WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED
WESTERN HIGHWAYS BUILDER

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VOLUME XXII, No. 8

AUGUST • 1947

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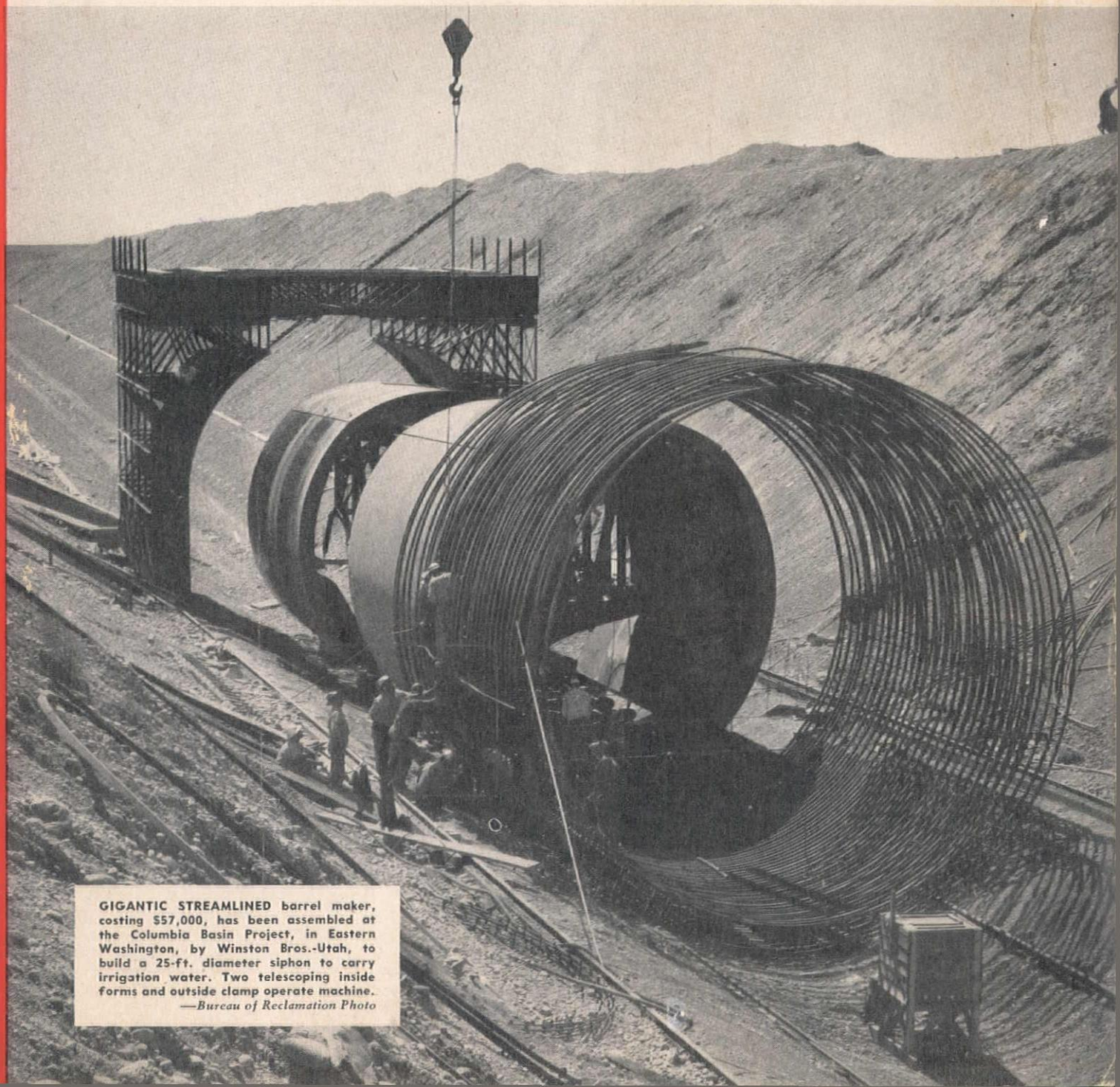
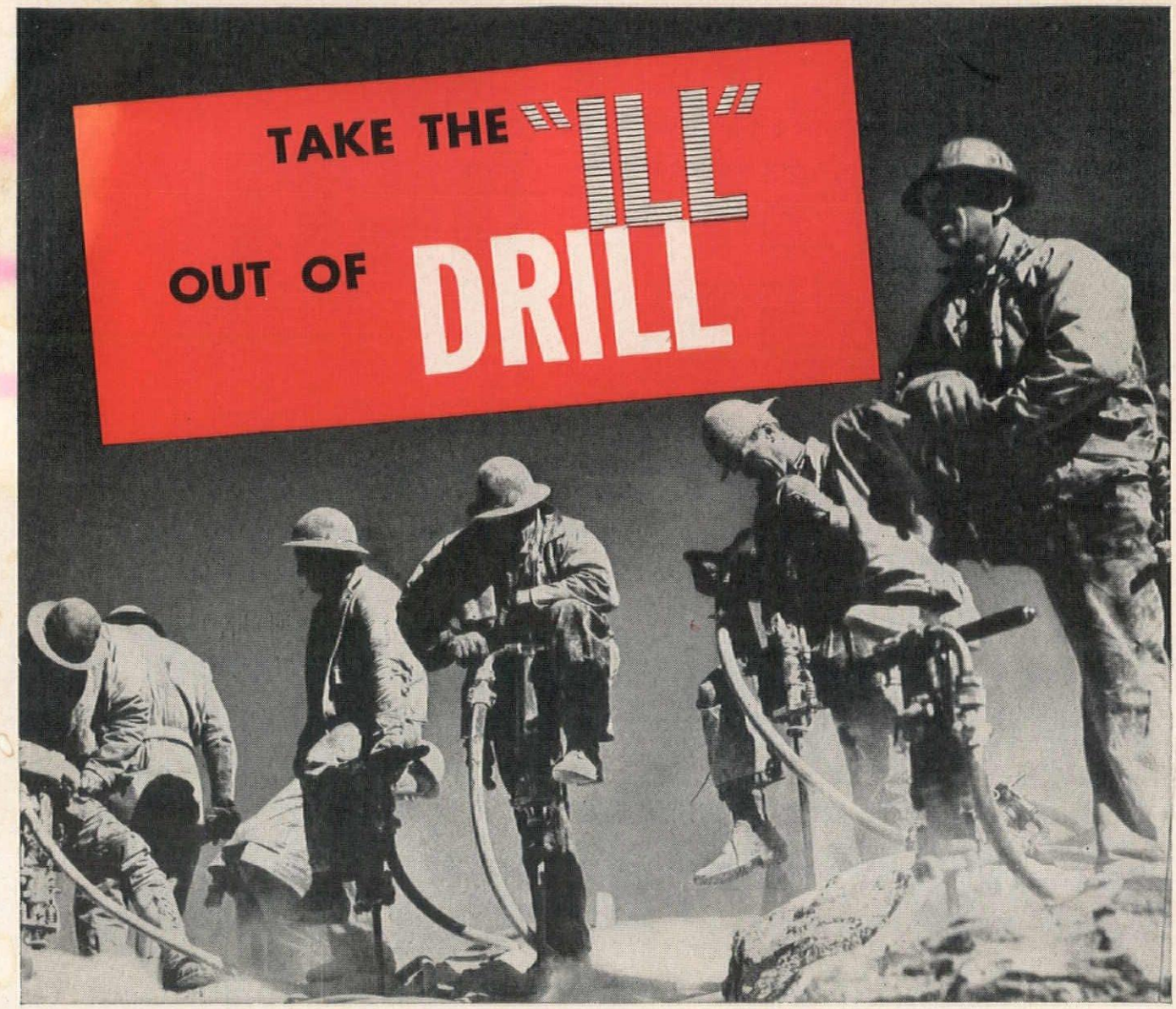


GIGANTIC STREAMLINED barrel maker, costing $57,000, has been assembled at the Columbia Basin Project, in Eastern Washington, by Winston Bros.-Utah, to build a 25-ft. diameter siphon to carry irrigation water. Two telescoping inside forms and outside clamp operate machine.
—Bureau of Reclamation Photo



SURE cure for a drill's "ills" – drill doctors say – is *effective lubrication*. Use Texaco Rock Drill Lubricants (E.P.), and your drills will stay in peak condition longer, require less servicing, cut greater footage at lower cost.

Texaco Rock Drill Lubricants (E.P.) have "extreme pressure" characteristics – give all moving parts full protection against wear. They resist oxidation, always flow readily, prevent rust and corrosion whether drills are running or idle.

Leading rock drill manufacturers approve Texaco Rock Drill Lubricants (E.P.) because they meet the lubrication requirements of every type of drill design and operating condition.

For Texaco Products and Lubrication Engineering Service, call the nearest of the more than 2500 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

PROTECT COMPRESSORS, TOO! Get more efficient, economical compressor operation by lubricating with the recommended *Texaco Alcaid, Algol or Ursa Oil*. All these famous oils prevent hard carbon formations — keep rings free, valves active, ports and air lines clear. Use them to keep pressure up, costs down.

TEXACO

TEXACO Rock Drill Lubricants (E.P.)

Tune in . . . TEXACO STAR THEATRE presents the TONY MARTIN SHOW every Sunday night. See newspaper for time and station.

EASY OPERATION

This is all there is to the "feather-touch" clutch control

less operator fatigue

"feel" of the load

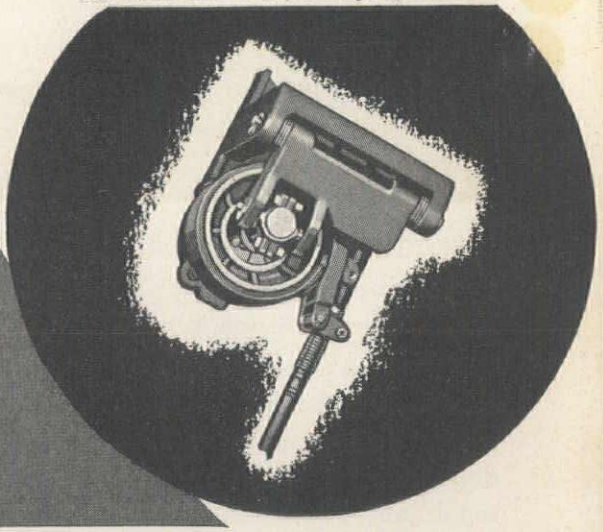
unaffected by weather

Here is all you need for easy operation!—A simple device—free from high-pressure pumps and tubing—no delicate mechanisms—nothing to refill—unaffected by weather or temperature—simple, positive, dependable and proved in years of service—that's the Northwest "Feather-Touch" Clutch Control on the main drums.

The *feel of the load* is always present. The clutch action is in direct ratio to the movement of the operator's hand lever, release is positive and *there is no danger of shutdown because of control failure.*

Easy operation is one of the secrets of high output. It means less fatigue, greater safety and better control of the load that pays out in handling the big ones, setting steel or stone and spotting to trucks or bins. Better plan to have it! Let us send full details so you can follow the Northwest Crowd.

NORTHWEST ENGINEERING CO.
135 South LaSalle St., Chicago 3, Ill.



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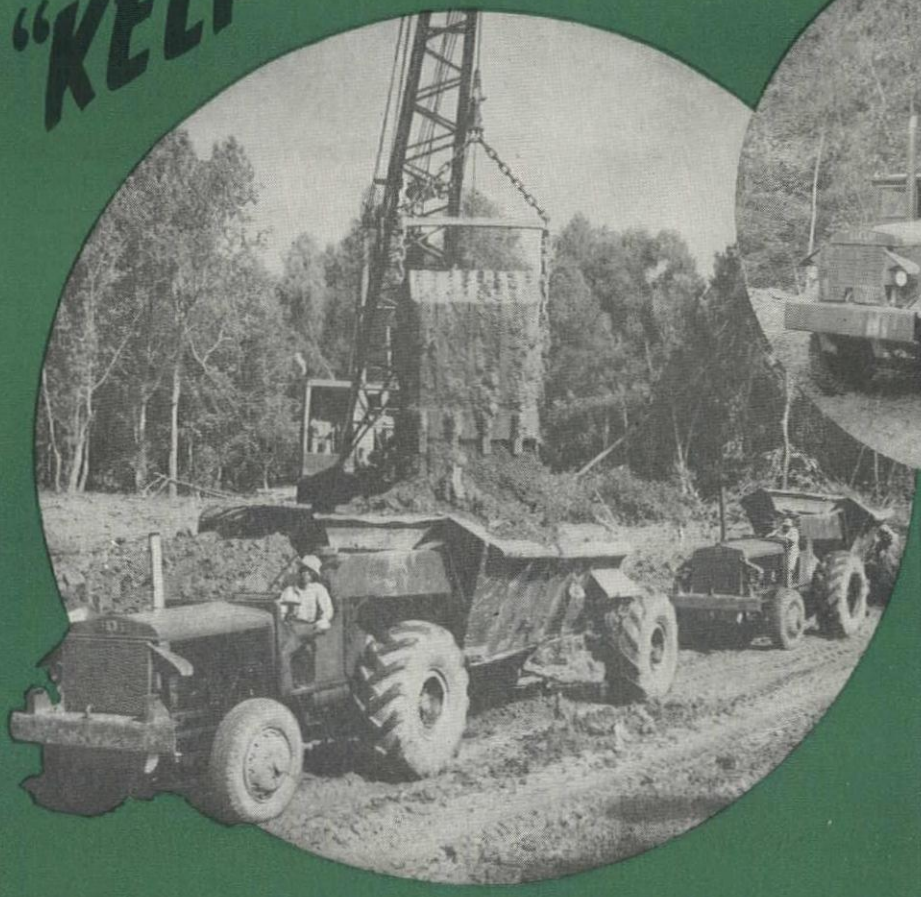
EUCLIDS "KEEP COMING BACK FOR MORE"



Because of the body design and method of dumping, Rear-Dump Euclids will handle all types of material. High dumping angle assures clean shedding of the load . . . distance from rear wheels to chute facilitates dumping over the bank, into hoppers or on the fill. Payload capacity is 30,000 lbs.... top speed loaded is 21.8 m.p.h. . . . 150 to 190 h.p. diesel engine.

Bottom-Dump Euclids are built for off-the-highway hauling of earth, ore, sand, gravel and other free flowing materials. Low loading height and wide top area provide an easy target for the loading unit. Capacity is 13 cu. yds. struck measure (40,000 lbs. payload) . . . loaded top speed is 26 m.p.h. . . . 150 to 190 h.p. diesel engine.

BOTTOM-DUMP and Rear-Dump Euclids are engineered for the job . . . built for efficient, long-life performance in off-the-highway service. Built by the pioneer of large capacity high-speed hauling equipment, Euclids have earned their reputation for rugged staying power, low cost production and continuous operation on hundreds of tough jobs. From bumper to bumper every part is designed and constructed for long life in heavy duty, off-the-highway hauling of earth, rock, coal, ore and other materials.

Ability of Euclid equipment to "keep coming back for more" means greater profits to owners by keeping operating and maintenance costs down. This dependable performance results in lower cost per ton or yard of material moved. Your Euclid Distributor or Representative will be glad to provide complete information on models best suited to your hauling needs.

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

EUCLIDS *Move the Earth*

Brown, Fraser & Co., Ltd., Vancouver, B. C.; A. H. Cox & Co., Seattle, Wash.; Hall-Perry Machinery Co., Butte, Montana; Lively Equipment Co., Albuquerque, New Mexico; Constructors Equipment Co., Denver, Colorado; Pacific Coast Branch: 3710 San Pablo Ave., Emeryville, Calif.; Intermountain Equipment Co., Boise, Idaho, and Spokane, Washington; Lang Company, Salt Lake City, Utah; P. L. Crooks & Co., Portland 10, Oregon. REPRESENTATIVE: M. H. Johnson, W. 2411 Crown Avenue, Spokane, Washington.

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WESTERN CONSTRUCTION NEWS
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Volume 22 AUGUST • 1947 Number 8

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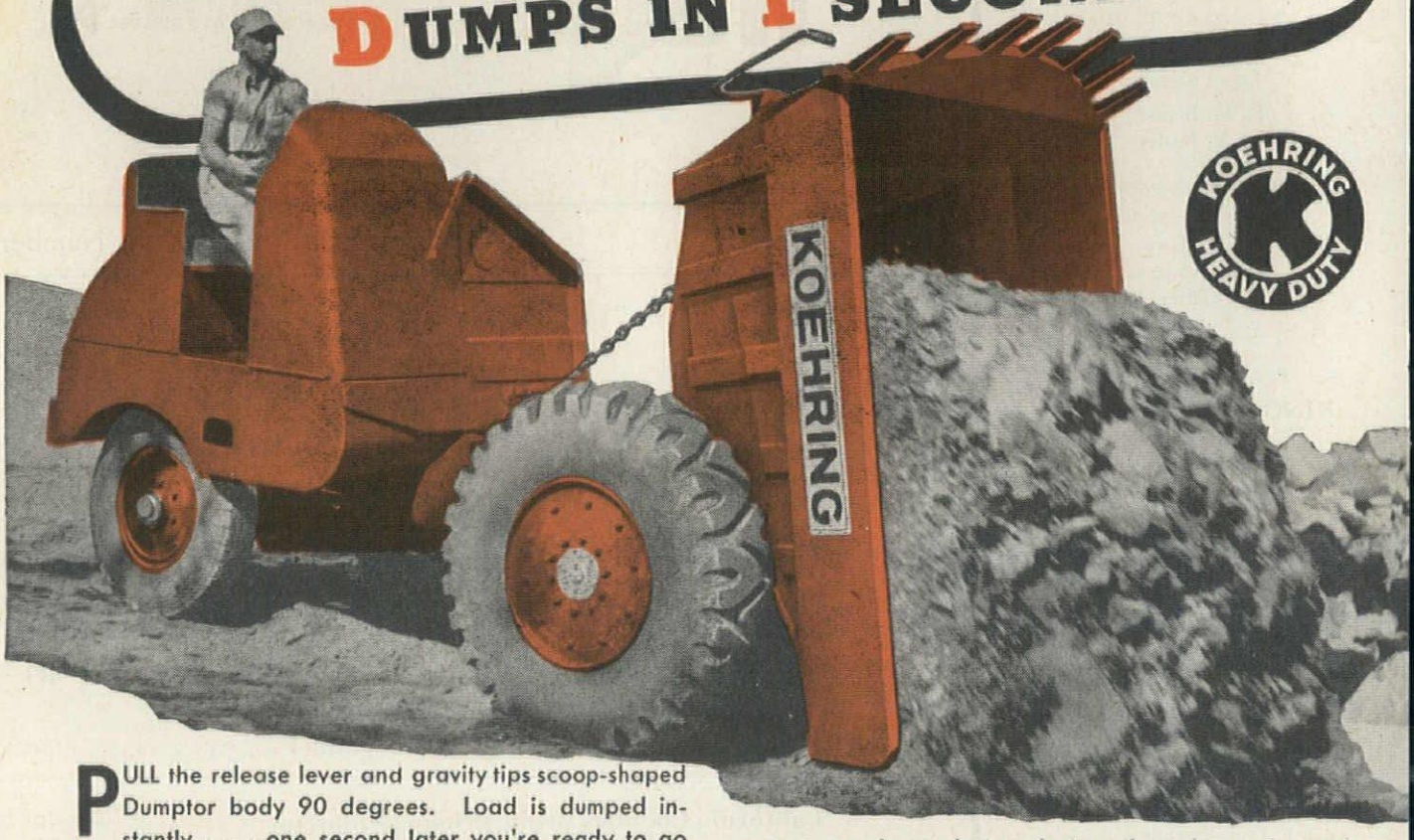
Covering the Western Half of the National Construction Field

KOEHRING DUMPTOR

DUMPS IN 1 SECOND



PULL the release lever and gravity tips scoop-shaped Dumptor body 90 degrees. Load is dumped instantly . . . one second later you're ready to go for another load.

No delay of 10 to 60 seconds, waiting for slow going hydraulic hoist to raise and retract. Kickout pan keeps body clean in any material.

No body hoist troubles, because Dumptor has no body hoist. Dumptor dumps fast even in zero weather . . . saves ALL body-hoist maintenance expense.

No Turn-Time, More Haul-Time

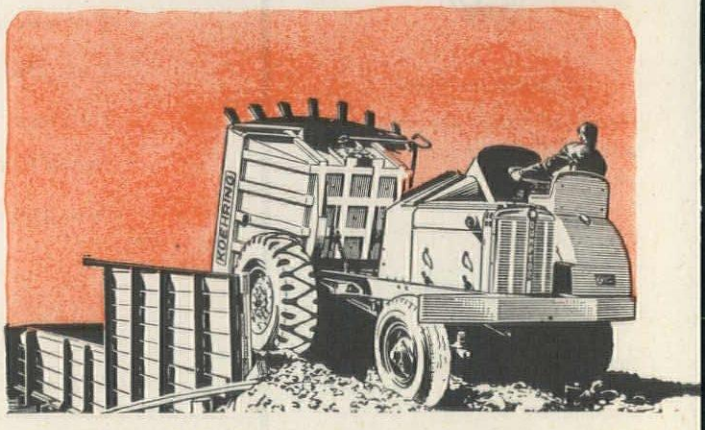
You save more seconds every trip, because Dumptor never needs to turn on shuttle-type hauls. Three reverse speeds are just as fast as three forward speeds. Constant mesh transmission is especially designed for shuttle work.

You'll Need Fewer Units—If They're Dumptors

Three 6-yard Dumptors often handle shovel output formerly requiring four conventional 6-yard hauling units. Usually there is a saving of 20 to 25 percent in number of haul units on jobs within Dumptor range of haul.

Experienced Dumptor engineers are ready to help with your off-the-highway haul problems. Contact your Koehring Distributor today for complete information.

KOEHRING HEAVY-DUTY



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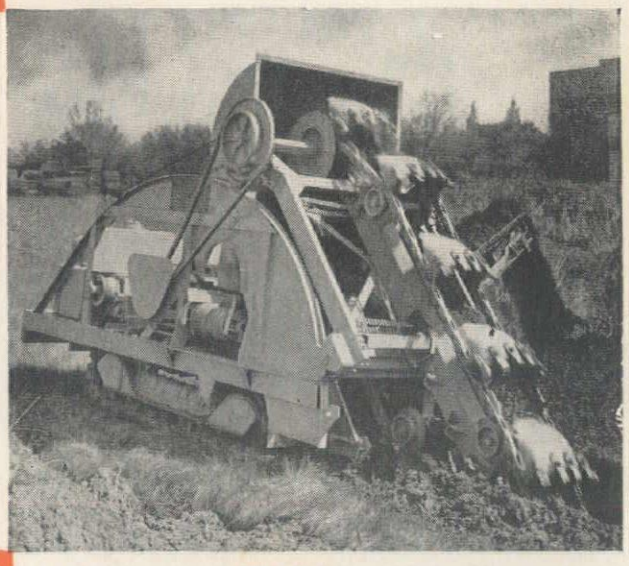
Harron, Rickard & McCone Co. of Southern California, ***Los Angeles***
Kimball Equipment Co., ***Salt Lake City***
McKelvy Machinery Co., ***Denver***
Moore Equipment Co., ***Stockton***
Neil B. McGinnis Co., ***Phoenix***
Pacific Hoist & Derrick Co., ***Seattle***
The Harry Cornelius Co., ***Albuquerque***
Western Machinery Co., ***Spokane***

PARSONS TRENCHLINER



Get All These Important Improvements

Parsons 221 and 250 Trenchliners combine the advantages of shiftable telescoping boom with a simple, direct power flow, tough shovel-type crawlers PLUS positive bucket cleaner, safety slip clutch, and power-shift arc conveyor, money-saving reversible chain links, self-locking pins. Parsons 221 Trenchliner digs up to 8' deep, 36" wide. 250 digs up to 12'6" deep, 42" wide.

Columbia Equipment Company	Portland, Boise
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Moore Equipment Company	Stockton
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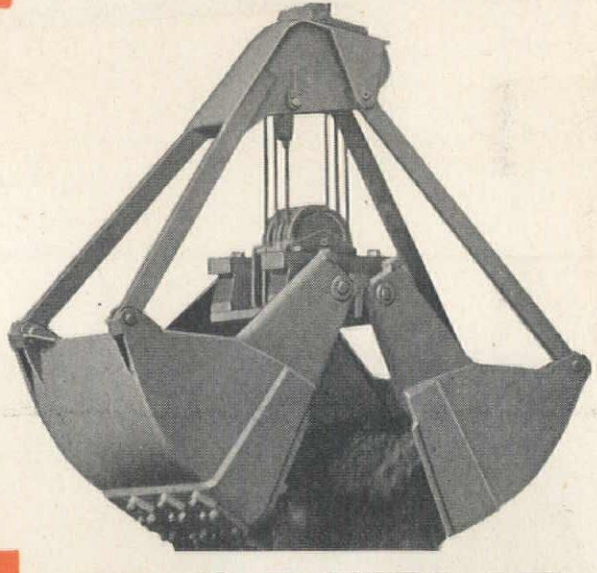
Western Machinery Company	Spokane

JOHNSON ALL-WELDED



Extra Tonnage Every Shift

Balanced construction, low center of gravity of Johnson All-Welded Clamshell Bucket drives teeth deep and straight into material every time bucket hits. Sealed needle bearings, large diameter sheaves, angle-mounted lower sheave block, straight cable reeving . . . all combine to close and open clams fast. Fast operation means more loads, extra tonnage every shift.

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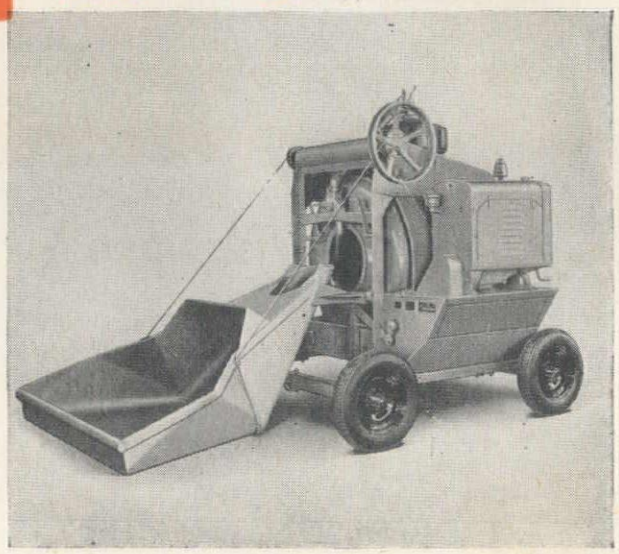
KWIK-MIX 16-S DANDIE



Cut Costs On Small Paving Jobs

Eliminate concrete barrows, cut skip loading-time with Kwik-Mix End-Discharge 16-S Dandie. Exclusive end discharge feature permits direct discharge of batch into form. End Discharge 16-S Dandie pulls away from poured concrete, never through it. Truck width power skip available as optional equipment, permits trucks to dump direct . . . saves time.

