

Electroline Co., Chicago, Ill.—Electroline-Fiege Connectors "hold like a bulldog" according to "Positive Grip," Bulletin F-2 of the company. Many drawings show the simple, efficient design of these connectors, and how they are easily and quickly installed with ordinary tools.

* * *

Viber Co., Burbank, Calif.—An attractive, red, black and white catalog shows the new line of Viber Vibrators and gives their general specifications. The largest construction projects which have used high-speed Viber equipment to speed construction time, lower costs and improve results are also listed, including photographs of Boulder Dam and Palomar Observatory.

* * *

Wilson Welder and Metals Co., Inc., New York, N. Y.—A guide to the proper selection of arc welding electrodes is given in a new 32-page illustrated catalog published by this company. The booklet supplies complete data on the proper electrodes to be used for all types of work on different base metals, and describes the approved welding procedures for each application, as well as chemical analyses, specification and other engineering data for each electrode.

* * *

B. F. Goodrich Co., Akron, Ohio—"Guide to the Selection of Conveyor Belt Grades" is a useful new pamphlet now available upon request. It discusses differences in various grades and outlines reliable measurements of qualities in different type belts and the services for which they are usually applied.

* * *

Caterpillar Tractor Co., Peoria, Ill.—An artistic catalog in chartreuse, black and white answers all your questions about tractors. Titled "Today's Answer Man—Your 'Caterpillar' Dealer,"—the booklet has a series of photographs and literature to show what "Caterpillar" tractors are capable of doing, and how their dealers may help you with useful information.

* * *

Chicago Bridge & Iron Co., Chicago, Ill.—"The Hortonsphere" is a new 6-page booklet published by the company. The Hortonsphere is a pressure container for the storage and handling of volatile liquids. The correct storage pressure required to prevent standing losses from volatile liquids can be read directly from a chart in the booklet. Included is a standard capacity table showing operating pressures available for each size; and gauging methods

OPPORTUNITY SECTION

are described with photographs of three typical gauging units shown.

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Blaw-Knox Co., Pittsburgh, Pa.—Twelve exclusive features of the latest Blaw-Knox concrete paving spreader are described in detail in the company's Catalog N. 2046. It cites a record broken when a Blaw-Knox spreader and finishing machine handled the maximum output of two 34-E dual drum paving mixers on 25-ft. wide airport paving. A total of 288,000 sq. yd. of 9-in. concrete slab was laid in 60 10-hr. days, despite poor weather, manpower shortage, and materials and equipment change-overs. It was extensively used in construction of military air bases.

* * *

Marlow Pumps, Ridgewood, N. J.—"Marlow Mud Hog" is the title of Bulletin No. M45 on the company's diaphragm pumps. Marlow Mud Hogs are powerful lift-and-force pumps, specially built for hard, dirty jobs. They pump water, mud, sand, ooze, sewage, sludge, slime, grit, and liquids with a lot of trash. They take what comes, pumping either trickling seepage or large volumes with each stroke, without adjustment or change of speed.

* * *

Isaacson Iron Works, Seattle, Wash.—This western firm has just released a new folder AD-I describing the uses and operations of the Isaacson Klearing Dozer. In addition to descriptive material, it gives case reports on clearing prices per acre which show a saving of from 50% to 75% made by using the Klearing blade. Photographs show the blade with its long teeth which are adjustable to three digging depths.

* * *

George S. May Co., New York, Montreal and Chicago—This business engineering firm has been operating for 20 years and so has published a booklet entitled "20 Years of Trouble" which is a colorfully illustrated record of nine cases of human conflict suffered by business clients of the May Co. Their files show an impressive record of successful solutions of business troubles.

* * *

Pittsburgh Corning Corp., Pittsburgh, Pa.— A 24-page booklet containing a summation of the physical qualities and varied uses of foamglas, a cellular glass insulating material frequently used as a heat resisting insulation on towers, tanks and ducts in the petroleum industry and elsewhere. About half the space is devoted to detailed drawings of foamglas application in various specific requirements.

* * *

B. F. Goodrich Co., Akron, Ohio—Catalog Section 2155 describes the Plylock belt joint. The advantages of this type of joint are described; they include time saving, no fasteners to pull out, added strength, uniform belt thickness, longer life and reduced maintenance costs. In this joint method the ends of the plies are interlocked and the joint permanently vulcanized to the original belt thickness.

INDEX TO ADVERTISERS
★ IN THIS ISSUE ★