Columbia Equipment Company	Portland, Boise
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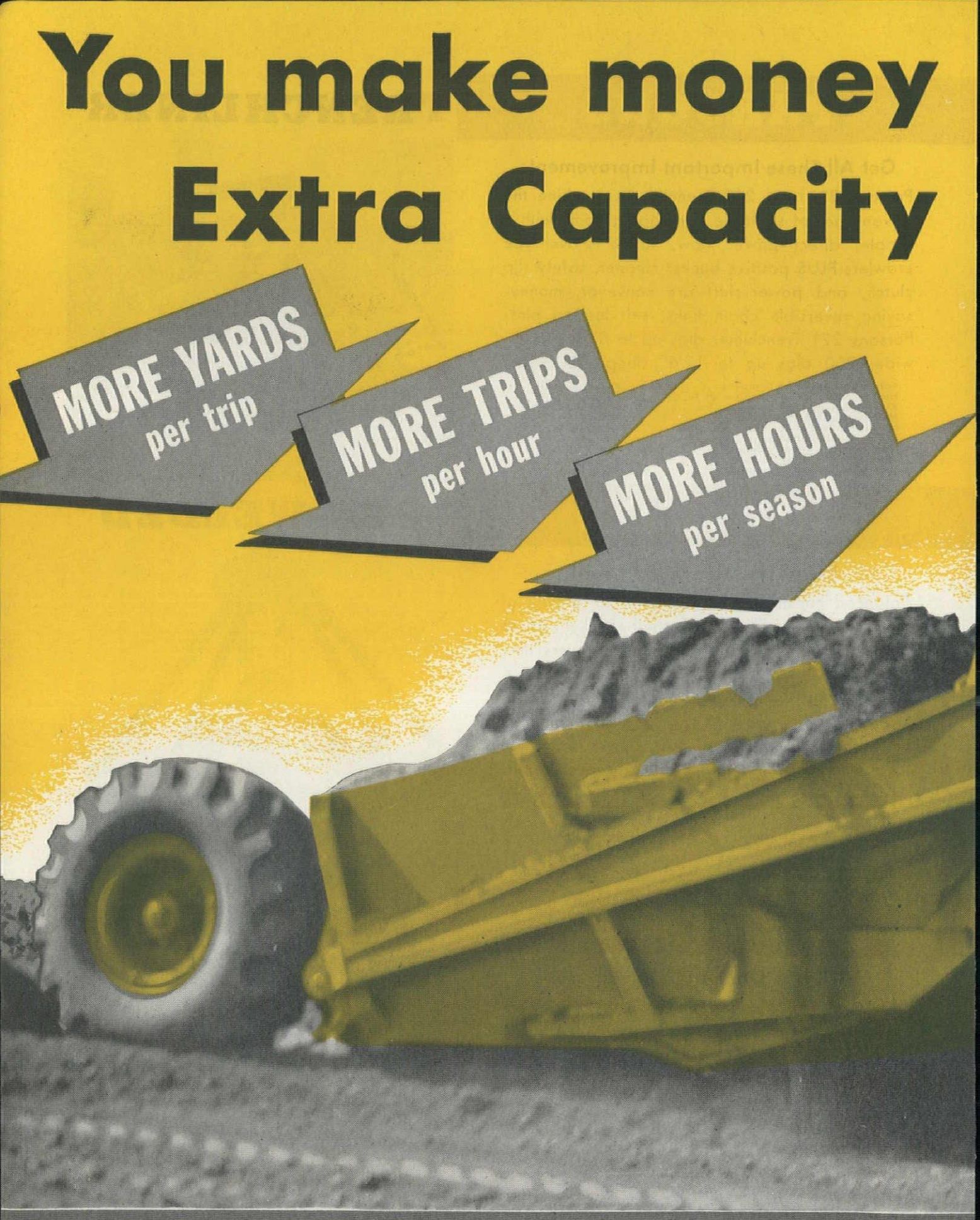
Kimball Equipment Company	Salt Lake City
McKelvy Machinery Company	Denver
Moore Equipment Company	Stockton
Neil B. McGinnis Company	Phoenix
Pacific Hoist & Derrick Company	Seattle
The Harry Cornelius Company	Albuquerque
Western Machinery Company	Spokane

You make money
Extra Capacity

MORE YARDS per trip

MORE TRIPS per hour

MORE HOURS per season



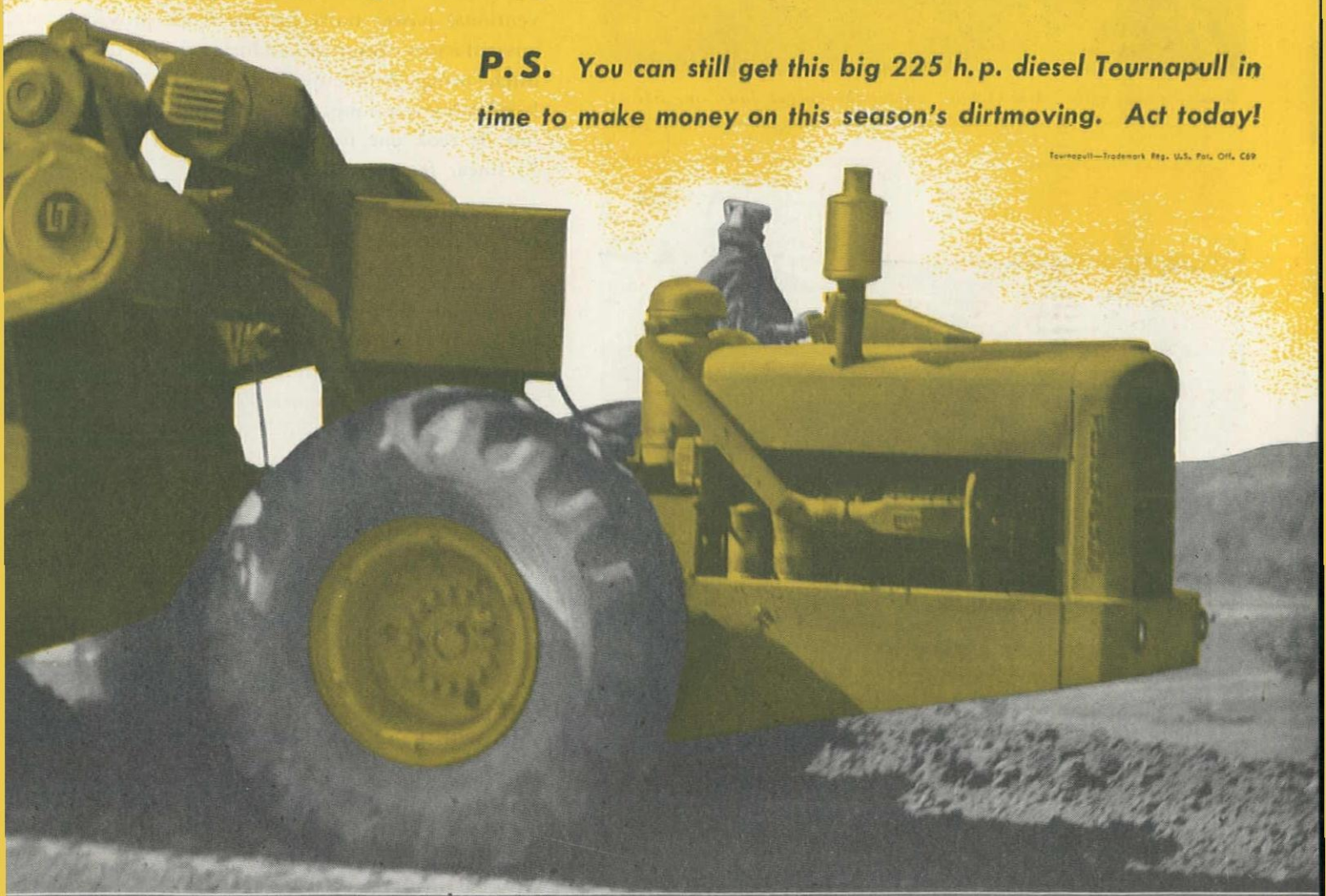
LETOURNEAU LET EQUIPMENT

See your LeTourneau Distributor NOW for complete information on prices and delivery

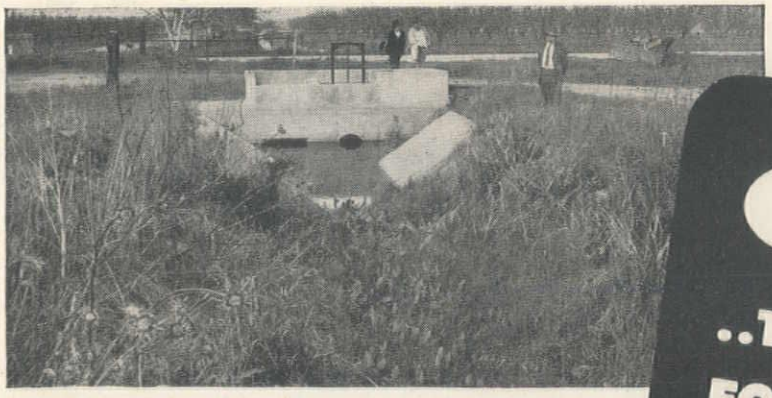
three ways with "B" TOURNAPULLS

FIGURE IT THIS WAY. On big yardage jobs the new 26-yard "B" Tournapull hauls over twice the usual scraper pay load every trip . . . doubles your dirtmoving output per man-hour . . . cuts your operating and maintenance costs practically in half. And that's only part of the story. Travel speeds up to 15 m.p.h. plus finger tip electric control . . . instantaneous shifting and braking . . . safe, easy power steering . . . all help deliver extra pay yards at the fill with minimum operator fatigue. In addition, because this powerful new "B" Tournapull walks right through deep mud, sand, snow and ice that would stall ordinary dirtmovers, you can start jobs earlier in the spring . . . keep moving dirt all season with fewer and shorter delays from weather . . . keep working later in the fall . . . make each year pay off in extra pay hours.

P.S. *You can still get this big 225 h.p. diesel Tournapull in time to make money on this season's dirtmoving. Act today!*



LETOURNEAU
PEORIA, ILLINOIS
EXTRA-CAPACITY
TOURNAPULLS



These irrigation ditches become choked by 4 to 15 inches of silt and tangled growth of weeds—must be cleaned yearly.

GRADALL
..THE *Only* MACHINE FOR A JOB LIKE THIS

Gradall's fast, agile "Arm Action" guides the bucket down one side of the ditch, across the bottom and up the other side—clean in one pass!

Long, powerful boom of the Gradall reaches across a 22-foot ditch, scrapes hard clay from ditch sides. Precision is a "must" to prevent damaging concrete ditch lining.

MILES OF DITCHES at the Contra Costa Irrigation District, Brentwood, California, must be cleaned annually. Use of conventional power units for the work proved unsatisfactory—resulted in damage to concrete ditch linings. So the ditches were cleaned by hand labor – a long, hard job and a costly one. It took one man a day to clean about 75 linear feet of ditch.

Gradall recently did this work at the rate of 2000 linear feet per day—and did it cleaner, better, in every way!

The time and money savings accomplished by Gradall dexterity and precision are not confined to ditch cleaning alone. Records of actual pay jobs over a period of 5 years *prove* Gradall's versatility in cutting costs on a wide variety of construction work.

Now is the time for you to investigate Gradall—to learn how it can make money by saving money on your jobs.

SALES AND SERVICE:

GOLDEN STATE EQUIPMENT CO.
4770 Valley Blvd.
Los Angeles 32, California

BAY EQUIPMENT CO.
3254 East Shore Highway
Richmond, California

INDUSTRIAL EQUIPMENT CO.
720 South 19th Ave., P. O. Box 2669
Phoenix, Arizona

Gradall Reg. U. S. Pat. Off.

SEND FOR
GRADALL BOOKLET
showing many job applications, specifications, complete facts.

GRADALL DIVISION
WARNER & SWASEY
Cleveland

WARNER & SWASEY
Cleveland 3, Ohio
Please send the new GRADALL Book to:

Name .....

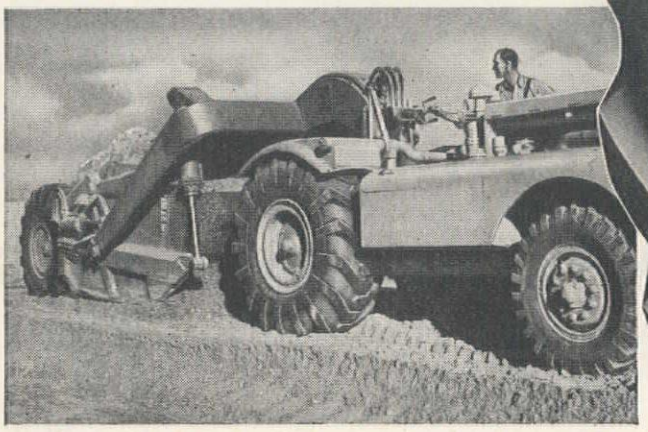
Address .....

City ..... *Zone* ..... *State* .....

J-847

Where traction is a must—

THIS TIRE IS TOPS!



GOODYEAR's great Sure-Grip is the champ on drive wheels because it has pull-ahead traction like no other work tire. The *open center* self-cleaning tread keeps each lug bar *completely* separate. So *each* lug bites in deep, takes firm grip with minimum slip, pulls sure and steady in *any* going.

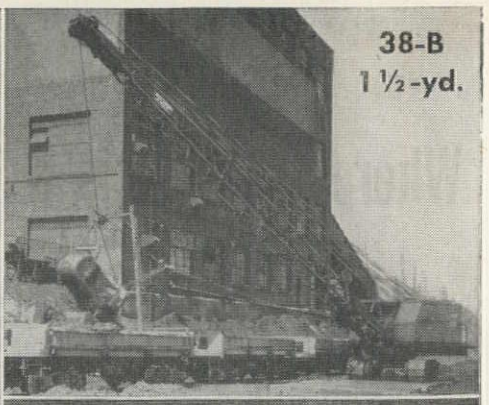
That's why the Sure-Grip is first choice wherever pulling power is the first need. And when you add in the low-cost, long-life performance typical of *all* Goodyear job-proved tires, you see why Goodyears *stay* first choice — why year after year, *more yards are moved on Goodyear off-the-road tires than on any other kind!*

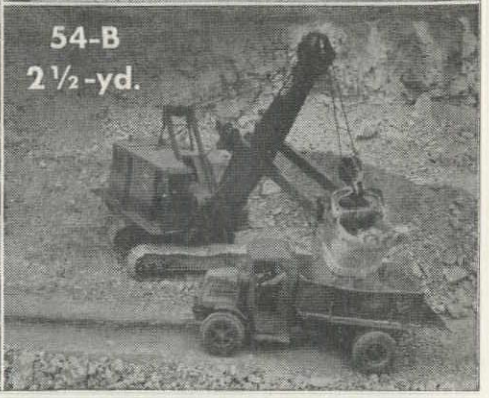
THE RIGHT TIRE FOR EACH JOB

Sure-Grip, All-Weather—T.M.'s The Goodyear Tire & Rubber Company

GOODYEAR

MORE YARDS ARE MOVED ON GOODYEAR OFF-THE-ROAD TIRES THAN ON ANY OTHER KIND





YOU'RE REALLY IN HIGH GEAR When You Work with Bucyrus-Eries

That's right, mister! It's the combination of light weight and great strength, the effective distribution of weight, the remarkable balance of operating functions, the smooth responsive control that together make Bucyrus-Erie 3/8 to 2 1/2 yard excavators tops in speed and output.

And what they have in speed, they match in durability. Operators find it easy to maintain a fast steady pace shift after shift with minimum maintenance. There is no need to spend valuable hours making delicate adjustments, for on Bucyrus-Eries the necessary adjustments are few in number, are easy to make, and stay put. Machinery is simple, parts are few and large, every inch of shaft length is used.

When you buy a Bucyrus-Erie, you buy a fast, durable excavator that's easily converted to various front ends, too. It's not just a shovel for which other attachments are available; it's an all-round machine whose design makes it equally effective with any front end.

That's the kind of machine your Bucyrus-Erie distributor wants to tell you about in detail. Check with him! Bucyrus-Erie Co., So. Milwaukee, Wis.

110E47

SEE YOUR BUCYRUS ERIE DISTRIBUTOR

EXC-2

SOULÉ EQUIPMENT COMPANY	Oakland — Sacramento
CROOK COMPANY	Los Angeles
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R. L. HARRISON COMPANY, INC.	Albuquerque
BROWN TRUCK & EQUIPMENT COMPANY	Reno

Shovels • Dragshovels • Draglines • Clamshells • Cranes • 3/8 to 2 1/2-yd.

"PERFORMANCE has been PERFECT"

Pioneer 20" x 36" Jaw Crusher Model 150 P.R.L.-2036 and Pioneer 22" x 40" Roll Crusher secondary unit Model 2405 powered by a 4-71 and a 6-71 GM Diesel engine respectively.

It takes a lot of power to crush 1000 tons of large rock a day and turn it into sand and gravel.

That's why the National Truck Service of Asheville, N. C., chose GM Diesels when they set up this rock-crushing plant. Tough GM Diesel power gives them production up to 170 tons per hour at a fuel cost of less than 10¢ per ton.

Because GM Diesels are 2-cycle engines, they provide power at every piston downstroke. They are built to "take it" on tough jobs such as this. They are cleanly designed and "easier to get at" should servicing become necessary. They are compact and easier to install.

All this makes the GM Diesel ideal for all kinds of construction work. If you have a tough, demanding construction job where dependable, low-cost power is a MUST—better get all the facts about these hard-working, husky GM Diesels.

DETROIT DIESEL ENGINE DIVISION

DETROIT 23, MICH. ● { SINGLE ENGINES . . Up to 200 H. P. / MULTIPLE UNITS . . Up to 800 H. P.

GENERAL MOTORS

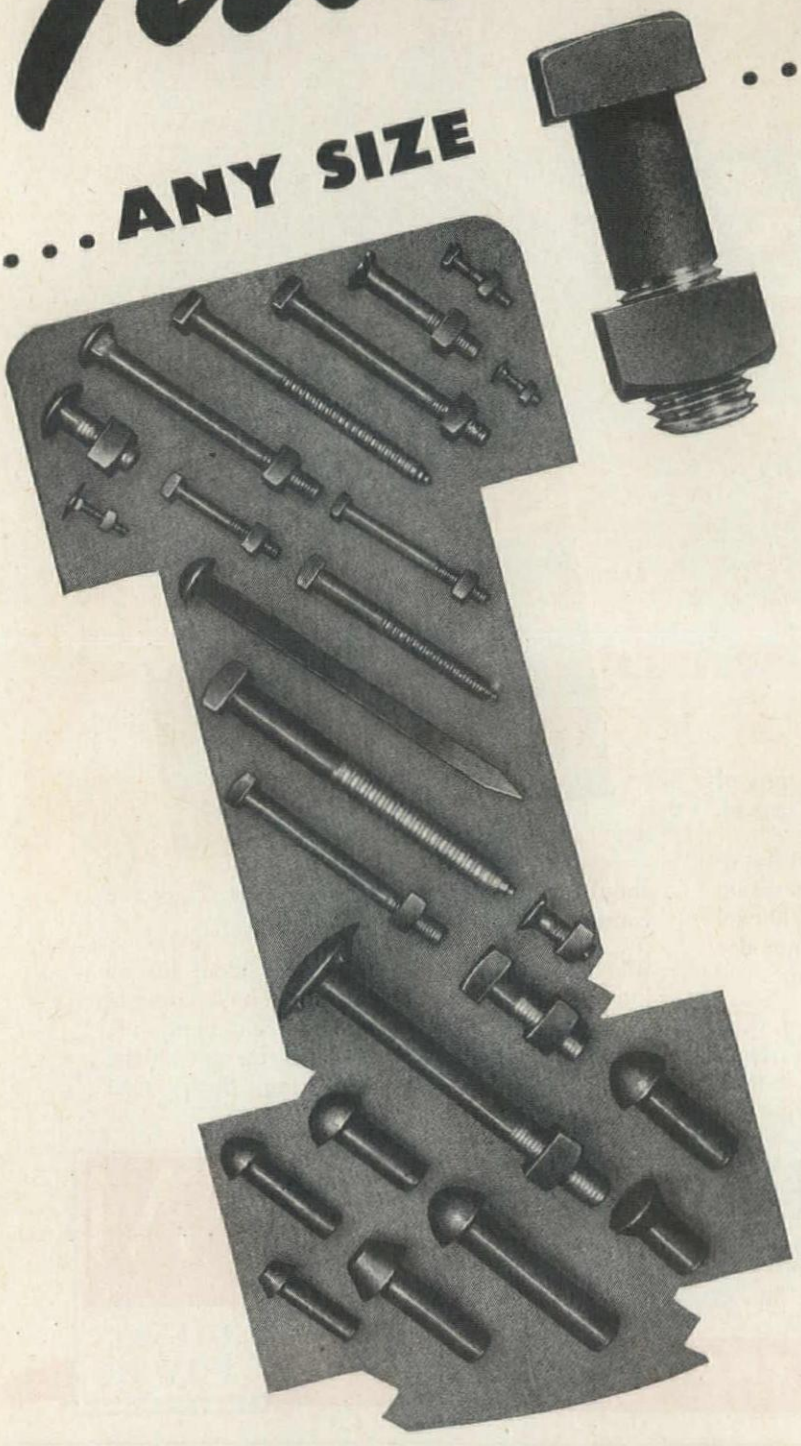
GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

Evans Engine & Equipment Co. SEATTLE 9, WASH.
Cate Equipment Co. SALT LAKE CITY, UTAH
Fred M. Viles & Company SPOKANE 8, WASH.
Mountain Tractor Co. MISSOULA, MONT.
Gunderson Bros. Equipment Corp. PORTLAND 9, ORE.
Olson Manufacturing Co. BOISE, IDAHO
Capitol Tractor & Equipment Co. SACRAMENTO, CALIF.
Anderson-O'Brien Co. LOS ANGELES 21, CALIF.

Fastenings

. . . ANY SIZE . . . ANY STYLE



Machine, carriage, lag, timber, plow, tap and blank bolts. Hot pressed, cold punched, semi-finished nuts. Rivets, spikes and round plate washers . . . . . These items and many more are included among Bethlehem Pacific's complete line of fastenings—a line so broad in scope that it comprises several hundred individual items.

If you manufacture or process mechanical equipment or if you do construction or maintenance work you'll find that Bethlehem Pacific fastenings meet your requirements. They're strong . . . dependable . . . precision-made.

Bethlehem Pacific is the largest full-line manufacturer of fastenings in the West. Complete and self-contained factories are located at Los Angeles, South San Francisco and Seattle to give rapid service to any industrial area.

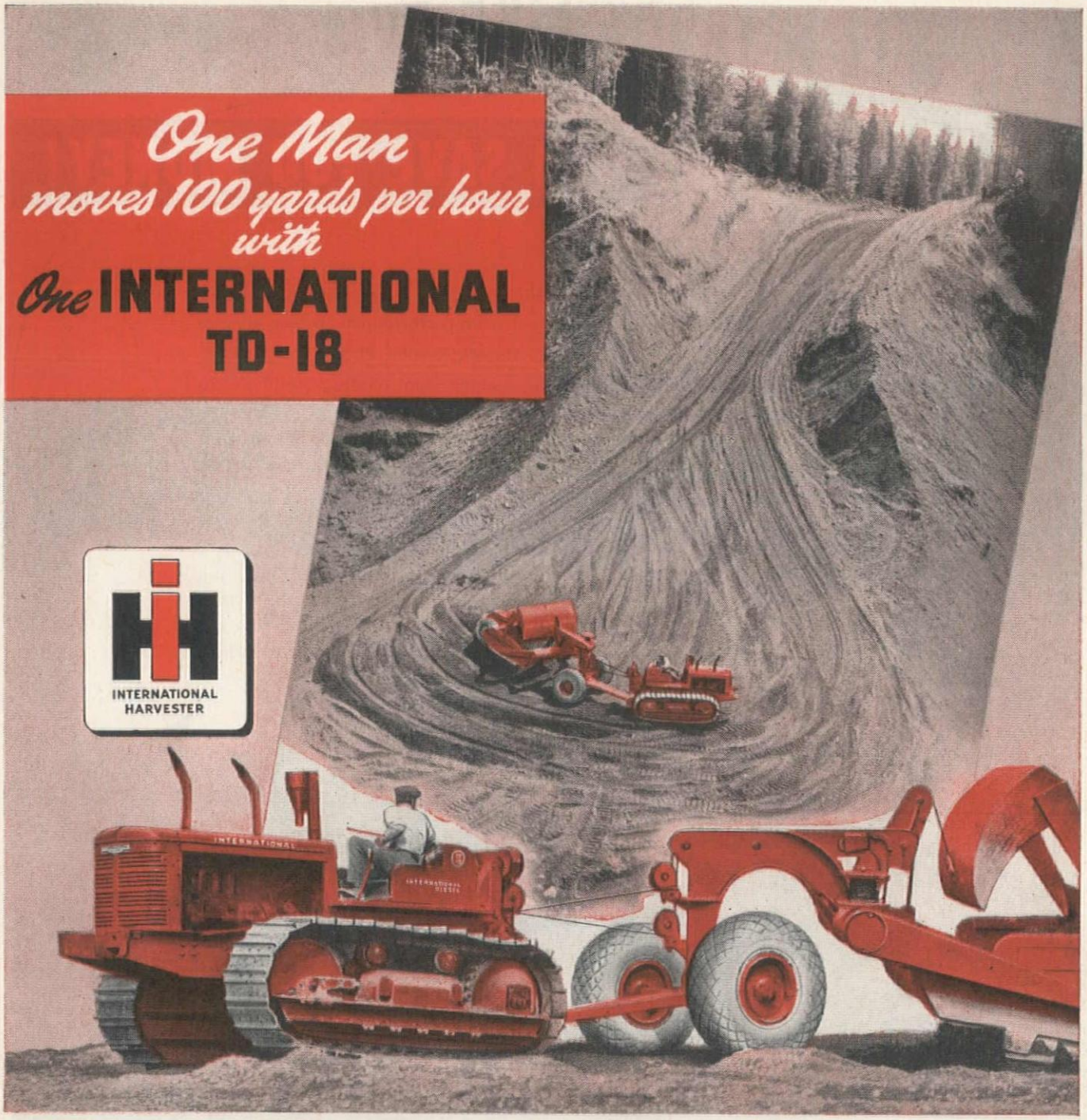
Whenever you need fastenings, large or small, standard or special, call the nearest Bethlehem Pacific office.

Bethlehem Pacific Coast Steel Corporation

Sales Offices: San Francisco, Los Angeles, Portland, Seattle, Salt Lake City, Honolulu

★ BETHLEHEM STEEL ★

BETHLEHEM PACIFIC



This one-man, International tractor and scraper unit moves 100 yards of earth to the fill in an hour! It's on a big road-building job for a logging company in the mountains of northwest Washington.

The International TD-18 Diesel has the power to lug its matched scraper without assistance, even through this hardpan and gravel. It has the maneuverability and secure footing to handle the load on steep grades as well as on the fill.

A lot of earth gets moved at minimum cost for labor, fuel and maintenance under these circumstances. That's why the demand for International Crawlers and matched earth-moving equipment becomes greater and greater every month.

Ask your International Industrial Power Distributor for the interesting facts about this and other tractors in the complete International line. Let him help select the power and equipment you require.

Industrial Power Division

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

INTERNATIONAL POWER

CRAWLER AND WHEEL TRACTORS · DIESEL ENGINES · POWER UNITS

READ WHY A TRUCK LIKE THIS

CAN SAVE YOU MONEY!

This truck—like every Dodge "*Job-Rated*" truck—is built to fit a specific hauling job.

It's powered with exactly the right one of 7 engines—plus the right gear ratio—to provide the pulling power the job requires, with maximum economy.

It's built with exactly the right clutch, transmission, rear axle—the right units throughout . . . for "top" performance, longer life, and maximum economy . . . on the job for which it was built.

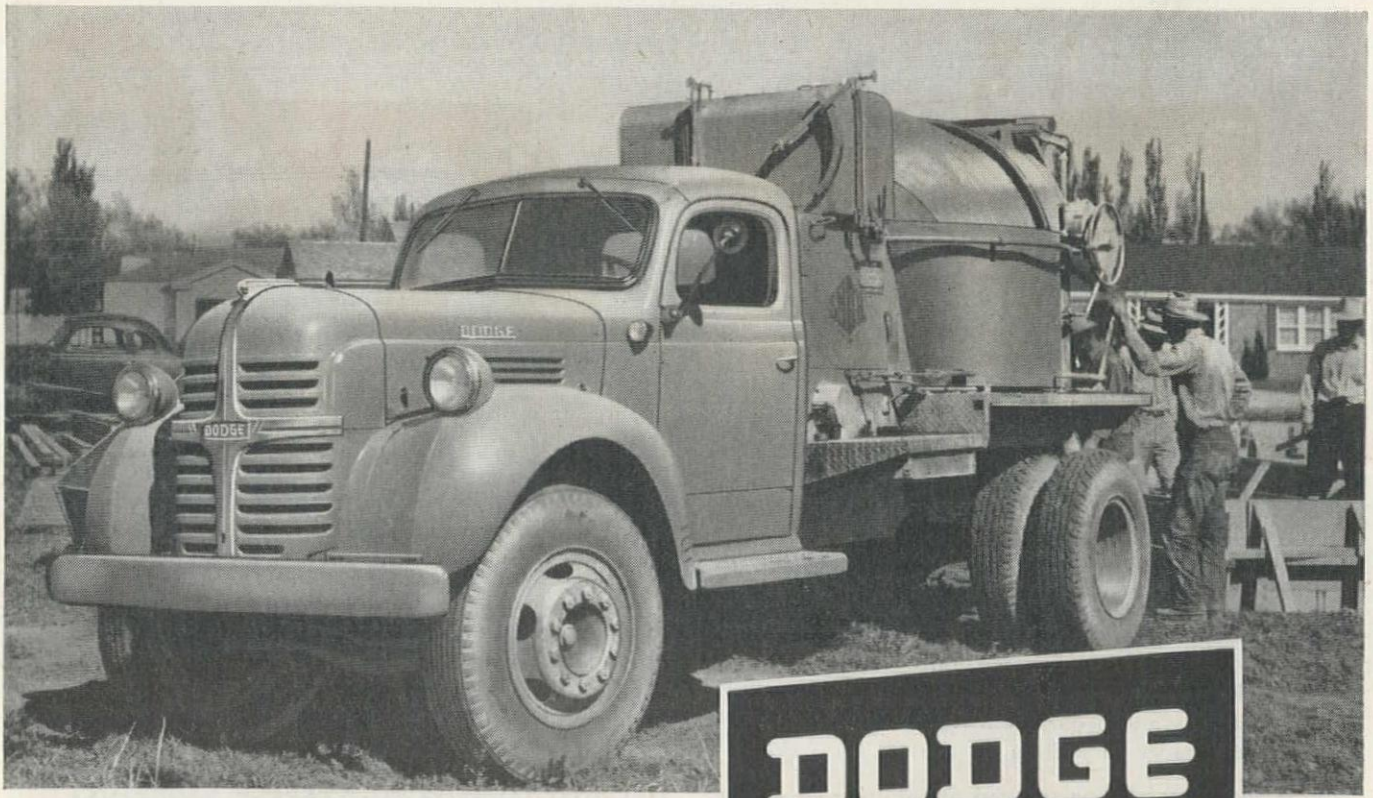
It stands to reason that a truck "*Job-Rated*" to haul *your* loads over *your* roads —will save YOU money!

You can get a truck to fit *your* job—a truck to give better performance, better service to your customers, and to save you money!

Simply explain your hauling problems in detail to your Dodge dealer. He has the engineering data from which to recommend the best truck investment you can make.

★ ★ ★

Your Dodge dealer is interested in your continued satisfaction: *First*, by selling you a truck that fits your job; *Second*, by giving you dependable Dodge truck service; *Third*, by providing you with truck parts that are identical with original Dodge "*Job-Rated*" truck parts.



DODGE

ONLY DODGE BUILDS "*Job-Rated*" TRUCKS

Fit the Job . . . Last Longer !

What becomes of them?

Last night another trainload of "Caterpillar" products rolled out of the yards. With the factory's peacetime production at an all-time high, such scenes are of daily occurrence.

So, you ask, why the "scarcity"? . . . What becomes of all these thousands of Diesel-powered tractors, engines, motor graders and units of earthmoving equipment?

That's a fair question. Especially if you are a customer who has been patiently awaiting delivery on an order. Here is the answer:

"Caterpillar" products have gained unprecedented demand that takes time to supply. It is a demand that has been built up through sheer excellence of quality . . . through tireless engineering research and job study that have made them better and better . . . through their illustrious war record and their versatility for serving many industries.

In fact, "Caterpillar" power has become woven into the very fabric of our economy and progress. Big-scale utility, reclamation and conservation projects could scarcely proceed without it. Agriculture needs it. Logging demands it. It is a "must" on highway construction and maintenance.

Mining, excavating, quarrying, oil drilling, community lighting, fishing, hatcheries, milling, cotton-ginning, machine shops, switching locomotives, factories—all find "Caterpillar" power a key to a successful public service.

So, you see, the "world of 'Caterpillar' Diesels" is a big one. The needs that "Caterpillar" must supply are many. The destinations of every trainload of "Caterpillar" products are widely scattered.

To allocate the factory's output is no small problem. Apportionment is fair — by regions and by industries. Priority of orders is the reasonable basis for customer deliveries. "Caterpillar" subscribes firmly to that principle. So do "Caterpillar" dealers, whose responsibility it is to carry it out. Each is a businessman of ability and integrity, who merits the confidence of his customers and his company.

Caterpillar Tractor Co., San Leandro, Calif.; Peoria, Ill.

CATERPILLAR
REG. U. S. PAT. OFF.
DIESEL ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

For Money In Your Pocket
PERFORMANCE . .

Resists Kinking

Being free from internal stress, it is always easy to handle—never fights back.

Spools Better

Even with a light load, it spools uniformly—is never cranky.

Takes Reverse Bends

Takes this "fatigue" much better, as on rope-ruining elevator installations.

Safer to Handle

Worn union-formed ropes handle as safely as new, as broken outer wires lie close to rope.

Always Relaxed

While it is flexible, and pliant, it has the "toughness" to withstand strain and weight.

Behaves on Grooves

Resists rotating or twisting in sheave grooves because wires are *Pre*formed.

. . Specify

union-formed

(preformed)

THE ULTIMATE IN LOW COST WIRE ROPE

Precision Constructed to OUTPERFORM *ordinary Wire Rope*

FIGHT! FIGHT! There is an exhausting fight going on all the time in ordinary wire rope. Each wire is fighting constantly to get out of the fixed position into which it is forced without any preliminary training to put it in shape. This internal fighting spoils the performance, cuts it short, doesn't give you a run for your money.

In **union-formed** Wire Rope each wire is put in shape (*Pre*formed) before it ever touches another wire in the rope. The result is exactly the same that comes from a set of conditioned muscles, i. e. finer coordination, greater endurance, top-flight kind of performance that does not let you feel out-of-pocket.

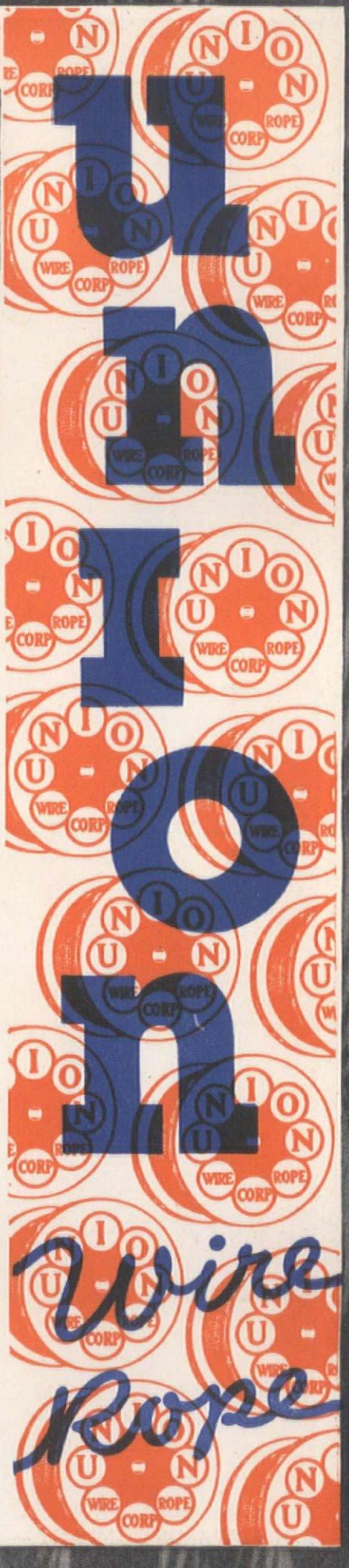
Yes sir! You will always get the most out of the best. The little extra you invest for the best is the part of your investment which will bring the payoff—yield the most dividends. Prove this fact to your own satisfaction. *Specify* **union-formed** — get money-in-your-pocket performance.

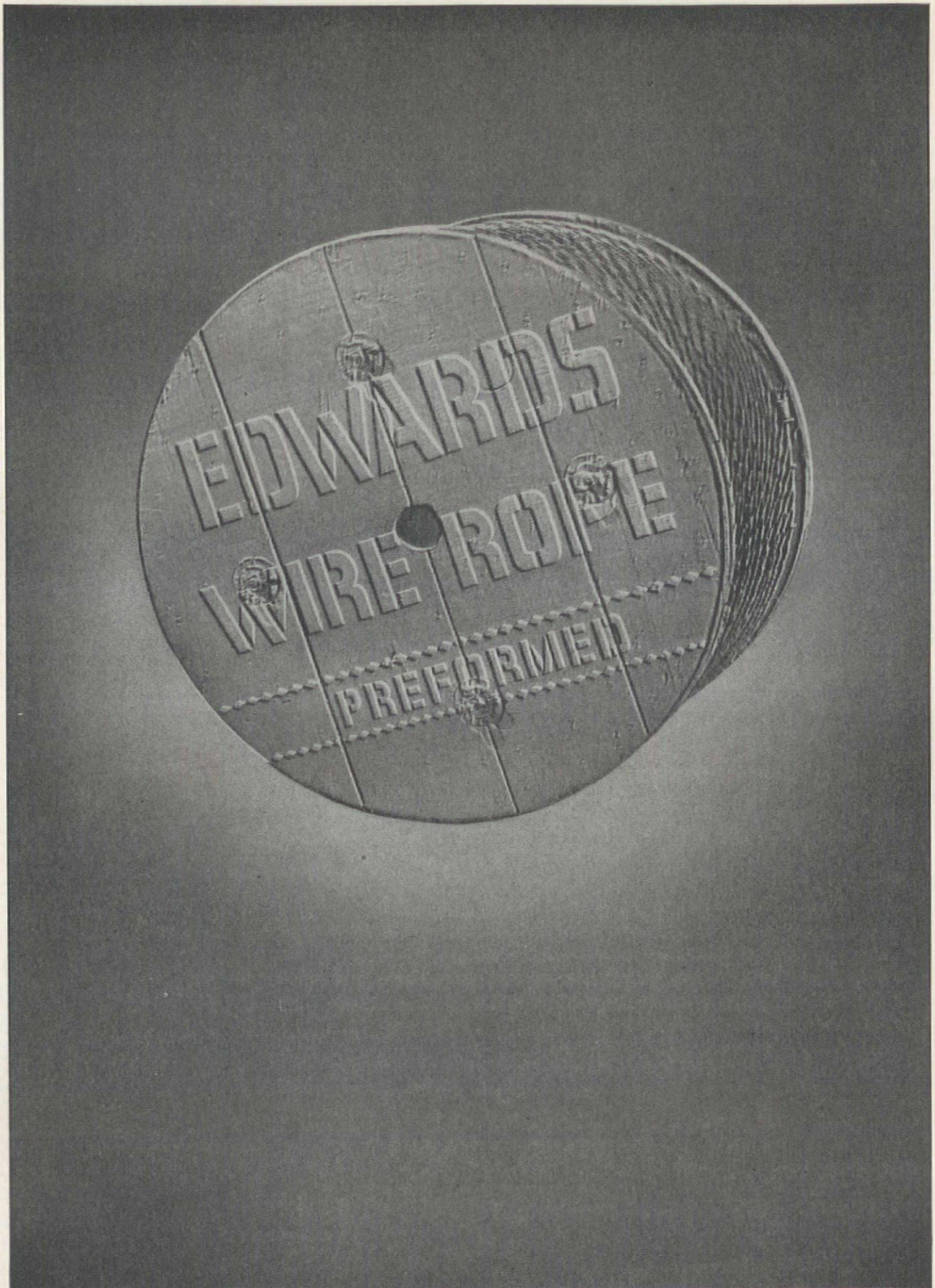
union Wire Rope

UNION WIRE ROPE CORPORATION

2146 Manchester Avenue Kansas City 3, Missouri

Tulsa 3 Houston 11 Chicago 6 Salt Lake City 13 New Orleans 16
Monahans, Tex. Portland 10, Ore. Ashland, Ky. Atlanta 1





. . . AND COMPETITIVE TESTS PROVE THAT LaPLANT-CHOATE SCRAPERS DO THE BEST JOB UNDER THE MOST CONDITIONS!

In the final analysis, *any make* of crawler tractor with sufficient horse-power will do a reasonably good job of handling a scraper. But when it comes to selecting *the right scraper,* it's an entirely different story. Some scraper outfits get heaping loads in double-quick time. Others take much longer — even with the aid of a pusher. Some will dump or carry a smooth spread in high gear, while others are slow and uncertain—especially in wet or bulky materials. Some scrapers make efficient use of tractor power — others burn it up by lugging around "an extra yard of dead-weight" that is strictly an extra cost item. The point is—regardless of what tractor you use, there's *a whale of a difference in scraper performance.* And that difference in the scraper alone can have an important bearing on your stripping or material handling costs. That's why more and more smart operators are picking up whatever tractors they can get—and standing pat on LaPlant-Choate Positive Forced Ejection Scrapers. Why LPC? Because competitive tests prove that under the varying conditions of scraper operation, La-Plant-Choate's improved rigs consistently deliver *highest average production at lowest over-all cost.* Just ask any recent LaPlant-Choate owner. LaPlant-Choate Manufacturing Co. Inc., Cedar Rapids, Iowa; 1022 77th Ave., Oakland, Calif.

LaPLANT-CHOATE

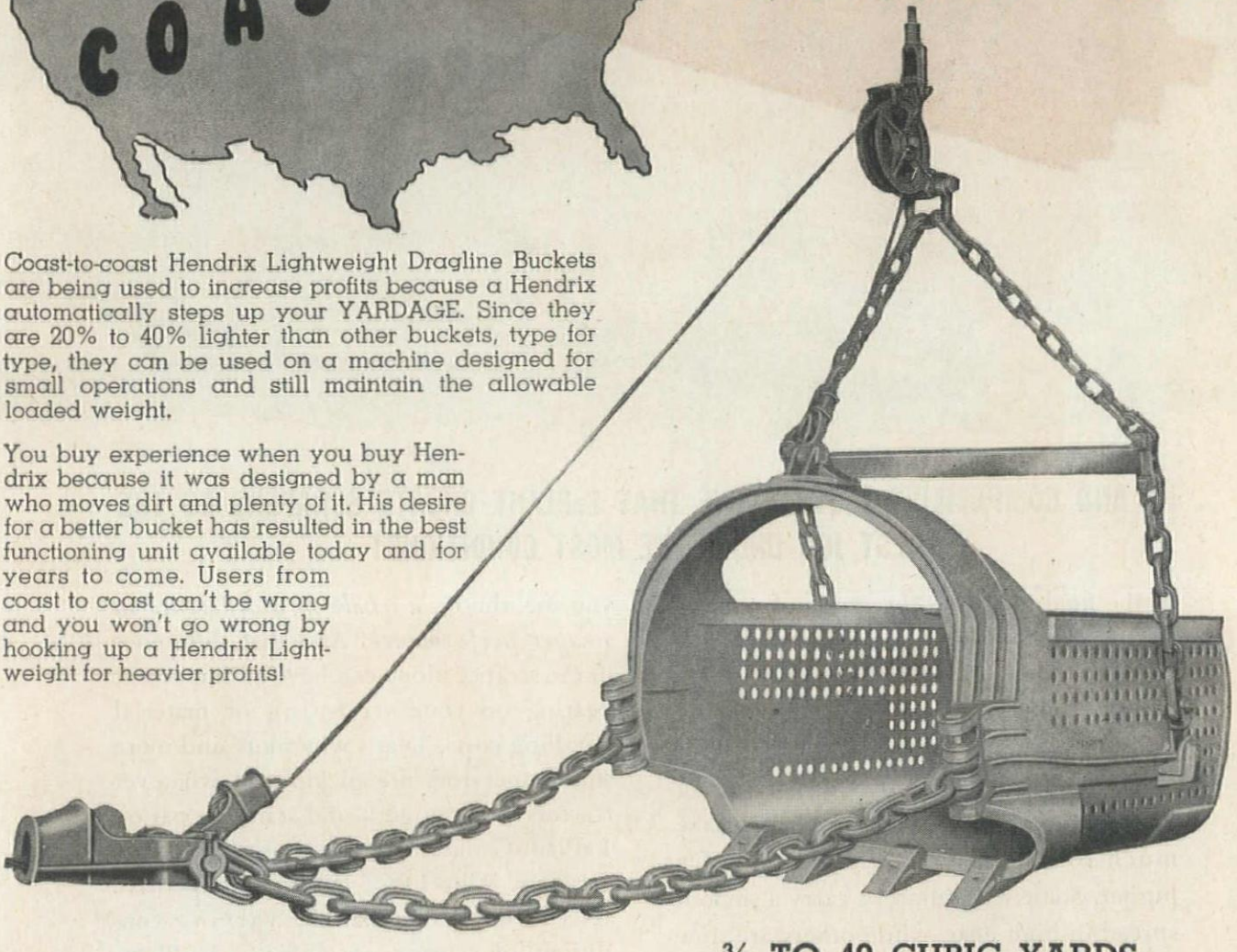
Positive FORCED EJECTION SCRAPERS

FIRST in value because they're **FIRST** in performance

HENDRIX BUCKETS ARE MAKING PROFITS

Coast-to-coast Hendrix Lightweight Dragline Buckets are being used to increase profits because a Hendrix automatically steps up your YARDAGE. Since they are 20% to 40% lighter than other buckets, type for type, they can be used on a machine designed for small operations and still maintain the allowable loaded weight.

You buy experience when you buy Hendrix because it was designed by a man who moves dirt and plenty of it. His desire for a better bucket has resulted in the best functioning unit available today and for years to come. Users from coast to coast can't be wrong and you won't go wrong by hooking up a Hendrix Lightweight for heavier profits!



- ★ **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 digging.**
- ★ **Perfect Balance; handles easier, fills faster, dumps cleaner.**
- ★ **Three types: light, medium, and heavy duty. With or without perforations.**

⅜ TO 40 CUBIC YARDS

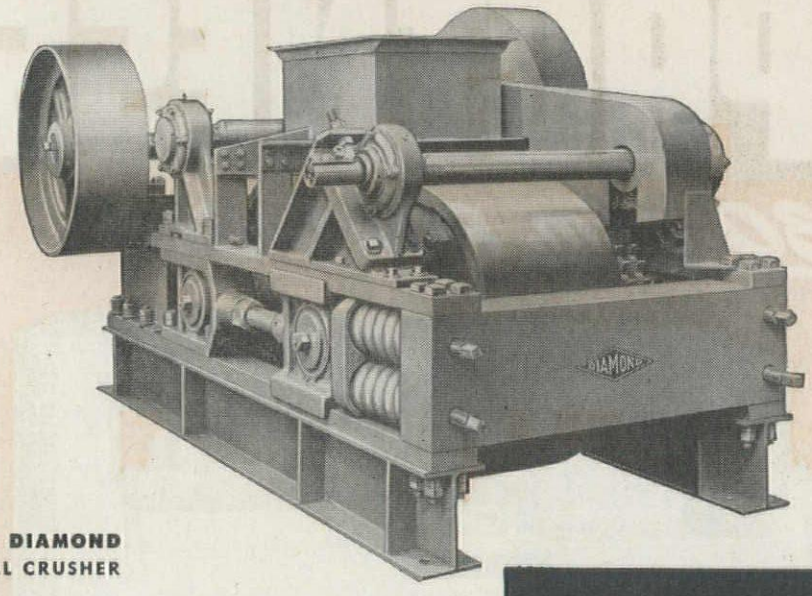
HENDRIX *Lightweight* **DRAGLINE BUCKETS**

Write for descriptive literature or ask your dealer

HENDRIX MANUFACTURING COMPANY
MANSFIELD INCORPORATED LOUISIANA

A BRUTE WITH ABILITY...

TO TAKE LONG TIME PUNISHMENT



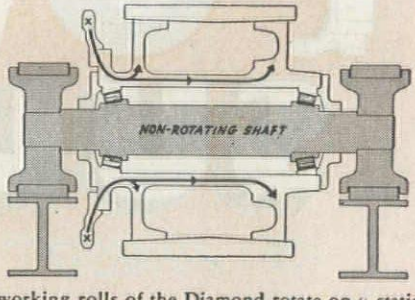
THE **DIAMOND**
ROLL CRUSHER

THERE'S NOTHING TOUGHER THAN A DIAMOND

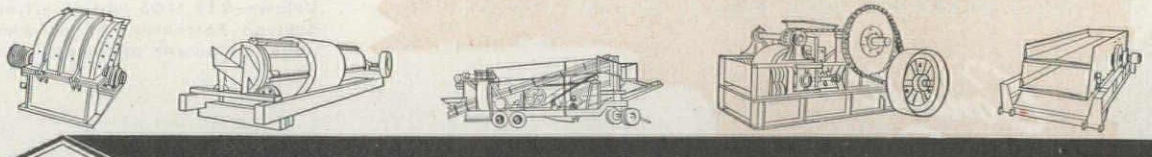
Any Owner of a DIAMOND Roll Crusher Will Tell You...

Diamond Roll Crushers, of whatever size, are designed throughout for ample margin over rated capacity. Years of watchful experience are engineered into every part—the experience of cooperating owners throughout the world—operators who have consistently improved their profits with Diamond-engineered equipment.

SEVERAL REASONS WHY...



The working rolls of the Diamond rotate on a stationary shaft. Internal housing allows larger roller bearings—more rollers to take the punishment. Rolls are driven through large cast steel sprockets bolted directly to the roll-head, totally relieving twisting stress on shaft. .the DIAMOND can take more punishment. *Your Diamond dealer has Bulletin D-45C—for full specifications.*



DIAMOND IRON WORKS, INC.
AND THE MAHR MANUFACTURING COMPANY DIVISION
MINNEAPOLIS 11, MINNESOTA

YOUR NEAREST DIAMOND DEALER FOR SALES AND SERVICE

Los Angeles . . . GARLINGHOUSE BROS.	*Denver* . CONSTRUCTORS EQUIPMENT CO.	*Boise* . . . . WESTERN EQUIPMENT CO.
Seattle . . . . . A. H. COX & CO.	*Salt Lake City* . FOULGER EQUIPMENT CO.	*Spokane* . . . WESTERN EQUIPMENT CO.
	San Francisco . . C. H. GRANT COMPANY	

Cut Truck-loading Time...

Barber-Greene

Cut Stock-piling Costs...

Speed up—*and Save*—with B-G "Portables"!

Trucks can make round trips faster if you turn over your loading problems to one or more B-G Portable Conveyors—and stock-piling service is a "natural" for them, too.

Used singly or in "teams," B-G portable Conveyors carry sand, crushed rock, coal and other bulk materials at a constant flow that means fast, low-cost loading, unloading and stock-piling. Power consumption is low, maintenance is negligible.

The B-G Heavy-duty Portable Conveyors shown above are only examples of the many popular types and capacities in the broad Barber-Greene line. See your Barber-Greene distributor.

Standardized construction: B-G "Portables" are easily lengthened or shortened by simple addition or removal of sections.

◆

Highly portable for travel—readily moved around the job.

◆

Wide variety of types and capacities—including crawler mounted B-G Stackers up to 150 feet in length.

◆

Available with either electric or gasoline power.

BARBER-GREENE COMPANY · AURORA, ILLINOIS

Constant Flow Equipment

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

For Sale By: Brown-Bevis Equipment Co., Los Angeles 11, California and Phoenix, Arizona; Columbia Equipment Co., Spokane and Seattle, Washington, Boise, Idaho, Portland 14, Oregon; Wilson Equipment & Supply Co., Cheyenne and Casper, Wyoming; Contractors Equip. & Supply Co., Albuquerque, New Mexico; Ray Corson Machinery Co., Denver 2, Colorado; Jenison Machy. Co., San Francisco 7, California; Western Construction Equipment Co., Billings and Missoula, Montana; Kimball Equipment Company, Salt Lake City 10, Utah.

TWO YEARS OF USE PROVE SUPREMACY!

ATLAS ROCKMASTER

The original milli-second delay blasting system

Gives 4 Outstanding Results

All over the country blasters are recommending Rockmaster for new blasting efficiency. They claim that it yields more rock ready for the shovel, increases fragmentation, reduces "back break," eliminates complaints about noise and vibration even when more holes are fired. They ought to know what Rockmaster will do. *They've been using it* since 1945!

In quarries, strip pits, on construction work, even underground in many cases, Rockmaster has increased production by as much as 30 percent!

Part of the Rockmaster system is a split-second delay that enables you to time the delay elements of your shots within thousandths of a second—a degree of control heretofore impossible. In 1946 alone, over 2,000,000 blasting detonators which control this delay have been sold!

Yes, time has proved that Rockmaster *gives results*—the kind of results that really count. But be sure you get the genuine, original Rockmaster. Talk over your problems with the Atlas representative. He's had two years of experience in split-second delay blasting, giving a background of know-how that cannot be gained in any other way.

1. **MORE ROCK READY FOR SHOVEL**
2. **BETTER FRAGMENTATION** Less secondary blasting. Shovel efficiency increased as much as 30%.
3. **FAR LESS "BACK BREAK"** behind your shots.
4. **MINIMUM NOISE AND VIBRATION** even though more holes are fired.

Less Bark

More Bite

Offices in Principal Cities

"ROCKMASTER"—Trade Mark

ATLAS EXPLOSIVES *"Everything for Blasting"*

CHEMICALS ATLAS EXPLOSIVES

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

JUST AS TOUGH AS THEIR BIG BROTHERS

You'll find Worthington Accessories as worthy of the Blue Brute name as the Rock Drills, Air Tools, Compressors and other "big shots" in this famous line. Air Hose, Paving Breaker Moil Points and Chisel Bits — Rock Drill Steel and Bits — Line Oilers, Valves, Couplings, etc. — all made to Blue Brute standards and thoroughly tested for the job to be done.

Save time, labor and money. Make sure you're equipped with genuine Blue Brute accessories for all mining or construction work. Rugged, hard working, always dependable, they'll quickly prove to you that *there's more worth in a Blue Brute.*

H7-8

BUY BLUE BRUTES

KNOW YOUR

BLUE BRUTES

Your Blue Brute Distributor will be glad to show you how Worthington-Ransome construction equipment will put your planning on a profitable basis.

RANSOME EQUIPMENT

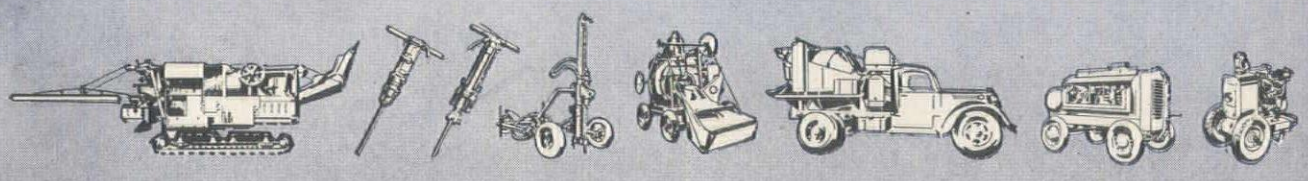
Pavers, Portable and Stationary Mixers, Truck Mixers, Pneumatic Placing and Grouting Equipment and Accessories.

WORTHINGTON EQUIPMENT

Gasoline and Diesel Driven Portable Compressors, Rock Drills, Air Tools, Self-Priming Centrifugal Pumps and Accessories.

WORTHINGTON

Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division, Holyoke, Mass.



IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

BASKETBALL or BAKERY!

FULLER FLOOR FINISHES TAKE THE TRAFFIC

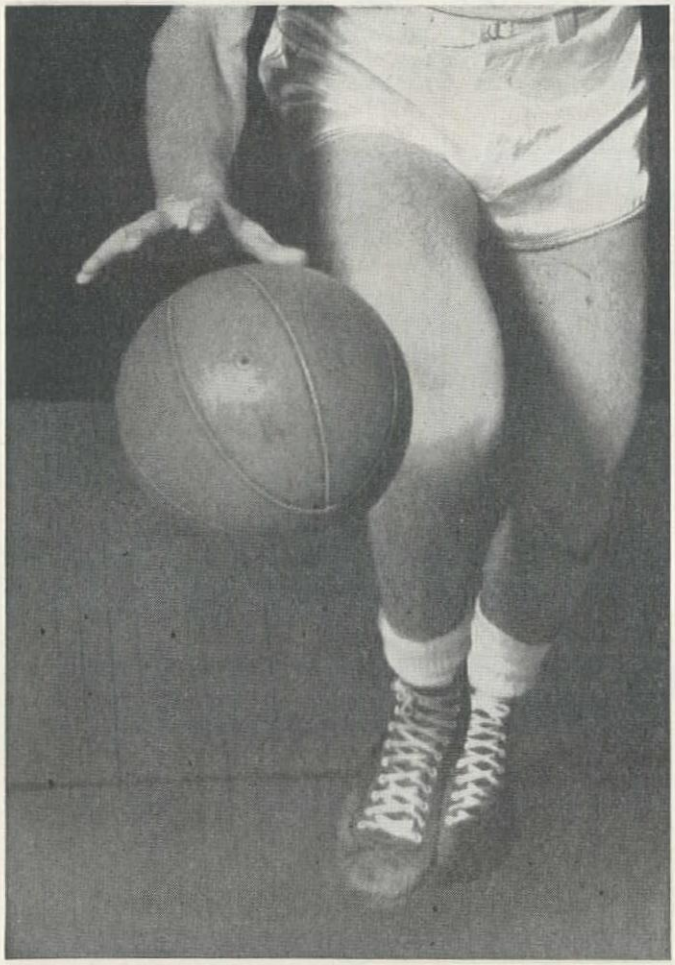
Yes, big buyers have given Fuller Floor Finishes scientific wear-tests, *in open competition*—and bought Fuller!

Yet, the tests we like best are the daily beat of a million feet in auditoriums, gymnasiums, institutions, schools, industrial plants and public buildings. You'll find that sort of *proof in use* on floors all over the West!

Isn't that the kind of floor preservation service you want to specify to your clients—for new construction, remodeling or maintenance contracts? Call Fuller first!

W. P. Fuller & Co., San Francisco, Los Angeles, Portland. Branches and Dealers throughout the West.

Traffic actually buffs Fuller Florcote to a soft sheen, easily and economically maintained. Florcote penetrates deep, hardens surface fibres of wood, leaves little surface film to scuff. Ideal for industrial floors where cleanliness and machine efficiency are mandatory!



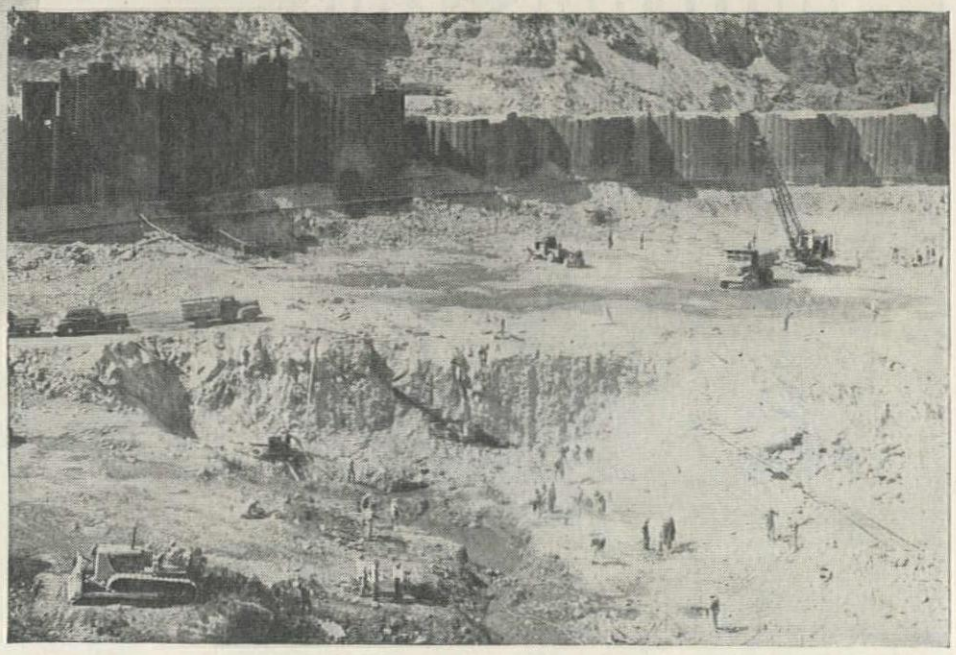
The score will "rough up" some of the fans, but the *play* won't scuff up these floors. Letters from recreation centers attest the enduring quality of Fuller Gymnasium Finish.

Approved by Maple Flooring Manufacturer's Association and the National Oak Flooring Manufacturer's Association. Fuller Gymnasium Finish! Dries to non-glaring, non-skid, rubber-burn-resisting surface. Non-reactive to water and common cleaning alkalies. Goes on easily with lambs wool applicator, mop or brush.

Du Pont Dynamites Help Build Allatoona Dam

Southern project using over half a million pounds of explosives

Loading Du Pont Special Gelatin in jackhammer hole in solid rock at dam site.



General view of Allatoona Dam construction on Etowah River in northwest Georgia.

In blasting operations incidental to construction of the $17,000,000 Allatoona Dam in northwestern Georgia, Du Pont dynamites played an important part.

Work began on the flood control and power project about a year ago and dynamite came into use right from the start. Straight accessroads—an early necessity—were blasted out of hillsides . . . track beds to haul supplies were constructed through virgin forest land from main highways and rail lines . . . and at the dam site approximately 450,000 cu. yds. of rock were excavated. Well over 500,000 pounds of Du Pont dynamites were consumed.

Typical wall of rock being excavated for dam foundation.

For blasting purposes, the National Constructors, Inc., an organization formed by Arundel Corp., Baltimore, L. E. Dixon Co., San Gabriel, Calif., and Hardaway Contracting Co., Columbus, Ga., relied upon three popular and widely used Du Pont dynamites:

Du Pont Special Gelatin 40%—an economical, all-purpose, all-weather dynamite. Powerful... water-resistant.

Du Pont "Red Cross" Blasting No. 3 (Free Running)—an economical, low-velocity dynamite for easy loading in ragged holes.

Du Pont "Gelex" No. 2—semi-gelatinous, moderately water-resistant dynamite—also economical.

These dependable dynamites meet most blasting requirements such as those encountered on the Allatoona job. They provide the water-resistance under wet conditions, and they produce necessary fragmentation desired to facilitate handling the rock. In addition, more than 56,000 Du Pont Electric Blasting Caps . . . both instantaneous and delays . . . have been purchased for work on the project.

Whatever the job . . . large or small . . . if there's blasting to be done, Du Pont Explosives, blasting supplies and accessories are available to speed the work and help contractors maintain important operating schedules. Ask the Du Pont Explosives representative in your area for complete information.

E. I. du Pont de Nemours & Co. (Inc.), Hoge Bldg., Seattle, Wash.—Old National Bank Bldg., Spokane, Wash.—Midland Savings Bldg., Denver, Colo.—111 Sutter Street, San Francisco, Calif.

DU PONT EXPLOSIVES

Blasting Supplies and Accessories

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

DU PONT
REG. U. S. PAT. OFF.

ALLIS-CHALMERS

First Again

NOW WITH 1,000 HOUR LUBRICATION

Truck Wheels
Front Idlers
Support Rollers

GREASING JOB IS EASY FOR THIS OPERATOR

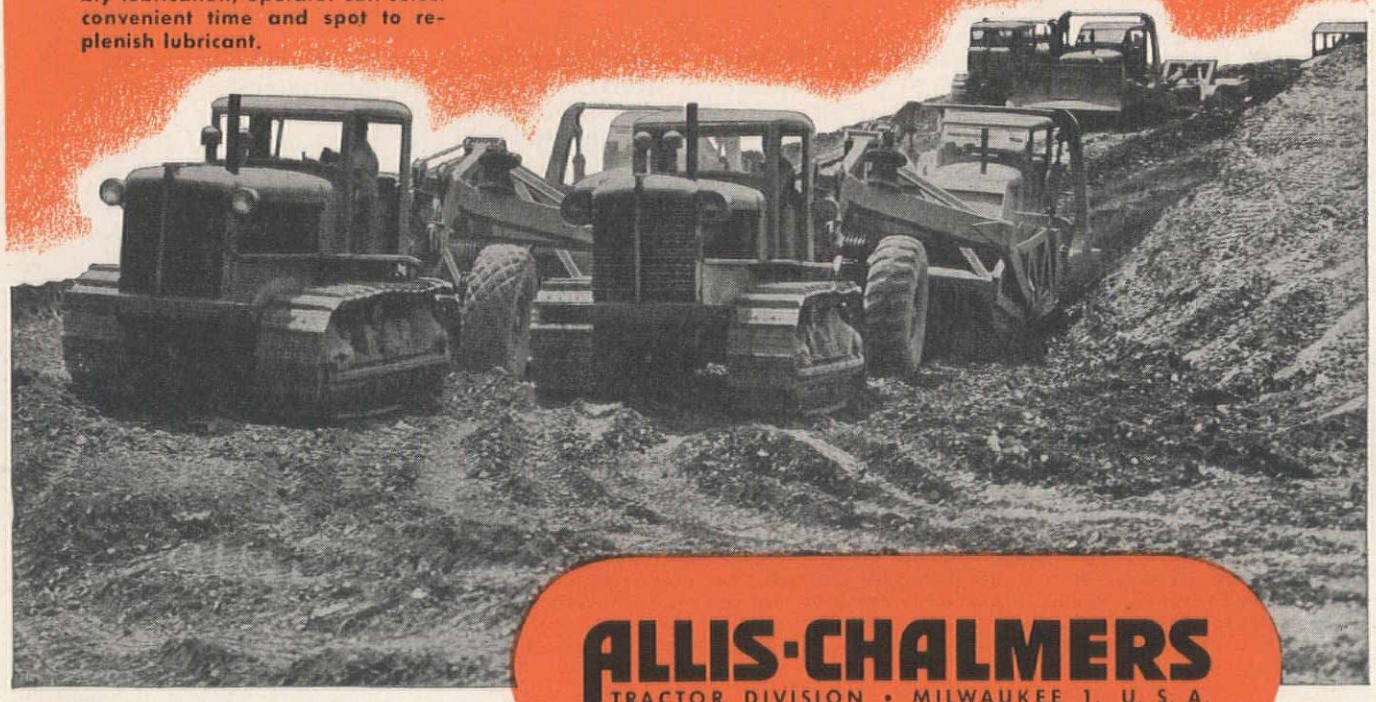
. . . no fighting through mud to reach truck wheels, front idlers and support rollers! With Allis-Chalmers' 1000-hour truck assembly lubrication, operator can select convenient time and spot to replenish lubricant.

"GOODBYE" to old-fashioned, expensive, time-consuming tractor maintenance methods.

NOW . . . truck wheels, idlers and support rollers on all Allis-Chalmers crawler tractors are GREASE-PACKED at the factory. Lubricant needs only to be replenished . . . not replaced . . . once every *1,000 hours*. That's . . . ONCE IN SIX MONTHS . . . on a 40-hour week basis! This long interval is made possible by taking full advantage of the improved Positive Seal, *exclusive in A-C tractors*.

What it means! Relieves you of the responsibility of frequent lubricating attention . . . results in less down time for greasing or repairs . . . considerably reduces lubricant cost . . . adds a factor of safety by assuring adequate lubrication for long operating periods. Result — your maintenance cost is reduced and tractor operating life extended.

For the full story of this and other features which make Allis-Chalmers tractors steady, high yardage movers, contact your Allis-Chalmers dealer.



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

Cut construction costs

. . . with low-cost aggregates

● In times like these, everything possible must be done to cut the high costs that are retarding construction work of all kinds. Modern crushing and screening plants with low operating and maintenance costs and high capacities will lower the cost of producing one of the basic raw materials. Cedarapids offers the Junior Tandem for that job.

It's a complete gravel crushing and screening plant that can be quickly converted to a crushed stone plant simply by adding a Cedarapids portable primary. The addition of a washing plant converts the Junior Tandem to a multi-sized washed gravel and stone plant. Here's flexibility, portability and economy that mean low-cost aggregates for every construction job.

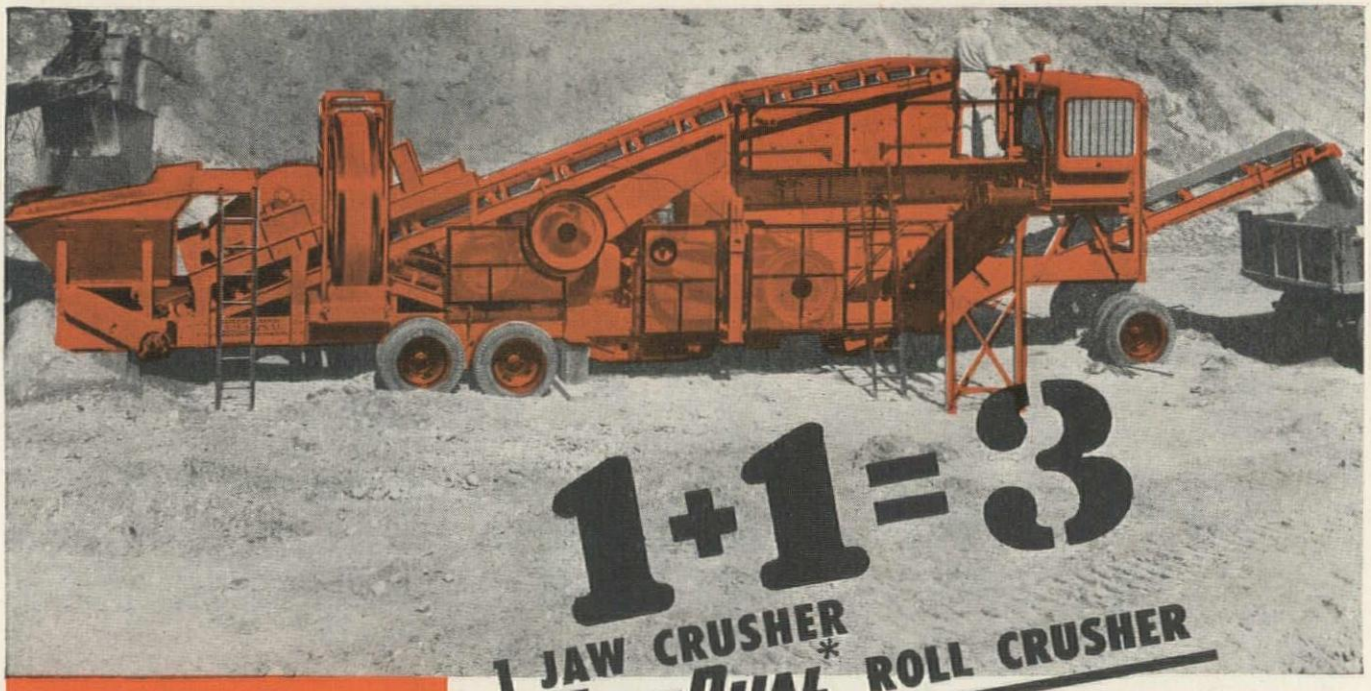
You can feed a Junior Tandem with a shovel, dragline or with any of the other standard feeding units, move it wherever necessary, set it up for operation with the minimum of time and expense and crush and screen whatever is available close to the job.

When you buy a crushing plant—buy the best—buy Cedarapids. Better get the facts from your nearest Cedarapids dealer today.

The Iowa Line *of Material Handling Equipment Is Distributed by:*

HOWARD-COOPER CORP., Seattle, Washington, Portland, Eugene and Central Point, Oregon; HALL-PERRY MACHINERY CO., Butte, Great Falls, Missoula, and Billings, Montana; INTERMOUNTAIN EQUIPMENT CO., Boise and Pocatello, Idaho, and Spokane, Washington; WORTHAM MACHINERY CO., Cheyenne, Wyoming; KIMBALL EQUIPMENT CO., Salt Lake City, Utah; BROWN-BEVIS EQUIPMENT CO., Los Angeles, California; H. W. MOORE EQUIPMENT CO., Denver, Colorado; EDWARD F. HALE CO., Hayward, California; ARIZONA-CEDAR RAPIDS CO., Phoenix, Arizona; R. L. HARRISON CO., INC., Albuquerque, New Mexico; SIERRA MACHINERY CO., Reno, Nevada.

Iowa Manufacturing Company, Cedar Rapids, Iowa, U. S. A.



1+1=3

1 JAW CRUSHER
1 TWINDUAL* ROLL CRUSHER
3 STAGES OF REDUCTION

THE AMAZING NEW UNIVERSAL TWINDUAL* MASTER

Here's the first really new and advanced post-war gravel plant. Size for size and weight for weight the **TWINDUAL*** MASTER has no equal for production. Under identical pit conditions it has out-produced larger, conventional model plants by 50 to 100%. **TWINDUAL*** Rolls give two stages of secondary reduction and provide amazing capacity with savings in weight and power. Permits 100% wider primary discharge opening, doubling jaw crusher capacity and reducing jaw wear. For the first time, 3 full stages of reduction in a complete single-unit gravel plant. *First* stage—JAW CRUSHER; *second* and *third* stages—**TWINDUAL*** ROLLS. Universal "Stream-Flo" Engineering again sets the standard for profit-making production and ready portability. For TOP CAPACITY at lowest cost per yard investigate the new **TWINDUAL*** MASTER.

WRITE FOR BULLETIN No. 682

•

UNIVERSAL ENGINEERING CORPORATION
323 Eighth Street N. W. Cedar Rapids, Iowa

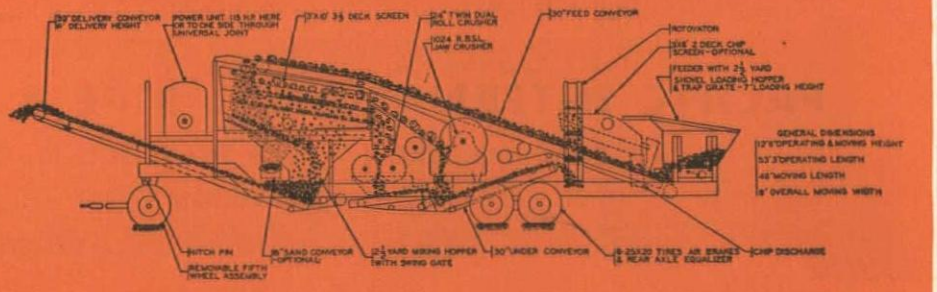
*PATENTED

CONTRACTORS EQUIPMENT CORPORATION
1215 S. E. Grand Avenue
Portland 14, Oregon

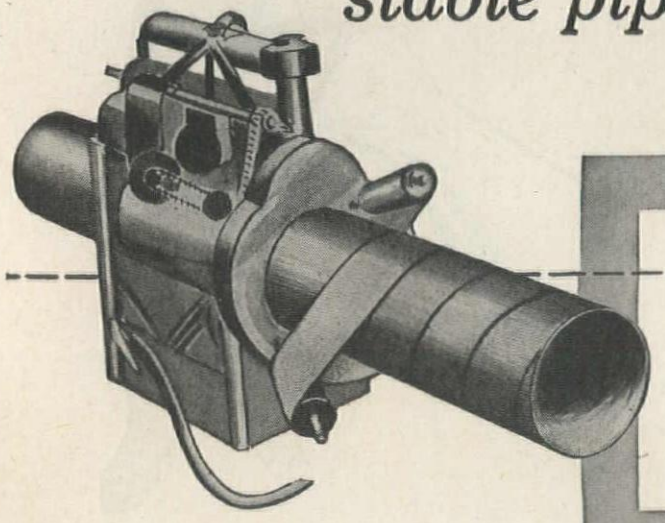
INDUSTRIAL EQUIPMENT COMPANY
4441 Santa Fe Ave., Los Angeles, Calif.
10911 Russet Ave., Oakland 3, Calif.
150 N. Virginia St., Reno, Nevada

J. K. WHEELER MACHINERY COMPANY
171 West S. Temple
Salt Lake City 1, Utah

OLSON MANUFACTURING COMPANY
P. O. Box 1487
Boise, Idaho

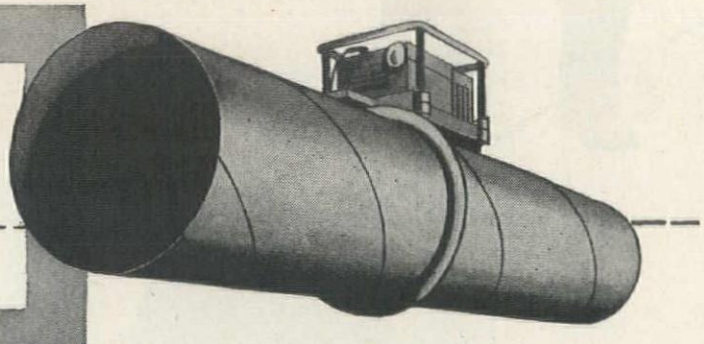


The economics of cathodic protection require the use of stable pipe protection



plus modern methods of application

and electrical inspection



Barrett Coal-tar Enamels, because of their low-moisture absorption under varying conditions of the soils, provide a constant, uniform and long-lasting stable underground insulation.

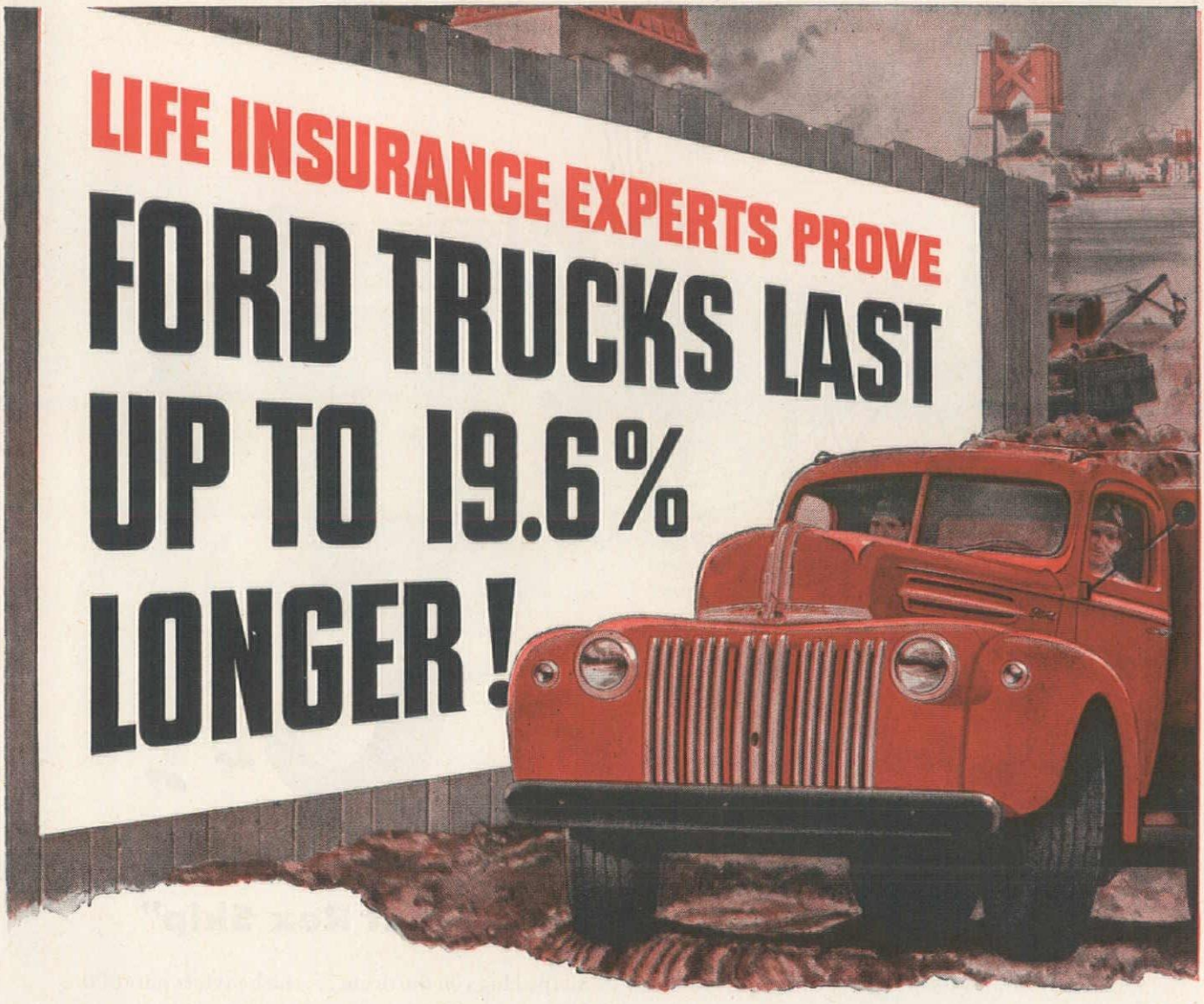
Mechanically applied by modern methods, these coal-tar enamels assure the proper continuity of the insulation.

Electrical inspection improves the quality of application and the handling of pipe during construction and, together with a pipe protection of stable dielectric strength, makes cathodic protection economical. This combination permits the use of a minimum number of cathodic protection units, spaced the maximum distance, and a minimum investment in the complementary electrical protection. A dependable procedure when designing corrosion-proof pipelines.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

FIELD SERVICE: The Barrett Pipeline Service Department and staff of Field Service men are equipped to provide both technical and on-the-job assistance in the use of Barrett Enamel.

Barrett
COAL-TAR ENAMEL
Reg. U. S. Pat. Off.



LIFE INSURANCE EXPERTS PROVE FORD TRUCKS LAST UP TO 19.6% LONGER!

NO LONGER need you guess about which make of truck to buy! Now you can know, beforehand, *which* one of all five sales leaders has delivered the longest service, which has the longest life-expectancy! Ford!

And the proof is *certified* proof! Certified by the same scientific methods used by life insurance companies in computing their rates!

4,967,000 Trucks Studied. Wolfe, Corcoran and Linder, noted New York Life Insurance Actuaries, assembled the records of all trucks of the five sales leaders registered from 1933 through 1941—a total of *4,967,000* trucks! Then they prepared *truck* life-expectancy tables in the same identical manner in which they prepare *human* life-expectancy tables for life insurance companies.

Ford Wins! Up to 19.6% longer life for Ford Trucks! Up to 19.6% longer life than the four other sales leaders! That's what the certified truck life-expectancy tables prove! The reason? Ford knows how to build trucks to last longer. Ford Trucks are built stronger! See your Ford Dealer today. He'll show you why it's good business to wait for the truck with the longest life-expectancy—Ford!

Certified proof

FORD TRUCKS LAST LONGER

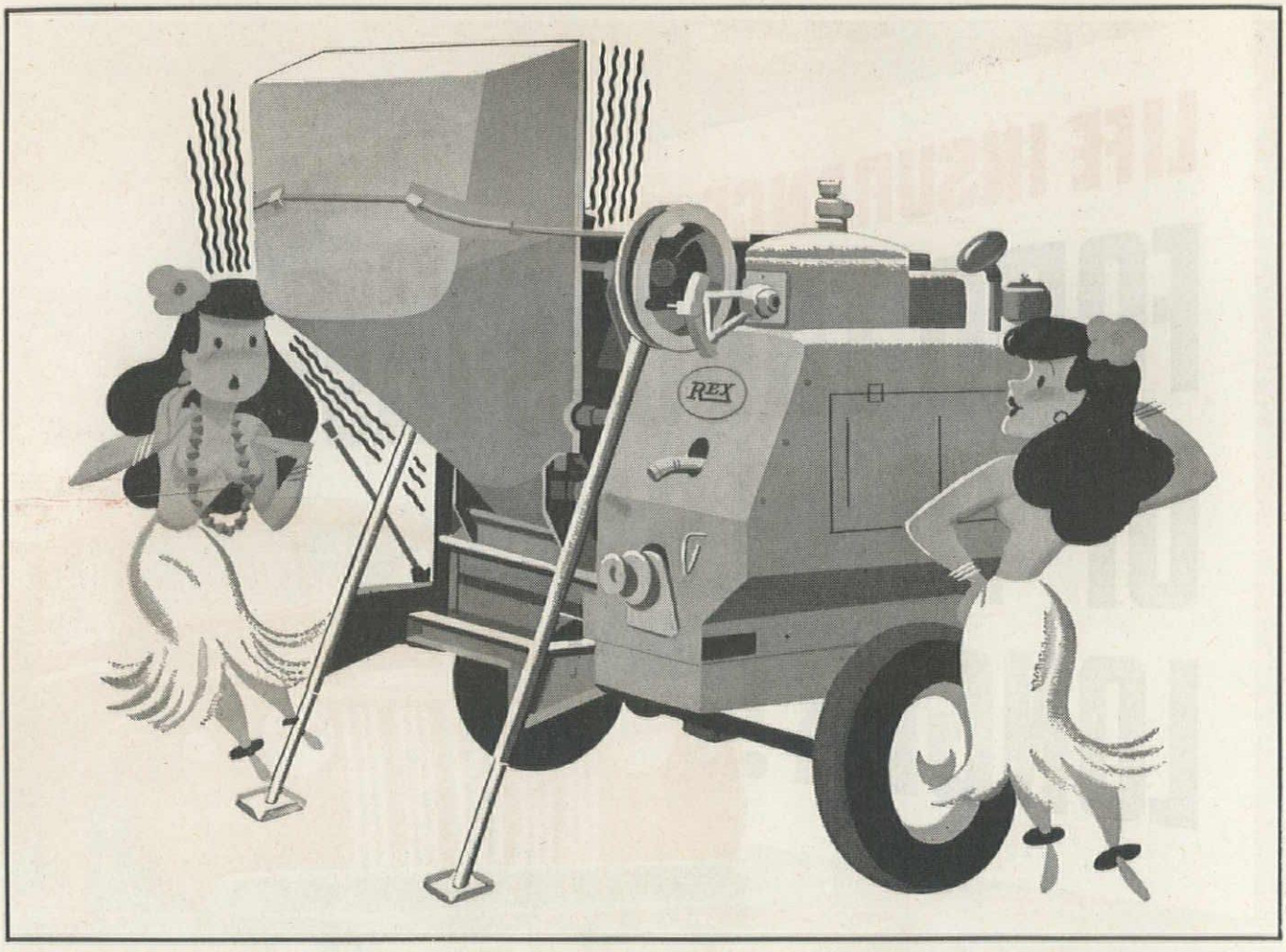
The life-expectancy of a Ford Truck is:

13.1% longer than that of Truck "B"
3.2% longer than that of Truck "C"
7.6% longer than that of Truck "D"
19.6% longer than that of Truck "E"

OFFICIAL ACTUARIAL CERTIFICATE

Based on the application of sound and accepted actuarial methods to the actual experience as measured by truck registrations, we hereby certify that, in our opinion, the accompanying table fairly presents the relative life-expectancy of the trucks involved.

WOLFE, CORCORAN AND LINDER
Life Insurance Actuaries, New York, N.Y.



"Wish we could 'shimmy' like that Rex Skip"

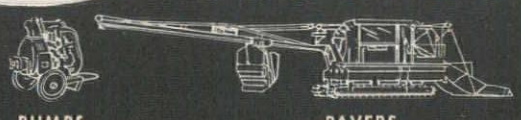
The Rex "Shimmy Skip" is in a class by itself when it comes to getting the batch into the drum faster! You don't have to pound it to get all the batch to drop. The "Shimmy Skip" provides just the right amount of snappy, shaking action . . . 304 sharp impacts per minute . . . for a clean, quick, time-saving charge that adds up to more batches per day . . . more yards per job . . . more profit for you.

The Rex "Shimmy Skip" is actuated by wedge-shaped lugs on the drum . . . the heaviest part of the mixer. As the drum rotates, these lugs engage shaker rollers on the skip, causing the "shimmying" action. There are no cams, gears, delicate adjustments, or fast wearing parts. There is no strain or extra wear on the skip . . . no extra burden on the transmission. Skip itself is sturdily built of heavy-gauge steel for maximum service life.

For all the facts, see your Rex Distributor.

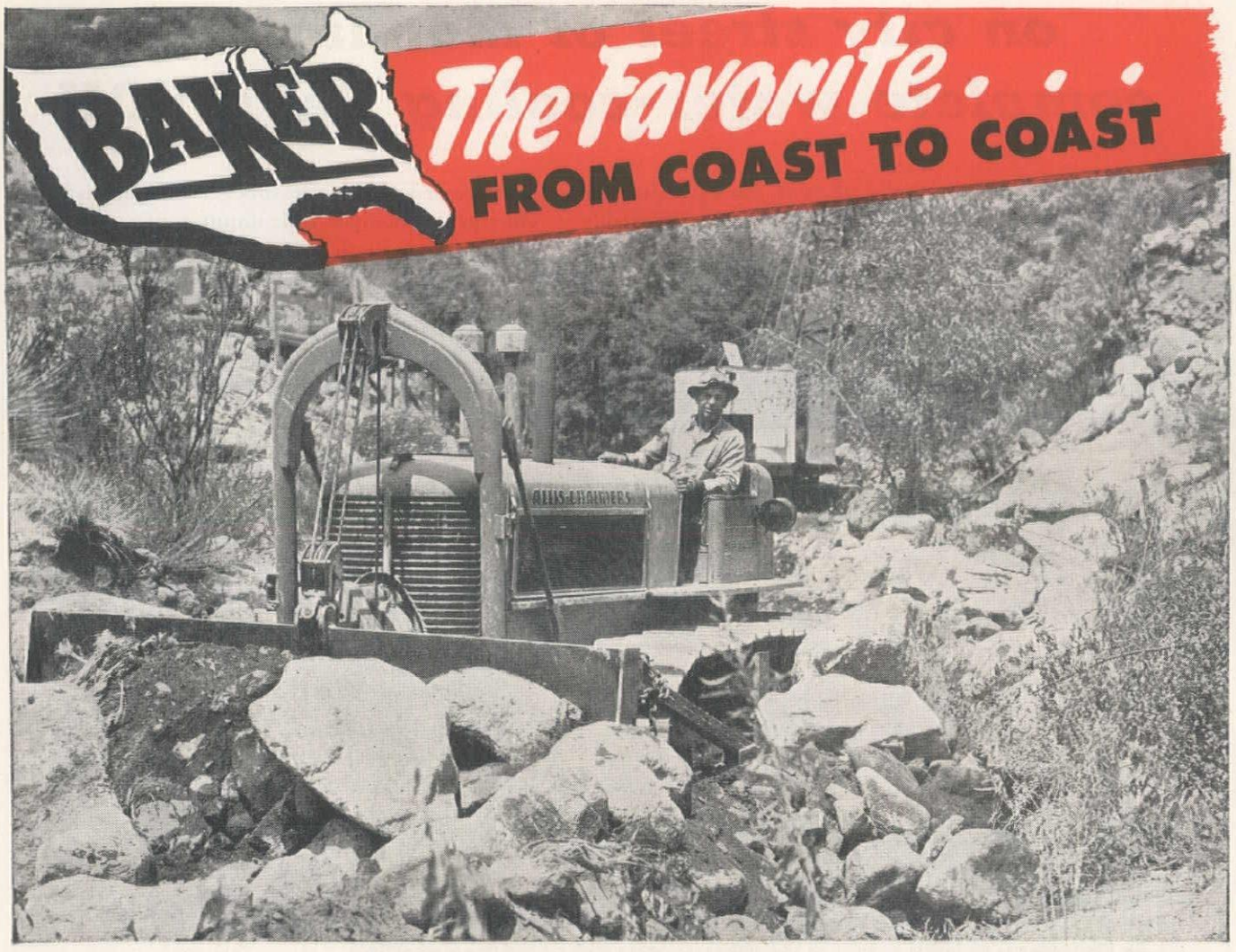
ARNOLD MACHINERY CO.	Salt Lake City 1, Utah
BOW LAKE EQUIPMENT COMPANY, INC.	Seattle 80, Washington
BROWN-BEVIS EQUIPMENT CO.	Los Angeles 11, California
BROWN-BEVIS EQUIPMENT CO.	Phoenix, Arizona
CONSTRUCTION EQUIPMENT CO.	Spokane, Washington
CONTRACTORS EQUIPMENT AND SUPPLY CO.	Albuquerque, New Mexico
RAY CORSON MACHINERY CO.	Denver, Colorado
HALL-PERRY MACHINERY CO.	Butte, Montana
INDUSTRIAL EQUIPMENT CO.	Oakland 3, California
INTERMOUNTAIN EQUIPMENT CO.	Boise, Idaho
LOGGERS & CONTRACTORS MACHINERY CO.	Portland, Oregon

REX CONSTRUCTION MACHINERY



PUMPS PAVERS PUMPCRETES MOTO-MIXERS MIXERS

BAKER The Favorite . . . FROM COAST TO COAST



BAKER Cable Bulldozers are rapidly becoming the favorite among experienced earth-movers from coast to coast. It's the same story everywhere—BAKER—in the mines, quarries, oil fields, forests and tough construction jobs. It's Baker because of the many superior features and advantages that pay off in higher daily yardage, greater versatility and utility, more work hours per shift and reduced maintenance costs.

Now when you have the privilege of *selecting* equipment —it will pay you to get the facts on Baker Bulldozers and Gradebuilders, cable or hydraulic control. Write for literature or see your Baker-Allis-Chalmers distributor.

BAKER MFG. CO., SPRINGFIELD, ILL.

EASIER OPERATION — Less effort required to operate P.C.U. Brake

MOLDBOARD TILT — Bulldozer and Gradebuilder blades can be tilted in 4 positions

QUICKLY CONVERTIBLE — Bulldozer or Gradebuilder employ same superstructure, control unit and trunions

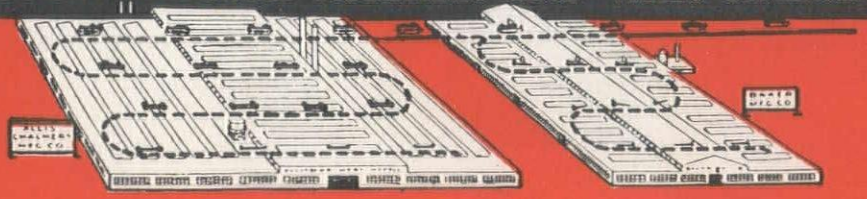
REDUCED CABLE WEAR — "Straight Line" Reeving Large diameter sheaves and drums

HEAVY DUTY CONSTRUCTION — Simple in design, extra heavy construction, all mechanism readily accessible

BAKER

BAKER They Go Together! AC

"STRAIGHT THROUGH" ASSEMBLY LINE – ALLIS-CHALMERS TO BAKER TO YOU!



The modern Baker plant with its completely equipped fabricating, machining and blacksmithing shops adjoins the Allis-Chalmers crawler tractor plant. When you order an A-C tractor with Baker bulldozer or gradebuilder, your tractor leaves the A-C assembly line, crosses a narrow court and goes on the Baker final assembly line.

on city street or mountain pass complete water-cooling Pays YOU

Whatever the size of your job . . . whatever its location . . . a Gardner-Denver Portable Air Compressor gives you the confidence of a steady, uninterrupted air supply. Complete water jacketing of all cylinders protects you from overheating in the 130° heat of desert or jungle — and from cold "unlubricated" starts in the sub-zero temperatures of the Arctic. And at any altitude, these two-stage water-cooled air compressors retain their high efficiency — deliver full output continuously without high discharge temperatures so destructive to air hose and so conducive to excessive oil consumption.

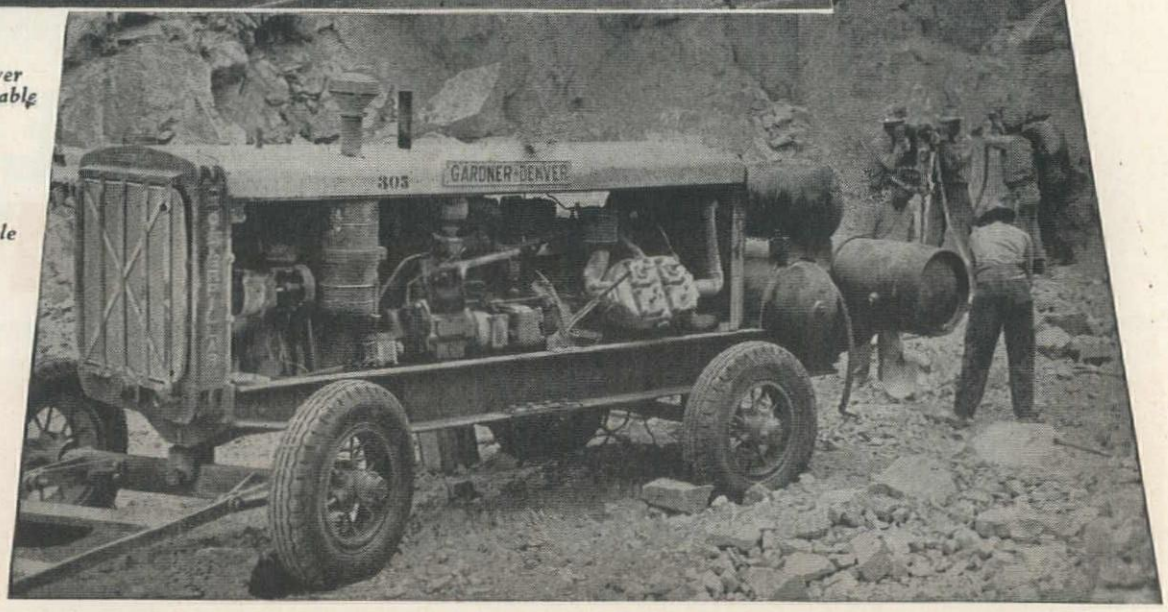
For complete information about Gardner-Denver Portable Air Compressors, write Gardner-Denver Company, Quincy, Illinois.

USE COMPRESSED AIR FOR SAFETY CONVENIENCE FLEXIBILITY

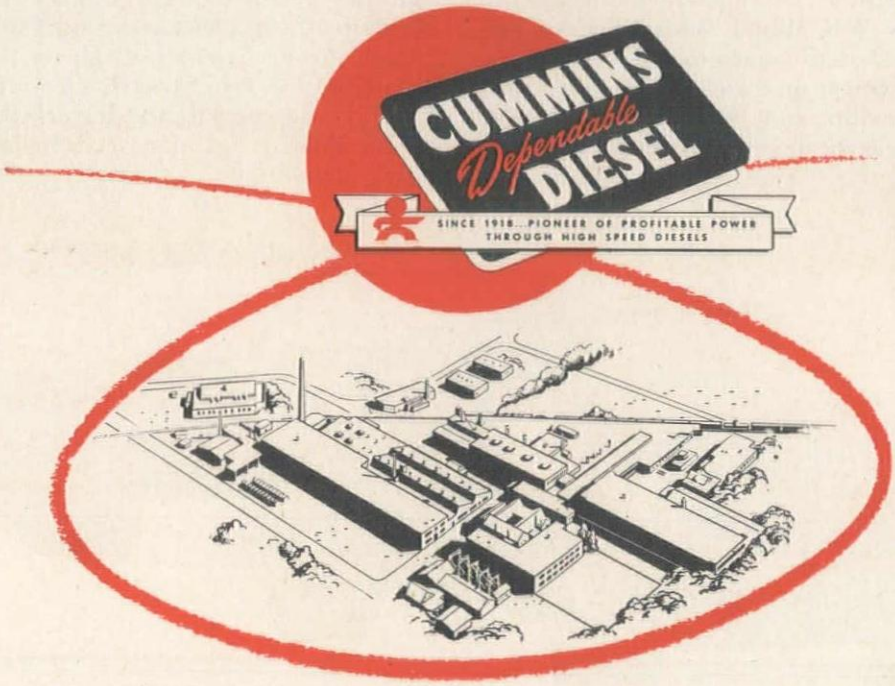
GARDNER-DENVER SINCE 1859

Western Branch Offices: Butte, Mont.; Denver, Colo.; Los Angeles, Calif.; Portland, Ore.; Salt Lake City, Utah; San Francisco, Calif.; Seattle, Wash.; Wallace, Idaho; El Paso, Texas.

Gardner-Denver WHD105 Portable Compressor



Gardner-Denver WHB365-D Portable Compressor



THIS FACTORY IS TOO SMALL

To Completely Satisfy Present Unprecedented User Demand

EVEN THOUGH . . . since the end of the war . . . Cummins have:

- spent three million dollars ($3,000,000) expanding their plant;
- increased floor space forty-four and eight-tenths per cent (44.8%).

BUT . . . this factory IS large enough:

- to build most of the Diesel Engines for the tough "premium" jobs;
- to assure users that Cummins quality and dependability will not be sacrificed to gain production volume.

CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA

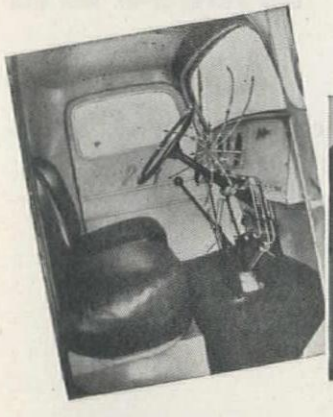
"WB-28" MORE THAN A MODEL NUMBER

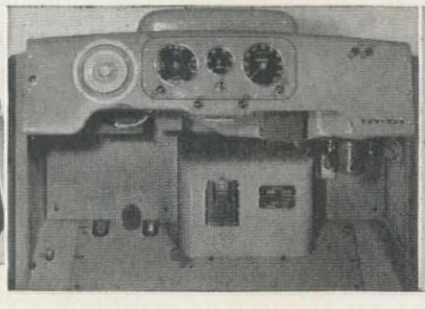
A SYMBOL FOR GREAT PERFORMANCE

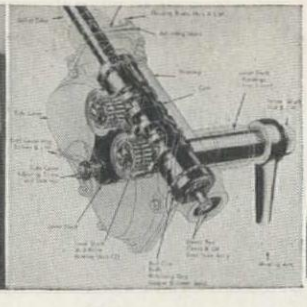
Already, "in-service" reports of greater Super Power performance by the new WB Model White Trucks emphasizes the many exclusive features, the finest materials, precision workmanship, and constant engineering research, development and test that combine to make possible the outstanding performance, economy and long life of this great series of White Super Power Engines. High on the list of features are extras that provide comfort and safety for the drivers who set the pace in the transport industry.

Even Greater Horsepower in White's New WB Super Power Models!

Drivers Everywhere Enthused about Exclusive White Cab Features







DIAL YOUR CAB CLIMATE!
Living room comfort the year 'round. Regulated flow of clean air through carefully designed diffuser on instrument panel. Complete heating and ventilating system is compact, efficient and automatic.

DESIGNED FOR DRIVING!
To the left is the compact diffuser for the new heating and ventilating system. Easy-to-use controls are to the right. The exclusive hinged sub-instrument panel, center, permits ready inspection.

NEW STEERING EASE!
It isn't hard work to steer the new White! Newly designed cam and twin-lever steering reduces turning radius, increases maneuverability, and makes possible more stabilized ride.

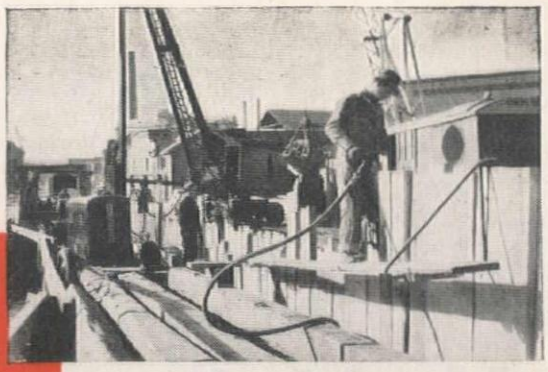
ADJUSTABLE CUSHIONED RIDE!
At last the BIG man can be comfortable! Position of both seat assembly and cushion readily adjust to driver's own comfort requirements, regardless of his size. Seat fitted to the driver with 2 adjustments.

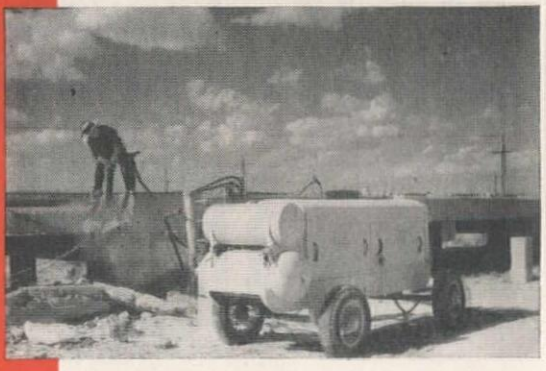
Your White Representative will gladly provide literature describing the advantages of the new WB models now in production.

THE WHITE MOTOR COMPANY • CLEVELAND, OHIO

For more than 45 years the greatest name in trucks

White





IF THE JOB IS IMPORTANT . . . THEY SPECIFY SCHRAMM

•

ANY TIME

•

ANY WHERE

•

Here you see 7 construction jobs being furnished compressed air by Schramm Air Compressors. Every one of the jobs is tough . . . but easily handled by Schramm, who furnishes all the air needed.

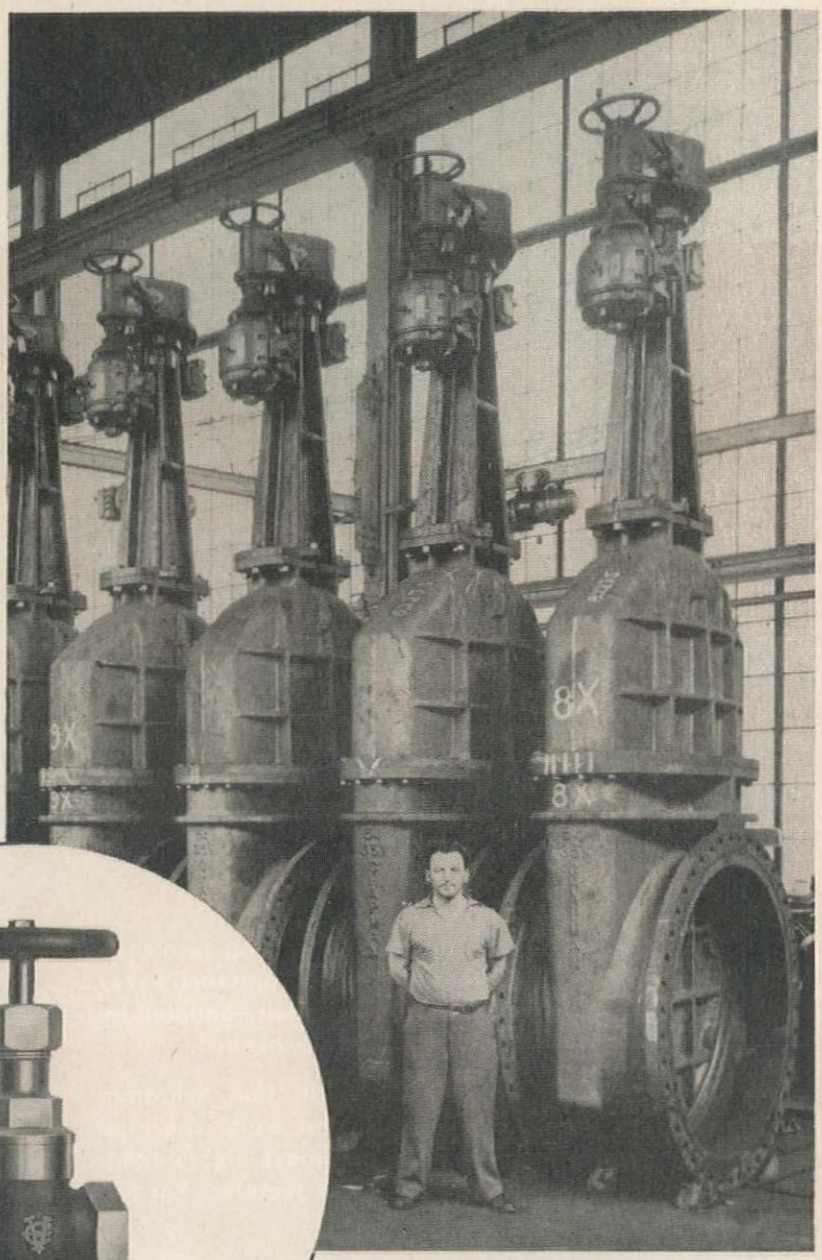
Throughout the country you will find Schramm Compressors used in construction work, specified because they are versatile, compact, lightweight. Schramm offers many advanced features. For full details write us today.

SCHRAMM INC.

THE COMPRESSOR PEOPLE

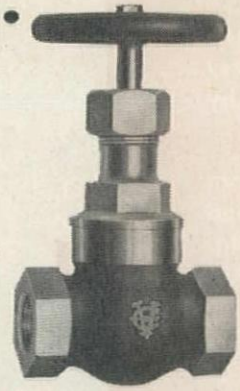
WEST CHESTER • PENNSYLVANIA

No Valve Too Large...



List 35X. These 54" motor-operated Chapman Iron Body Bronze Mounted Gate Valves are shown ready for shipment from the Chapman plant at Indian Orchard.

NO VALVE TOO SMALL...



Bronze Gate Valve for 125 lb. working pressure.

For CHAPMAN to build

Whatever the size valve you need — very large or small, check with Chapman. Valves in the Chapman line range from 9 ft. diameter of opening, to very small iron, bronze or alloy valves.

Consult with Chapman where valves must meet unusual service conditions, and for methods of operation adaptable to your requirements.

THE CHAPMAN VALVE
Manufacturing Company
INDIAN ORCHARD, MASSACHUSETTS

Saw with the saw that's easy to use in any position

DON'T JUST SAW IT...

SKILSAW IT!

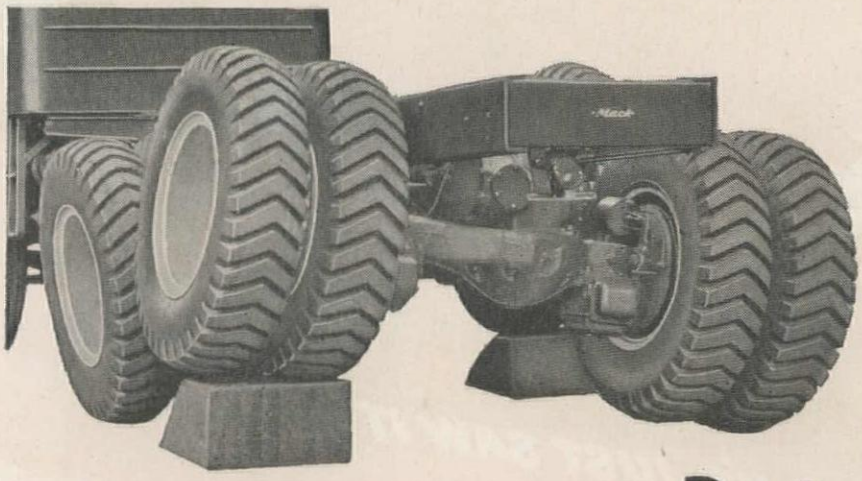
ELECTRIC PNEUMATIC

SKILTOOLS

MADE BY SKILSAW, INC.

A wonderful combination of perfect balance, compactness, minimum weight and ample power makes SKILSAW the handiest saw you can own. It's the result of a quarter century of pioneering in the portable saw field. Ask your distributor today about a demonstration.

SKILSAW, INC.
5033 Elston Ave., Chicago 30, Ill.
Factory Branches in Principal Cities



For GOOD Going on Bad Ground

Unmatched flexibility . . . without complications of design or localized strain . . . is an outstanding advantage of Mack's Balanced Bogie for six-wheeled trucks and tractors.

- Long, many-leaved springs freely trunnioned to the frame and yieldingly attached to the axles by huge rubber Shock Insulators assure fully flexible suspension. Wheels conform freely to road irregularities without the slightest twisting stress upon the frame. Even when traversing rough ground which causes the axles to slant in opposite directions the frame maintains its proper midway position. The suspension also maintains positive alignment of the axles for true tracking either straight ahead or on curves.
- To its inherent flexibility the Mack bogie adds the benefits of equal traction, even tire loading and uniform braking on all four wheels—regardless of road conditions. Because of its simple, sturdy construction and balanced stress distribution maintenance is greatly reduced.
- The Mack bogie is built complete in Mack factories. Its advanced and simplified design is further evidence of the forward-looking engineering that goes into the making of a Mack.

Mack six-wheel trucks, embodying Mack's exclusive Balanced Bogie, have earned an enviable reputation in construction work because of their unfaltering ability to cope with the toughest of terrain.

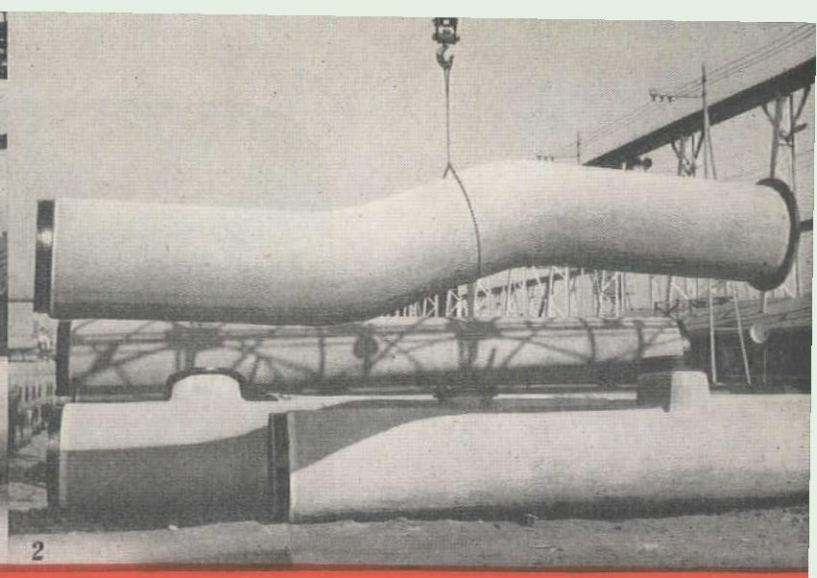
Mack

since 1900, America's hardest-working truck

Mack-International Motor Truck Corp. — Los Angeles
Sacramento • San Francisco • Seattle • Portland
Salt Lake City • Factory branches and dealers
in all principal cities for service and parts.

Trucks for every purpose

1



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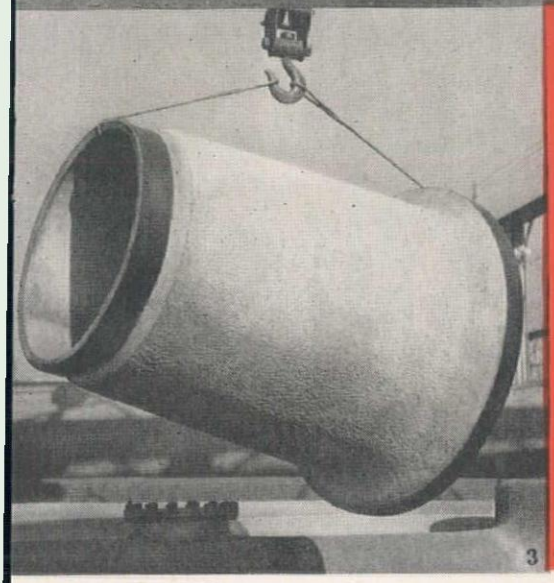


3

They're not *really* special!

4

Regular American service includes fabrication of *all* special fittings for water supply lines.

Illustrations show typical special fittings as follows:—

1. Bend (foreground) and special pipe with flanged outlets;
2. Reverse bend — right end flanged, Lock Joint rubber gasket joint on left end;
3. Reducer section with caulking ends;
4. Example of a complicated manifold section.

Quality pipe line products manufactured and installed by American include:— Lock Joint Concrete Cylinder Pipe, Prestressed Lock Joint Concrete Cylinder Pipe, American Concrete Cylinder Pipe, Centrifugal Concrete Pressure Pipe.

• • •

Main Offices and Plant—
4635 Firestone Blvd., South Gate, Calif.

District Offices and Plants—
Oakland San Diego Portland, Oregon

Correctly engineered and manufactured fittings for reinforced concrete pressure pipe lines are vital to efficient and economical operation. That's why American designs, manufactures and thoroughly tests all bends, manifolds, reducers and similar units in its own plants.

Fittings can be supplied for all special water supply line requirements. This company has enjoyed a wide experience in the field of water supply line engineering and construction over a long period of years and this experience and training are available to water works officials and engineers. Information available upon request.

American
PIPE & CONSTRUCTION COMPANY

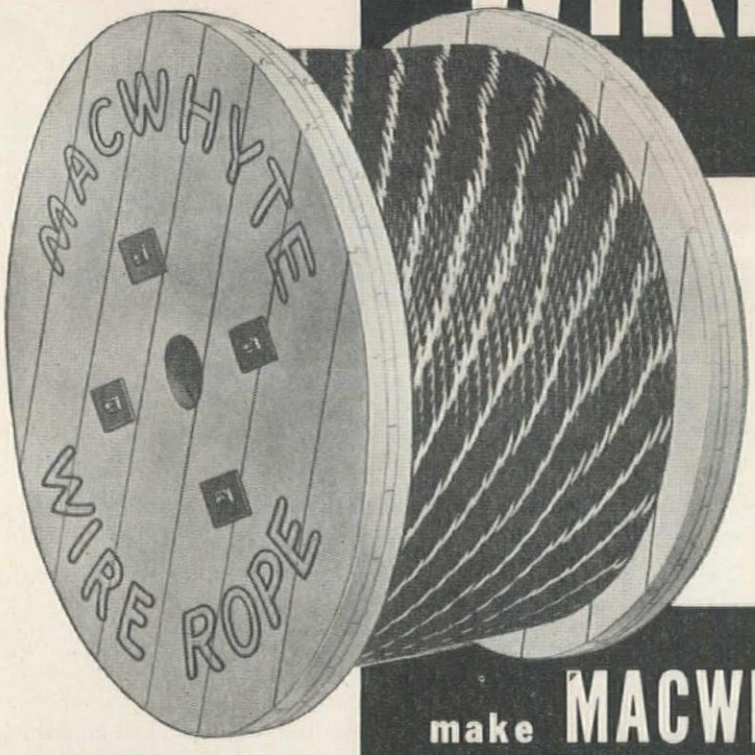
Concrete Pipe for Main Water Supply Lines, Storm & Sanitary Sewers, Subaqueous Pipe Lines

P. O. Box 3428, Terminal Annex, Los Angeles 54, California

a thousand and one

MACWHYTE WIRE ROPES

When you use the correct wire rope, both the rope and your equipment last longer, cost less to operate. Macwhyte consulting engineers will check your equipment and recommend the wire rope specifically engineered for your job. Ask your Macwhyte distributor, or write Macwhyte Company.



... all job-proved... assure you the correct rope for your equipment

make MACWHYTE your headquarters for WIRE ROPE and SLINGS

MACWHYTE PREFORMED AND NON-PREFORMED INTERNALLY LUBRICATED WIRE ROPES... MONARCH WHYTE STRAND Wire Rope ... Special Traction Elevator Rope ... Stainless Steel Wire Rope ... Monel Metal Wire Rope... Galvanized Wire Rope... Atlas Braided Wire Rope Slings, Hi-Fatigue Aircraft Cables, Assemblies and Tie-Rods. Catalogs on request.

NO. 918

MACWHYTE WIRE ROPE

Manufactured by Macwhyte Company
2909 Fourteenth Avenue, Kenosha, Wisconsin

Mill Depots: **New York • Pittsburgh • Chicago • Minneapolis • Fort Worth Portland • Seattle • San Francisco • Los Angeles**
Distributors throughout the U.S.A. and other countries

Heliarc
WELDING

A fast, easy way to join

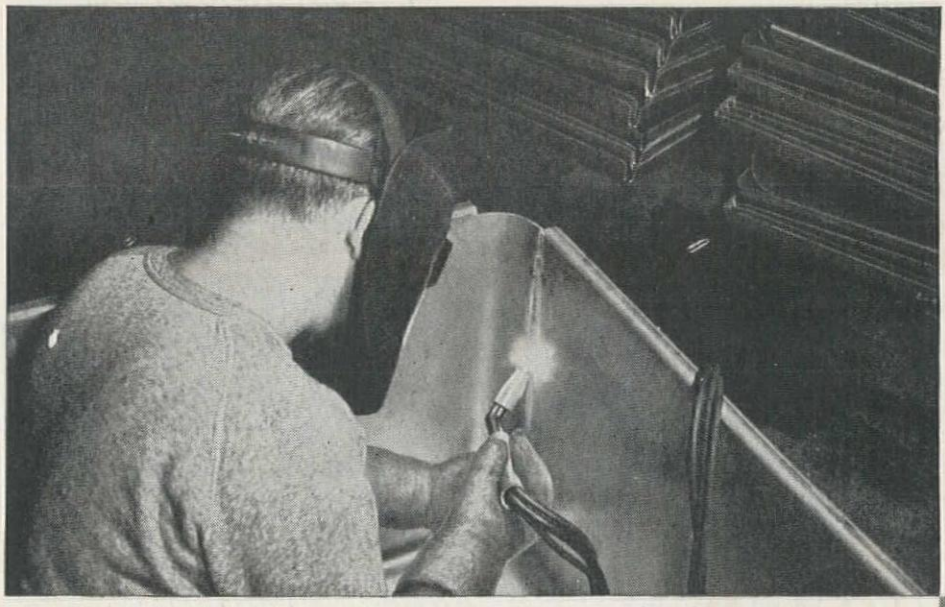
- STAINLESS STEEL
- HIGH-CARBON STEEL
- ALUMINUM
- MAGNESIUM
- BRASS
- COPPER
- EVERDUR
- MONEL
- INCONEL
- SILVER

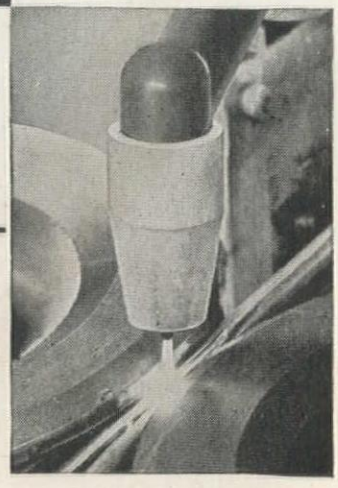
Linde's HELIARC process is a new and different method of welding with the electric arc, in which the welding action is shielded by an inert gas—usually argon.

Joints welded with the HELIARC process have exceptionally high quality. They are clean because HELIARC welding eliminates flux. Joints are so smooth, even, and neat that usually no finishing treatment of any kind is required.

Butt, lap, tee, corner, and angle joints are easily made on rolled, cast, extruded, or forged parts of stainless steel and practically all non-ferrous alloys of any commercially used thickness.

HELIARC welding can be done manually or with machines and is equally practical for mass production or job lots.





Linde service engineers are always available to help with problems of treating, cutting, joining, and forming metals.

Call or write any Linde office for information.

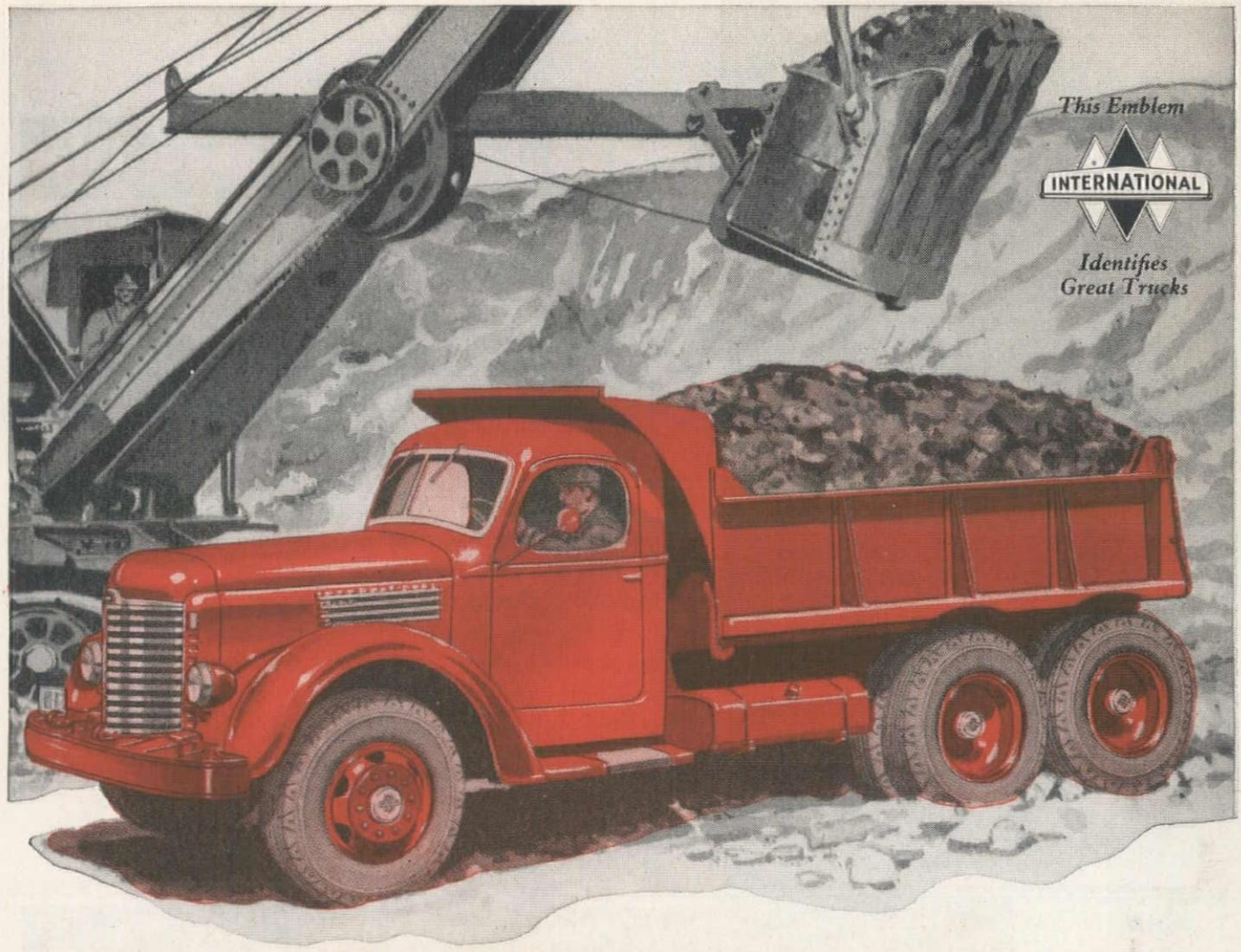
The word "Heliarc" is a trade-mark of The Linde Air Products Company.

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

30 East 42nd St., New York, N. Y. UCC Offices in Other Principal Cities

In Canada: Dominion Oxygen Company, Limited, Toronto



HOW NEW KB INTERNATIONALS ARE
Masterfully Specialized to their Jobs

New KB Model Internationals are the finest values in International Truck history. And International values are so outstanding that for 16 years more heavy-duty Internationals have served American commerce and industry than any other make.

But rugged quality is only one reason for International leadership. Another is International's masterful ability to *specialize* trucks to their jobs.

There are 15 basic KB Internationals. Gross weight ratings range from 4,400 to 35,100 pounds. Ten different engines are used. Axles, transmissions and tandems are available for every requirement.

International *specializes* its 15 basic KB Models into more than 1,000 different type trucks—a result of 40 years experience, engineering skill and matchless facilities. *That's fitting the truck to the job!*

Now add this: International can accurately tell every operator just what his maximum loads should be in terms of the exact conditions under which his trucks operate—an exclusive International service that enables the operator to get the most in operating economy, low maintenance costs, and long, trouble-free performance.

For details of new KB Internationals, *expertly specialized,* see your International Dealer or Branch.

Motor Truck Division
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

40TH ANNIVERSARY OF INTERNATIONAL TRUCKS
1907-1947—Forty Years of International Truck Service to Industry, Commerce and Agriculture

INTERNATIONAL

INTERNATIONAL *Trucks*

THIS TOUGH TRACK ROLLER GREASE STAYS PUT!

1. When grease leaks out of track rollers, bearings are exposed to the grinding action of grit, mud and dust. Often a costly breakdown occurs. You can avoid this danger by using Red Line Tractor Lubricant—the grease that sticks to track rollers no matter how severe your operating condition may be.

2. Red Line Tractor Lubricant resists washing away or emulsification by water, and the dead weight of the tractor can't force it from bearing surfaces in the hottest summer. Even when the tractor is tipped on slopes the grease stays put.

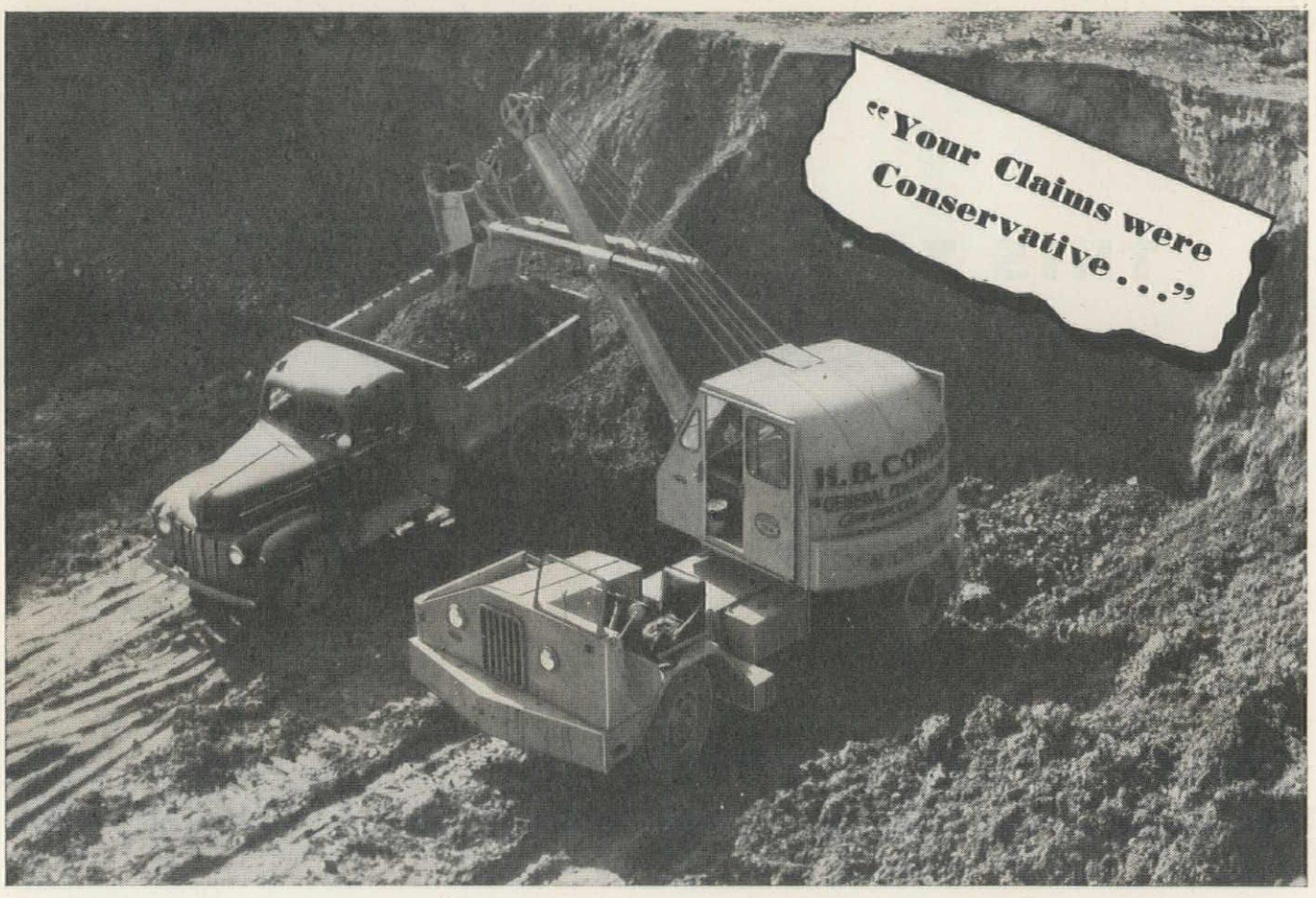
3. Despite its tackiness, Red Line is easy to handle. It remains pumpable at below-freezing temperatures and permits grease gun application when many greases are too hard and stiff to use.

4. Remember—track rollers need a grease strong enough to stay put when your tractor is wallowing through mud or tearing through brush and dirt. Red Line seals out foreign matter and at the same time provides smooth lubrication for the free, easy working of parts. You'll save money by investing in this extra protection for your equipment!

RED LINE Tractor Lubricant

For full information on Red Line Tractor Lubricant phone your local Union Oil Representative or wire Sales Department, Union Oil Company, Los Angeles 14, Calif.

ANOTHER **UNION OIL** SUCCESS-TESTED PRODUCT



says Combs Construction Company, Chattanooga, *about* MICHIGAN

This MICHIGAN owner, in a letter to Nixon Machinery & Supply Co., Chattanooga, goes on to say

". . . we have never gone wrong buying equipment that you recommend. Your claims were, if anything, conservative.

"We have used our MICHIGAN as shovel, back hoe, clam, dragline and in steel erection as a crane. In all operations it has proven a very efficient and economical machine. Operating and maintenance costs have been extremely low. Its mobility and flexibility, plus its other features has convinced us that it is an essential part of our equipment fleet.

"We recommend the MICHIGAN Model T-6-K, without reservations, for any work within its capacity."

Full details about the complete line of 3/8 yd. and 1/2 yd. convertible MICHIGAN Mobile SHOVEL-CRANES are available on request.

MICHIGAN
POWER SHOVEL COMPANY
BENTON HARBOR, MICHIGAN

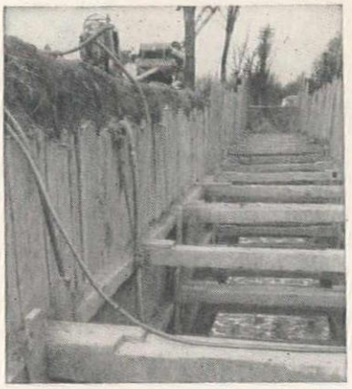
NOVO NEWS

AUGUST, 1947

"Best Pump We Ever Had"

Eastern Contractor Says Novo "Pronto-Prime" Is Answer to Pumping Problems

A Tough Job



Here's the tough job on which the work of the Novo "Pronto-Prime" amazed Philadelphia contractors. One of the big reasons for its outstanding success story is its dependable, stout-hearted seal. In repeated torture tests as well as in field operations, this seal has proved it can take it for hours on end—abrasive grit, including sandblast sand for over 2000 hours . . . ordinary muddy water for indefinite periods.

Other "Pronto-Prime" features are equally impressive — superspeed priming; independent pump unit; universal base; accessibility of wearing parts; self-cleaning; and many mechanical advantages.

Other Contractors' Equipment by Novo

Novo contractors' equipment—backed by over 50 years of manufacturing experience—includes diaphragm pumps, pressure pumps, hoists, generator sets, air compressors, pavement breakers, engines, and the Scootruk mechanized wheelbarrow.

It Handles Muddy Water All Day

Want the facts on self-priming centrifugal pumps? Ask D & C Spinoza, Philadelphia contractors, what they think of the Novo "Pronto-Prime." Their answer means something — because it's based on actual experience.

They were having plenty of trouble with water on a big sewer job along Pennypacken State Road —until they hooked up a 3" "Pronto-Prime." With a capacity of 20,000 gallons per hour, it took charge of the situation immediately. Pumping 69 seconds, priming 25 to 60 seconds, this sturdy pump operated 9 hours daily—and continued to do so for over three months.

The suction lift was 25 ft. through 40 ft. of hose; the discharge head was 10 ft. through 50 ft. of hose.

It's a rough, tough job for any pump — but the "Pronto-Prime" got the nod from those who studied it at work day after day.

C. Spinoza

C. Spinoza, partner of D & C Spinoza, has this to say about the "Pronto-Prime": "It's the best pump we have ever had. Have two other makes on this job but they are not as good. It's the answer to our pumping problems. Never stops, handles muddy water all day long. It's surprisingly economical. In other words, it's tops with D & C!"

DISTRIBUTORS

ALABAMA
Birmingham—YOUNG & VANN SUPPLY CO.
ARIZONA
Phoenix—MINE & SMELTER EQUIP. CO.
ARKANSAS
North Little Rock—STANDARD EQUIP. and SUPPLY CO.
CALIFORNIA
Oakland and Eureka—BUBAN EQUIP. CO.
Los Angeles—GARLINGHOUSE BROTHERS
COLORADO
Denver—GUNDERSON-KRINGEL CO.
CONNECTICUT
Stamford—M. F. TAYLOR CONSTRUCTION EQUIPMENT & SUPPLIES
FLORIDA
Jacksonville—FAROUHAR MACHINERY CO.
Miami—GENERAL EQUIP. & SUPPLY CO.
Tampa—EPPERSON & CO.
GEORGIA
Atlanta—J. W. GRASS EQUIPMENT COMPANY, INC.
ILLINOIS
Chicago—CENTRAL CONTRACTORS SERVICE
Mt. Vernon—ED MEYER TRACTOR COMPANY
Springfield—ILLINOIS ROAD EQUIPMENT CO.
Rock Island—WESTERN EQUIP. & SUPPLY CO.
IDAHO
Boise—COLUMBIA EQUIPMENT COMPANY
INDIANA
Indianapolis—BOCK EQUIPMENT CO.
Rochester—DEEDS EQUIPMENT CO.
IOWA
Cedar Rapids and Des Moines—GLOBE MACHINERY & SUPPLY CO.
KANSAS
Topeka—MARTIN TRACTOR COMPANY
KENTUCKY
Louisville—NATIONAL EQUIPMENT CO.
Paducah—HENRY A. PETTER SUPPLY CO.
LOUISIANA
Baton Rouge, Monroe and New Orleans—DUNHAM-PUGH CO., INC.
MAINE
Portland—EASTERN TRACTOR & EQUIP. CO.
Presque Isle—ROY C. THOMPSON CO.
MARYLAND
Baltimore—MARYLAND SUPPLY & EQUIP. CO.
MASSACHUSETTS
Boston—FERRIN, SEAMANS & CO., INC.
MICHIGAN
Detroit—W. H. ANDERSON COMPANY, INC.
Grand Rapids—E. K. J. EQUIPMENT CO.
Marquette—MARQUETTE PUBLIC SERVICE GARAGE, INC.
MINNESOTA
Duluth and St. Paul—BORCHERT-INGERSOLL, INC.
MISSISSIPPI
Jackson—WATKINS-ALDRIDGE EQUIP. CO., LTD.
MISSOURI
Kansas City—CONTRACTORS SUPPLY CO.
St. Louis—MISSOURI-ILLINOIS TRACTOR & EQUIPMENT CO.
MONTANA
Butte and Great Falls—MONTANA HARDWARE CO.
NEBRASKA
Omaha—FEHRS TRACTOR & EQUIP. CO.
NEVADA
Reno—NEVADA TRUCK SALES
NEW JERSEY
Union—SMITH TRACTOR & EQUIP. CO.
NEW MEXICO
Albuquerque—HARRY CORNELIUS CO.
NEW YORK
Albany—SLADE TRACTOR & EQUIPMENT CO.
Buffalo—FOX EQUIPMENT CO.
New York—H. O. PENN MACHINERY CO.
Rochester—HAVERSTICK & CO.
Utica—CREDLE EQUIPMENT CO.
NORTH CAROLINA
Charlotte—CONTRACTORS SERVICE, INC.
NORTH DAKOTA
Fargo—MYHRA EQUIPMENT CO.
OHIO
Cincinnati—THE FINN EQUIPMENT CO.
Columbus—BLAKE EQUIPMENT CO.
Marietta—NORTHWEST SUPPLY & EQUIP. CO.
Toledo—EDMUND SUPPLY CO.
OKLAHOMA
Oklahoma City—THE BOARDMAN CO.
OREGON
Portland—COLUMBIA EQUIPMENT CO.
PENNSYLVANIA
Clearfield—CLEARFIELD EQUIPMENT CO.
Philadelphia—METALWELD, INC.
Pittsburgh—BRINKER SUPPLY CO.
Wilkes-Barre—STANDARD EQUIPMENT CO.
SOUTH CAROLINA
Columbia—TIDEWATER SUPPLY CO., INC.
TENNESSEE
Knoxville and Nashville—DEMPSTER BROS.
Memphis—HOWELL EQUIPMENT CO.
TEXAS
Dallas—HI-WAY MACHINERY COMPANY
El Paso—DON A. CARPENTER CO.
Houston—SOUTH TEXAS EQUIPMENT CO.
Lubbock—FRED BERRYHILL EQUIP. CO.
San Antonio—TOWERY EQUIPMENT CO.
UTAH
Salt Lake City—THE LANG CO., INC.
VERMONT
White River Junction—NOBLE-BELISLE MACHINERY CO.
VIRGINIA
Norfolk and Roanoke—TIDEWATER SUPPLY CO.
Richmond—INDUSTRIAL SUPPLY CO.
WASHINGTON
Seattle and Spokane—COLUMBIA EQUIP. CO.
WEST VIRGINIA
Charleston—CLYDE W. BECKNER, INC.
WISCONSIN
Milwaukee—STONE MANUFACTURING CO.
Park Falls—STEIGER MOTOR SALES
ALASKA
Anchorage—NORTHERN ENGINEERING & EQUIPMENT CO.

Allied Member of A.E.D.

NOVO ENGINE COMPANY
LANSING 9, MICH. U.S.A.
CONTRACTOR'S EQUIPMENT
· GRAY IRON CASTINGS ·
ENGINES

HE HAS RUN THEM ALL...

He Bought a LINK-BELT SPEEDER

Lee Woods, of Monrovia, California, using his model HC-70 Truck Crane for setting reinforced concrete panels on a warehouse job in Los Angeles, using 45 foot boom and 20 foot jib.

AN OPERATOR FOR 21 YEARS — HE KNEW JUST WHAT MACHINE HE WANTED TO OWN!

Actual experience with practically every make of shovel and crane, including five different models of Link-Belt Speeders, taught Lee Woods a lot about these machines. When he decided to embark on his own business venture, he took the trouble to check all current models of truck-cranes, finally deciding on a Link-Belt Speeder HC-70. This machine is easy to operate, and provides perfect control for accurately spotting steel; has stability and abundant power, and is lively on the road, wasting no time getting from job-to-job.

With boom adjustable to various lengths, and with a ¾ yard clamshell and dragline bucket, it is readily available for a wide range of jobs. No wonder Lee Woods and his fellow Link-Belt Speeder owners keep profitably busy.

★ ★ ★

Twenty-five models of crawler and wheel-mounted Link-Belt Speeder Shovel-Cranes offer a size and type for every job. All convertible to every conventional front end attachment.

10,780

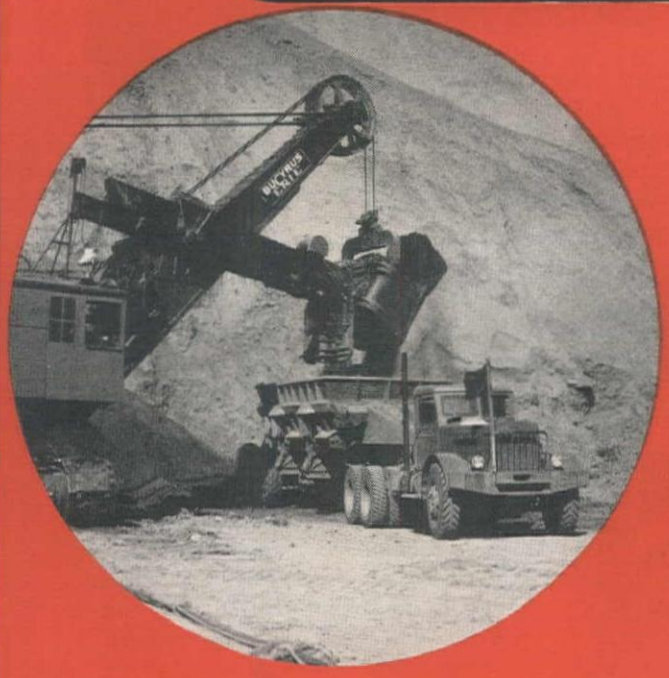
LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of SHOVELS-CRANES-DRAGLINES

A MILLION YARDS A MONTH!

An All-Time American Record



Here is the fleet of thirty PETERBILT TRUCKS with 30 cubic yard bottom-dump trailers, owned and operated by Macco-Morrison-Knudson, which helped to set an all-time American record during July, August and September by moving a million yards of dirt per month.

The job on which this record was established was the conversion of 300 acres of marsh land into new ground for the expansion of Mills Field, San Francisco's $20,000,000 airport.

In handling this tremendous yardage, Macco-Morrison-Knudson began the task of virtually moving a mountain on to flat land and spreading it out. All of the dirt was hauled directly from the excavation over private road onto the airport. The company constructed an overpass over the main highway and another over the railroad so that traffic and trains would not interfere with the continuous stream of trucks running in both directions.

The fine strategy in handling this project is reflected in the record they set, and PETERBILT is proud of the performance of its trucks in helping to establish this all-time American record.

Peterbilt Motors Company

107th AVENUE AND MacARTHUR BOULEVARD · OAKLAND · CALIFORNIA

Long-Term Assets to the Modern Waterworks System . . . . .

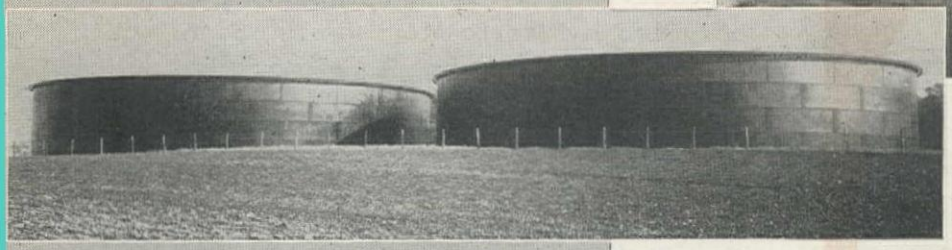
***for* EFFICIENT SERVICE · LOWER MAINTENANCE · GREATER DURABILITY**

Pittsburgh-Des Moines

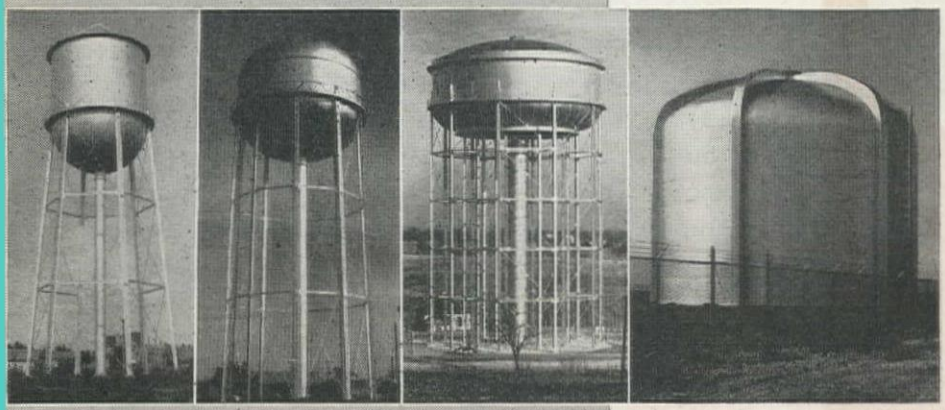
ELEVATED STEEL TANKS

and STEEL RESERVOIRS

1,500,000 gal. toroidal bottom tank; structural tower. Diameter 103'4", head range 25'; height to bottom 85'. Fort Dodge, Iowa.



Two 3,000,000 gal. steel reservoirs, diameter 144', height 25'. Berryville, Va.



300,000 gal. cone roof, hemispherical bottom tank, 118' to top. Stillwater, Okla.

500,000 gal. double ellipsoidal tank, on 100' tower. Mission, Texas.

1,000,000 gal. toroidal bottom tank, diameter 76'9", height 127', head range 30'. Keokuk, Iowa.

2,200,000 gal. steel reservoir; ellipsoidal roof; ornamental pilasters. Diameter 80', height 51'. Midland, Tex.

The choice of elevated steel tank or steel reservoir depends largely upon local land elevations. The choice of PITTSBURGH-DES MOINES as designers, fabricators and erectors of your required units is equally logical: you benefit by a half-century of experience in this type of construction, and a guarantee of complete satisfaction with each installation. *May we consult on your water storage needs?*

A NEW **PITTSBURGH · DES MOINES** STEEL FABRICATING PLANT at SANTA CLARA, CALIFORNIA

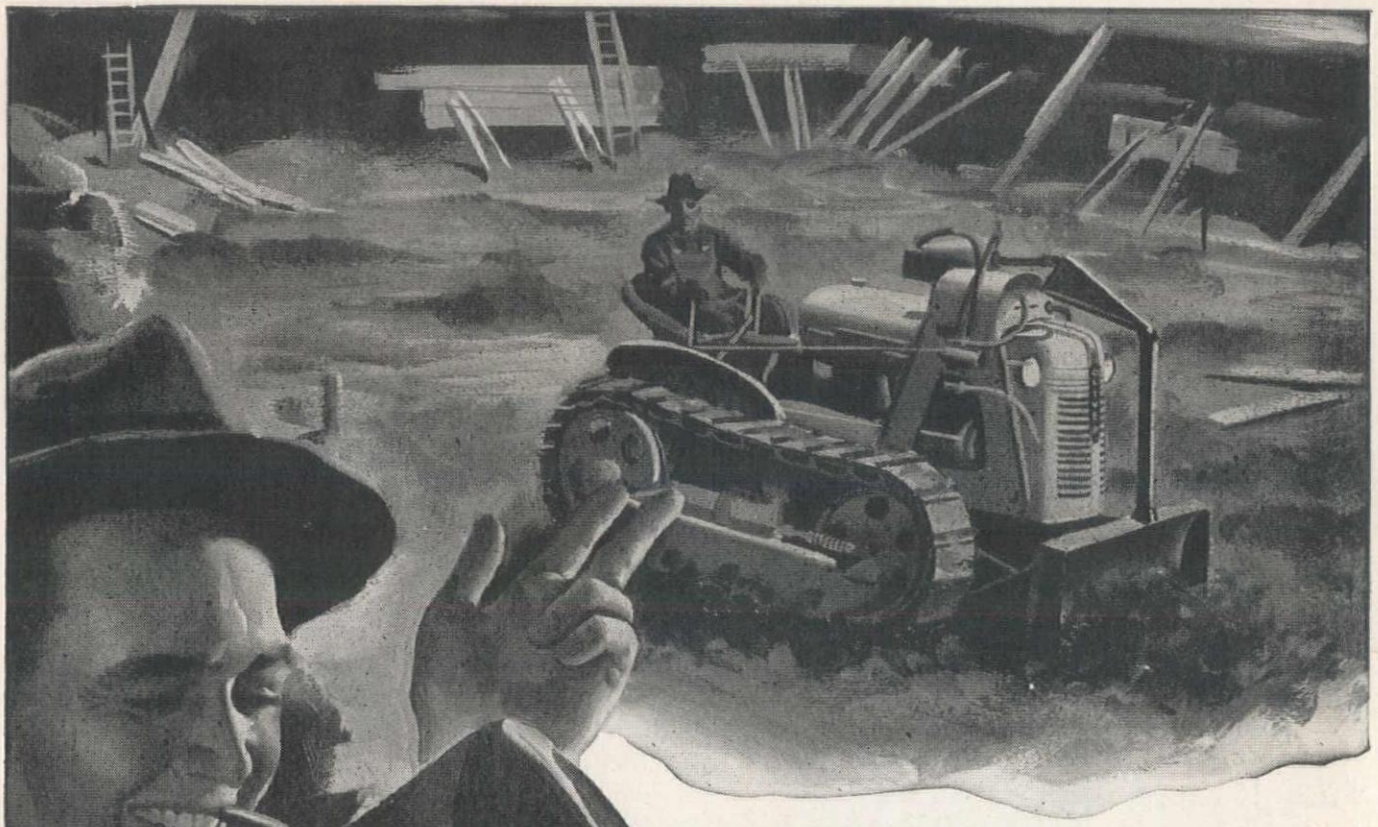
PITTSBURGH • DES MOINES STEEL CO.

PITTSBURGH, PA., 3420 NEVILLE ISLAND • DES MOINES, IOWA, 921 TUTTLE STREET

SANTA CLARA, CAL., 627 ALVISO ROAD

NEW YORK, ROOM 919, 270 BROADWAY • CHICAGO, 1224 FIRST NATIONAL BANK BUILDING

DALLAS, 1225 PRAETORIAN BUILDING • SEATTLE, 528 FIRST AVENUE, SOUTH



The Dozer Never Sleeps

There seems to be no limit to the number of jobs that little Cletrac Imp dozer can do. Why, it seems that every day we find some new job it fits to a "T".

It's been a real time and cost saver, and our Oliver "Cletrac" dealer really rang the bell when he said it would be a "handy man" for our work. He happened to be out one day when we were digging a foundation and remarked about the amount of heavy equipment we had. "You know," he said, "we've got a little unit that might save you a lot of time and money. It's a small hydraulic bulldozer that mounts on the Oliver HG . . . the smallest track tractor in the field. We call it the 'Imp.' It's small enough to do a lot of those jobs without the higher operating costs of a big tractor-dozer unit. And you can get it into places where the big tractors can't operate so you can eliminate a lot of hand labor."

It sounds good to me and it's proved even better. That Oliver "Cletrac" dealer sure has a lot of ideas that make a job easier. He's a good man to know.

OLIVER
Cletrac
SALES
SERVICE

"THE SIGN OF EXTRA SERVICE"

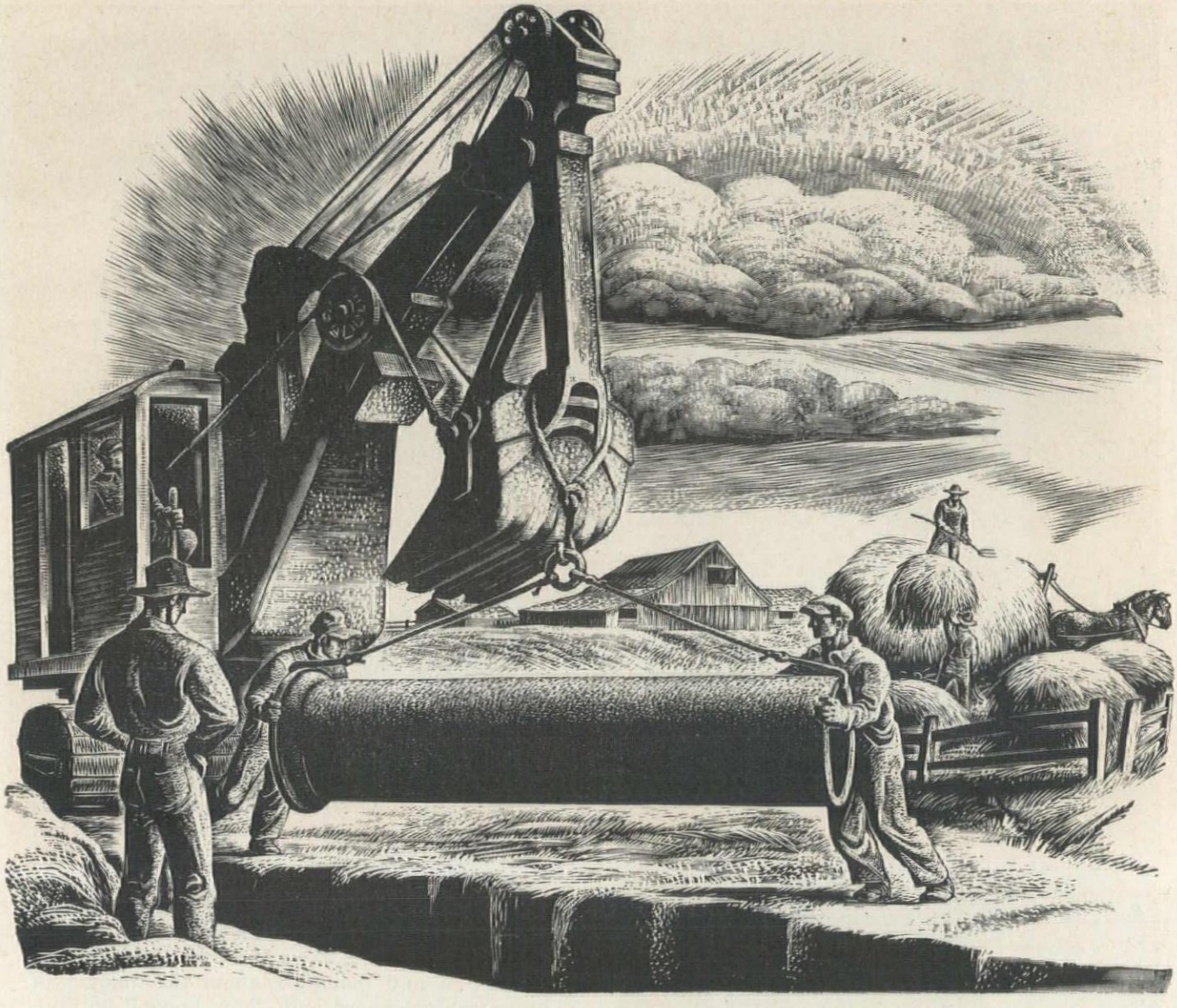
Cletrac

a product of

The OLIVER Corporation

Industrial Division: 19300 Euclid Ave. • Cleveland 17, Ohio

State of Arizona: Guerin Implement Co., Phoenix. *State of California:* Gustafson Tractor Co., Eureka; Mechanical Farm Equipment Dist., Inc., San Jose; Ashton Implement Co., Salinas; Comber & Mindach, Modesto; Tractor Service Company, Inc., 820 Broadway, Chico; Tractor & Equipment Co., San Leandro; Flood Equipment Co., Sacramento; W. J. Yandle, Santa Rosa; Hamsher Tractor Co., Stockton; Ranch Equipment Co., Ventura; Jim Ingle Co., Fresno and Tulare. *State of Washington:* Inland Truck & Diesel Company, Spokane; Pacific Hoist & Derrick Co., Seattle; Melcher-Ray Machinery Co., 202 East Alder Street, Walla Walla; Coleman Equipment Co., Chehalis; Central Tractor and Equipment, Co., Wenatchee. *State of Oregon:* Loggers & Contractors Machinery Co., Portland and Eugene. *State of Idaho:* Idaho Cletrac Sales Co., Lewiston; The Sawtooth Company, Boise. *State of Montana:* Western Construction Equipment Company, Billings and Missoula. *State of Nevada:* B & M Tractor & Equipment Corp., 1420 S. Virginia St., Reno. *British Columbia:* Pacific Tractor & Equipment, Ltd., 505 Railway Street, Vancouver.



Original Woodcut by Lynd Ward

The life of a supply line, to be constructed with cast iron pipe, is obviously more predictable than the future growth of the community it is to serve. City planners may hazard a prediction of population growth in a hundred years. Water works engineers can predict, on the basis of proved service records, that a properly constructed cast iron supply line will have a useful life of *more* than a century. A substantial part of the tonnage of large diameter cast iron pipe, installed for supply lines throughout America, is U. S. Cast Iron Pipe.

U.S.
cast iron
PIPE

U. S. PIPE & FOUNDRY CO.
General Offices: Burlington, N. J.
Plants and Sales Offices throughout U.S.A.

FOR STATES
FOR COUNTIES
FOR CITIES

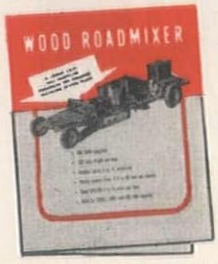
The new self-propelled Wood Roadmixer Model 36 is designed and built to meet highway maintenance requirements. Furthermore all equipment is field-tested under every variety of actual working conditions.

For instance, the self-propelled Model 36 mixes-in-place in ONE PASS 125 tons per hour, or more, of ready-to-spread mix — with a one-man crew! It mixes native or imported materials with liquid binders or stabilizing agents used in the construction of surface pavements or base courses. It can get from one job to another at road speeds up to 15 miles an hour.

Obviously the Model 36 meets maintenance requirements to a T. It combines high output with low materials and labor costs. It's made to order for all types of asphaltic and soil-cement surfacing or resurfacing, and base course stabilization — and it requires the lowest capital investment per ton of capacity.

This explains why the Model 36 in *one year* has been bought and used by states and counties from east to west, from north to south!

Self-Propelled
Wood Roadmixer Model 36



SEND FOR BULLETIN 36

This bulletin describes the Model 36 in detail. Also see your Wood distributor, or write direct, for information and prices on Wood Windrowers, Tank Trailers & V-Spreaders.

ROADBUILDING EQUIPMENT

WOOD MANUFACTURING CO.

BOX 620, 6900 TUJUNGA AVENUE
NORTH HOLLYWOOD, CALIFORNIA

Distributors: P. L. CROOKS & CO., Portland 10, Ore. ★ ARNOLD MACHINERY CO., INC., Salt Lake City 1, Utah ★ INDUSTRIAL EQUIPMENT CO., Billings, Mont. ★ WORTHAM MACHINERY CO., Cheyenne, Wy. ★ THE MINE & SMELTER SUPPLY CO., Denver, Colo. ★ HARDIN & COGGINS, Albuquerque, N. M. ★ STATE TRACTOR & EQUIPMENT CO., Phoenix, Ariz. ★ SIERRA MACHINERY CO., Reno, Nev. ★ COAST EQUIPMENT CO., San Francisco 1, Calif. ★ GOLDEN STATE EQUIPMENT CO., Los Angeles, Calif. ★ WILLARD EQUIPMENT CO., Vancouver, B. C.

drilling magic

...the flexibility and deep-hole drilling speed of Le Roi-Cleveland Wagon Drills produce unbelievably low-cost footage

Here's a wagon drill that can practically turn itself inside out — it drills at any angle. This flexibility and the ease with which you can make set-up changes save you time and money—holes can be drilled in the most effective spots regardless of the contour of the ground. This, of course, means proper burden on the hole, better fragmentation, lower costs.

And power—say, when that 4-inch bore Le Roi-Cleveland Drifter starts hammering on a piece of drill steel, it keeps driving it down until you have a 40-foot hole. The advantages of this dependable machine's high drilling speed are made greater through the use of a quick-returning feed. Less time is lost in changing steel, so that much more footage is drilled per shift.

The throttle, feed, and blowing controls consist of a single, compact, conveniently located unit. This helpful feature gives the operator complete control over the machine at all times. He can easily select the right feed for the formation being drilled.

Ask your Le Roi distributor to give you all the facts. Send for our latest wagon-drill bulletin.

*Reg. U. S. Pat. Off.

Le Roi Engine-generator Set — *Le Roi Heavy-duty Engine* — *Le Roi 105 Tractair** — *Le Roi Airmaster**

LE ROI COMPANY

CLEVELAND DIVISION
Manufacturers of Cleveland Rock Drills
Cleveland 11, Ohio

LE ROI COMPANY, General Offices, Milwaukee 14, Wisconsin

NEW YORK • WASHINGTON • CLEVELAND • MILWAUKEE
BIRMINGHAM • TULSA • BUTTE • SAN FRANCISCO

RD-6

Evidence

CLOSE QUARTERS . . . that faculty for working at full efficiency in close quarters gives Insley the edge. Let your local distributor show you an Insley at work.

EXCAVATORS
INSLEY
CONCRETE EQUIPMENT

INSLEY MANUFACTURING CORPORATION • INDIANAPOLIS 6, INDIANA

FOR INSLEY SERVICE AND SALES IN YOUR TERRITORY

ANDREWS MACHINERY.....404 N. W. Broadway, Portland 9, Oregon
ANDREWS EQUIPMENT SERVICE.....126 South Walnut St., Spokane 9, Washington
CONSTRUCTORS EQUIPMENT CO.....3707 Downing St., Denver 5, Colorado
M. & F. EQUIPMENT CO.....Route 1, Box 246A, Albuquerque, N. M.
H. H. NIELSEN COMPANY.....541 W. 2nd South, Salt Lake City 1, Utah
SHAW SALES AND SERVICE CO., 5100 Anaheim-Telegraph Rd., Los Angeles 22, Calif.

Two flat cars of WHEELER TANDEM ROLLERS roll east for delivery.

WHEELER Tandem Rollers

This illustrates a WHEELER TANDEM ROLLER compacting close to curb line.

Work with ease...

The Wheeler 3 to 4 ton Tandem Roller will save you time and money on compacting jobs. The Wheeler Roller maneuvers in small areas with its short 7' 10" wheel base. It works comfortably within 2" of buildings; it rolls right to the curb with its 10" high frame clearance. A full working-width is compacted with the 34" and 36" steering and compacting rollers.

Convenient, quicker operation is provided by the Wheeler. Clear visibility on the right hand side permits the operator to see BOTH rollers at work, permitting hair-line operation. The easy operating hand wheel or hydraulic steering gives rapid, less tiring operation. The single-lever clutch moves the machine both forward and backward, allowing the operator immediate and precise control. Conveniently located, the foot brake quickly stops the machine, and a hardened steel ratchet locks the brake for parking. The parking brake is engaged or released by the tipping action of the driver's foot. Free access to all working parts is provided and it is easier for the operator to mount or dismount. This tandem roller is easily loaded and transported from job to job. The Wheeler is low in first cost and upkeep—more economical to operate. Immediate delivery is now yours.

Write for the name of your local dealer; ask for the new 6-page 2-color folder giving complete information

SPECIFICATIONS

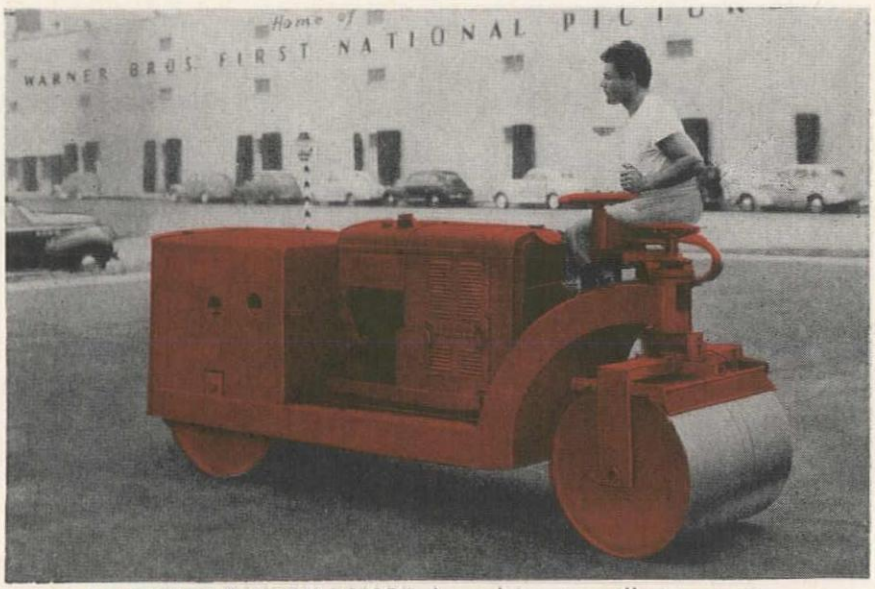
POWER: Allis-Chalmers Industrial Model B gasoline engine, 4 cylinder. Brake horsepower—24.5 @ 1500 RPM, 27.8 @ 1800 RPM. Speeds—2 forward and 2 reverse. First gear—1.55 MPH @ 1500 RPM, 2.55 MPH @ 1800 RPM. Second gear—2.75 MPH @ 1500 RPM, 4.00 MPH @ 1800 RPM. Continental and Hercules engines also furnished.

DIMENSIONS: Wheel base 7' 10". Length overall 10' 7". Width overall 3' 6". Tank height 4' 0". Ground clearance 10". Left side clearance 1½".

WESTERN WHEELER ROLLER DEALERS

CALIFORNIA: Moore Equipment Company, Stockton; Buran Equipment Company, Oakland; Fresno Equipment Company, Fresno. **OREGON:** Clyde Equipment Co., Portland. **WASHINGTON:** A. H. Cox & Company, Seattle. **MONTANA:** Caird Engineering Works, Helena. **IDAHO:** Southern Idaho Equipment Co., Idaho Falls. **ARIZONA:** W. P. Powell Machinery Co., Phoenix. **NEW MEXICO:** Bud Fisher Company, Albuquerque.

NEW DEALERS ARE BEING ADDED—CHOICE TERRITORIES ARE STILL AVAILABLE . . .



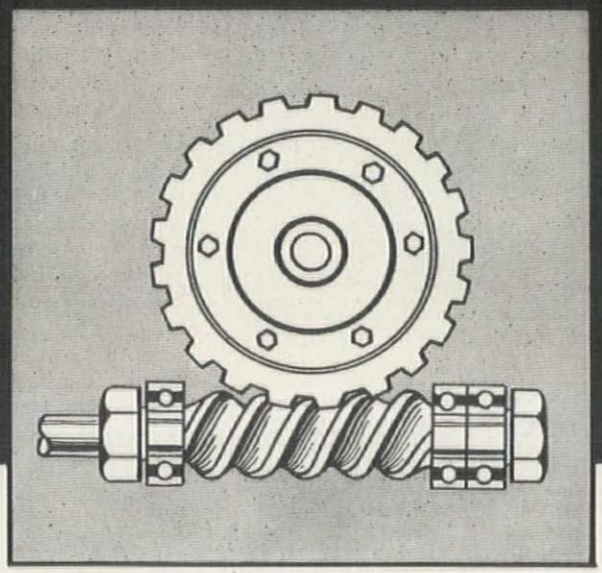
A WHEELER TANDEM ROLLER shown doing an excellent compacting job near the Warner Bros. First National Pictures lot, Burbank, California.

WHEELER ROLLER DIVISION

SHAW SALES & SERVICE CO.

5100 Anaheim-Telegraph Road, Los Angeles 22, California

solves high-speed worm gear lubrication problem



Veedol Super Film Lubricant "A"

Here's a lubricant especially designed for worm gear usage. Veedol Super Film Lubricant "A" successfully lubricates all types of worm gears used in construction equipment.

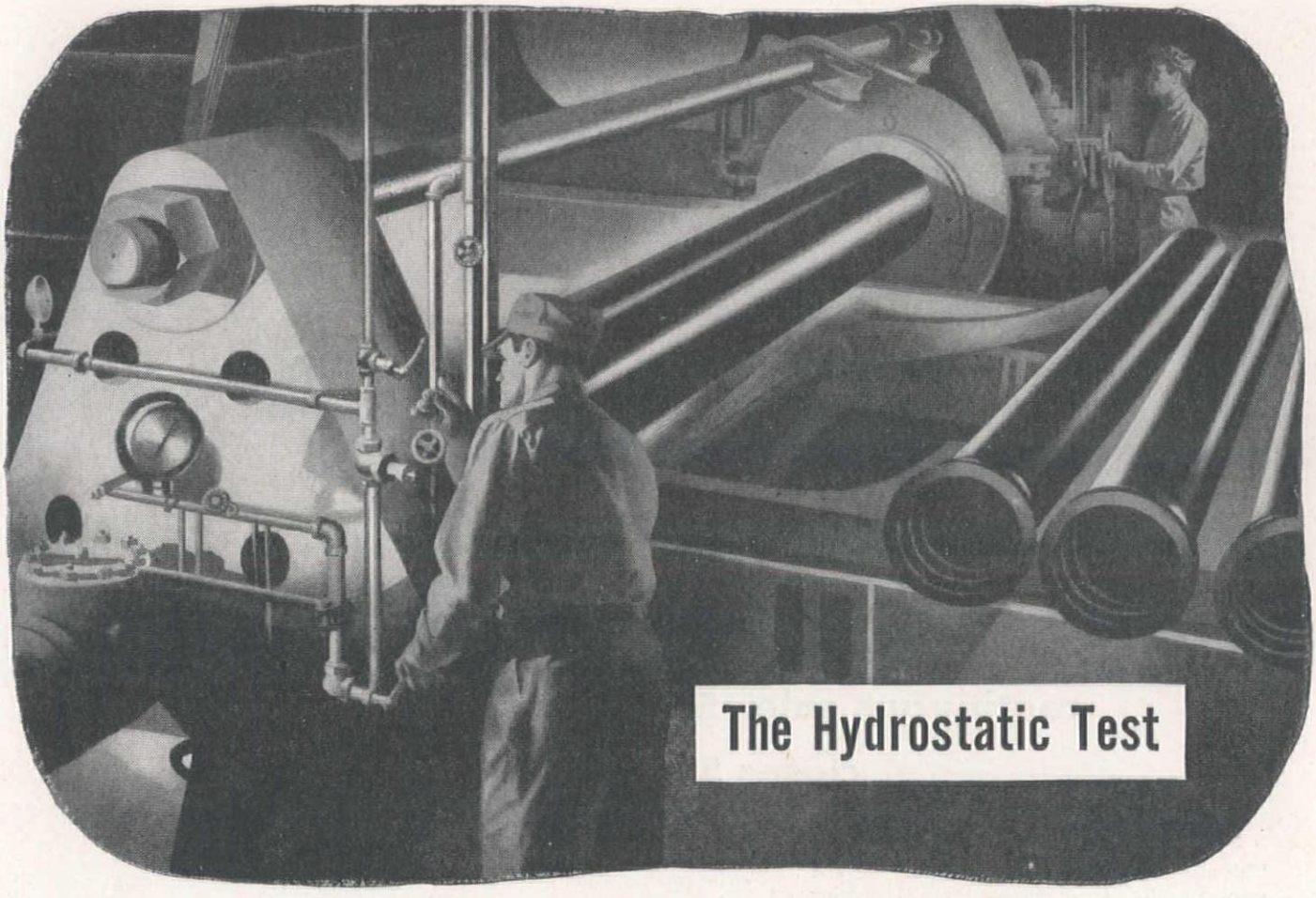
Veedol Super Film Lubricant "A" contains *three* additives formulated into its base stock. These include a metal de-activator, an oiliness agent, and an oxidation inhibitor. Worm gear operating temperatures stay down, gears remain "oilier," and wear is definitely reduced.

You'll find that Veedol Super Film Lubricant "A" does not thicken in service. It *retains* its protective qualities. Investigate this superior Associated product for usage in *your* equipment. Discover how it will help improve operations, cut upkeep costs.

Call your Associated Representative for expert help on any lubrication problem.

Tell Your Associated Dealer You Want a National Credit Card

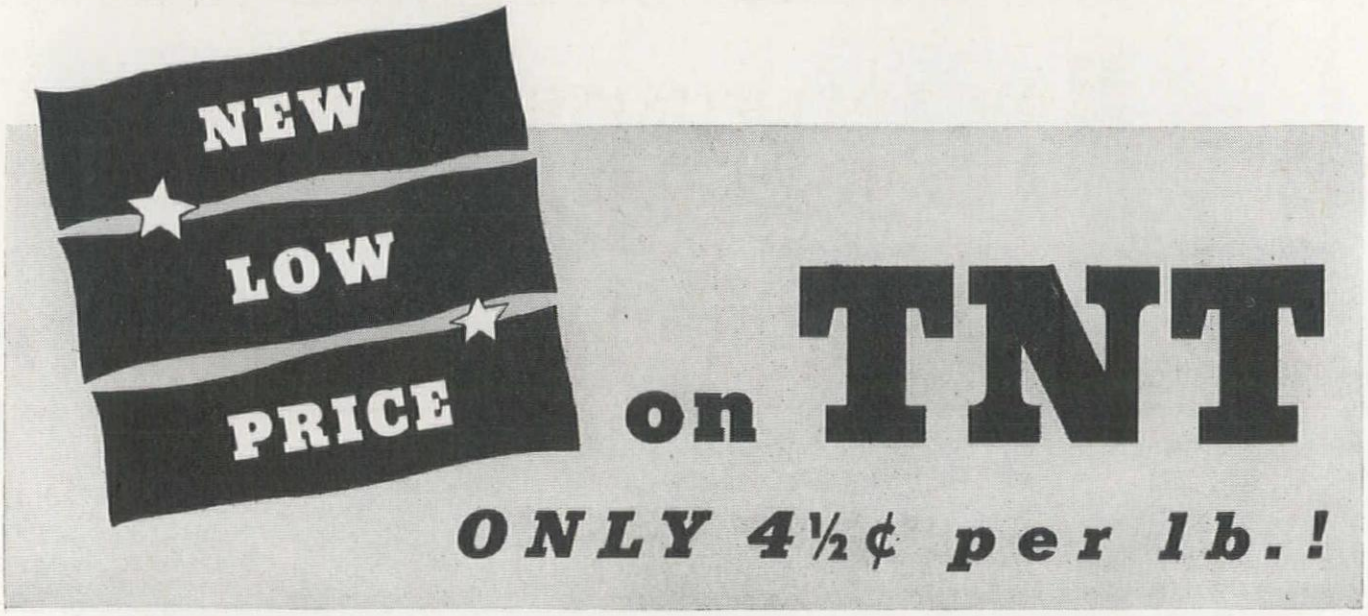
TIDE WATER ASSOCIATED OIL COMPANY



YOU can't buy a length of cast iron pipe for love or money unless it has passed the Hydrostatic Test at the foundry. Every full length of cast iron pipe is subjected to this test under water pressures considerably higher than rated working pressures. It must pass the test or go to the scrap pile.

The Hydrostatic Test is the final one of a series of routine tests made by pipe manufacturers to ensure that the quality of the pipe meets or exceeds the requirements of standard specifications for cast iron pressure pipe.

Few pipe buyers realize the extent of the inspections, analyses and tests involved in the quality-control of cast iron pipe. Production controls start almost literally from the ground up with the inspection, analysis and checking of raw materials—continue with constant control of cupola operation and analysis of the melt—and end with inspections and a series of acceptance and routine tests of the finished product. Cast Iron Pipe Research Association, Thos F. Wolfe, Engineer, Peoples Gas Bldg., Chicago 3, Illinois.



Approximately 25,000,000 pounds available on continuous sale. Sale to priority groups closes Sept. 2, 1947

PRICE, F. O. B. LOCATION, 4½¢ PER LB.

This material is available for immediate sale and delivery to all classes of purchasers at the following War Assets Administration Regional Offices in the approximate quantities shown. Offers to purchase may be made at any WAA office, or by letter, wire, or personal visit to any of the Regional Offices listed. If your offer is written mark your envelope "Offer to Purchase Trinitrotoluene, A-128".

WAA OFFICE	½ LB.	1 LB.
Birmingham	——	482,000
Chicago	——	1,160,700
Cincinnati	21,145	3,527,595
Denver	1,202,900	463,841
Grand Prairie, Texas	——	693,870
Los Angeles	——	867,630
Minneapolis	——	1,600,530
Nashville	1,616,600	——
New York	——	50,000
Omaha	1,064,900	1,843,200
Philadelphia	——	1,170,000
Portland	27,556	1,436,024
Salt Lake City	341,980	8,320,745
San Francisco	45,710	51,747
St. Louis	8,500	——
	4,329,291	21,667,882

This is a concurrent and continuous sale, 10% reserved for Federal Agencies and Priority Claimants until September 2nd. All orders received from priority claimants will be filled from the reserve. Non-priority orders will be filled immediately upon receipt.

This material is offered, as is, subject to inspection by purchaser at location, without expressed or implied warranty except as to title. WAA reserves the right to reject any or all offers, and to make awards in whole or in part. All items subject to prior withdrawal.

Purchasers of Trinitrotoluene are required to observe all applicable laws regulating the sale, use, handling and storage of explosive materials.

Purchaser's order must state thereon: (a) "This order is subject to War Assets Administration Standard Conditions of Sale, and all other advertised terms and conditions, and no other terms or conditions should be binding on War Assets Administration", (b) Type of business and level of trade. Orders from veterans must show certification date, case number and location of certifying office.

T. N. T. is relatively insensitive to shock and is one of the most stable of the high explosives. For many blasting operations it is superior to dynamite.

T. N. T. does not deteriorate like dynamite and turning, to prevent deterioration, is not required. It can be stored over long periods of time and can be handled and shipped with comparative safety.

T. N. T. burns at 266 degrees F. and can be burned in the open in small quantities without exploding. If burned in confinement or in large quantities, it explodes.

T. N. T. is insoluble in water and may be used in underwater charges. It is non-hygroscopic and does not form sensitive compounds with metal.

USES

T. N. T. can be used wherever 40-60% dynamite is employed with the *exception of underground operations* or for use in closed spaces because its explosion produces poisonous gases.

It can be used for swamp drainage and is highly efficient in quarrying, above ground mining, road construction, soil conservation, mud capping, stump removal, seismographic surveying, and for "blowing out" oil well fires.

The use of Primacord (in place of caps) on each block of T. N. T. is recommended. Then there is no danger of detonating unexploded caps when clearing holes.

OFFICE OF GENERAL DISPOSAL

WAR ASSETS ADMINISTRATION

GOVERNMENT WAA SURPLUS

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

1297

Customer Service Centers in these and many other cities.

How advertising can get *Full Credit* for supporting the sales plan

WHEN coordinated with sales activities advertising is given an opportunity to win recognition and succeed as an aid in moving goods and selling services.

Selling plans are based on facts. The decisions of sales managers are guided by dependable information from government and business statistics. To function as an active factor in the sales program and share in the credit as well as the responsibility for sales success, the planning of business paper advertising should be equally factual.

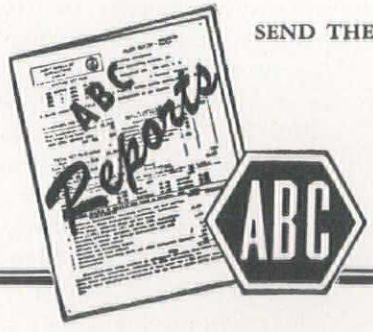
In applying media to markets, the use of adequate, verified circulation data is an indispensable step in the effective coordination of sales with advertising.

Following are some of the questions about the circulation of business papers that are answered in the reports issued by the Audit Bureau of Circulations:

How much paid circulation? How much unpaid? What business or occupational groups receive the paper and how many paid subscribers in each group? At what price is the publication sold? What circulation inducements are used, if any? What percentage of the subscriptions are renewed? How many subscriptions in arrears? Where does the circulation go?

Answers to the questions above, as given in A.B.C. reports, make it possible for space buyers to select media with the same care that an efficient sales manager uses in employing and routing his salesmen. The planned and verified distribution of advertising, by means of the information in A.B.C. reports, is the starting point for effective coordination of advertising and sales efforts.

This paper is a member of the Audit Bureau of Circulations. Ask us for a copy of our A.B.C. report and then study it.



SEND THE RIGHT MESSAGE TO THE RIGHT PEOPLE

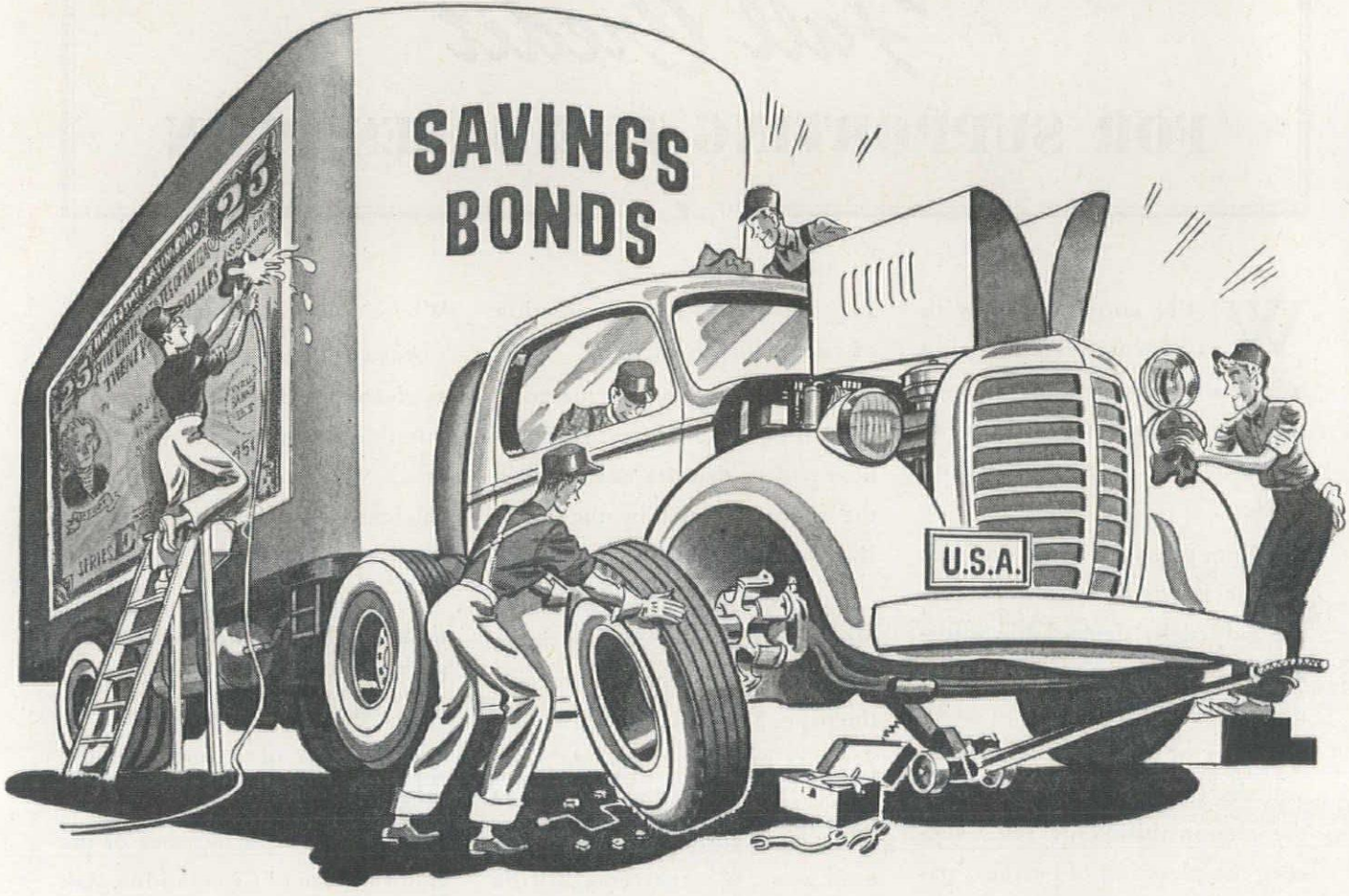
Paid subscriptions and renewals, as defined by A.B.C. standards, indicate a reader audience that has responded to a publication's editorial appeal. With the interests of readers thus identified, it becomes possible to reach specialized groups effectively with specialized advertising appeals.

WESTERN CONSTRUCTION NEWS

503 Market Street, San Francisco 5, California

ABC = *AUDIT BUREAU OF CIRCULATIONS* = *Facts as the Basic Yardstick of Advertising Value*

Time for a Check-up . . .



on the plan that delivers Peace of Mind

THANKS to the work of patriotic volunteers, the U. S. Savings Bonds program has carried America a long way up the road to economic security.

During 1946, in spite of all the problems and uncertainties the nation faced, sales of Savings Bonds *exceeded redemptions* by $1,389,216,000. The success of this great sales operation has helped stem the tide of inflation, has reduced public debt holdings of the banking system, and has given millions of citizens a stake in their country and a profitable investment in their own futures.

Yes, we've come a long way—but the trip isn't over! Now is the time to check up on your Payroll Savings Plan. Make sure that all your new employees are familiar with its advantages. Remind *all* your employees that there's no easier, surer way to build their own futures—and America's—than by buying Bonds regularly through the Payroll Savings Plan. Every $3 invested pays $4 at maturity!

For any help you need in conducting the Payroll Plan, call on your State Director of the Treasury Department's Savings Bonds Division.

New Savings Bonds Plan won't affect the P.S.P.

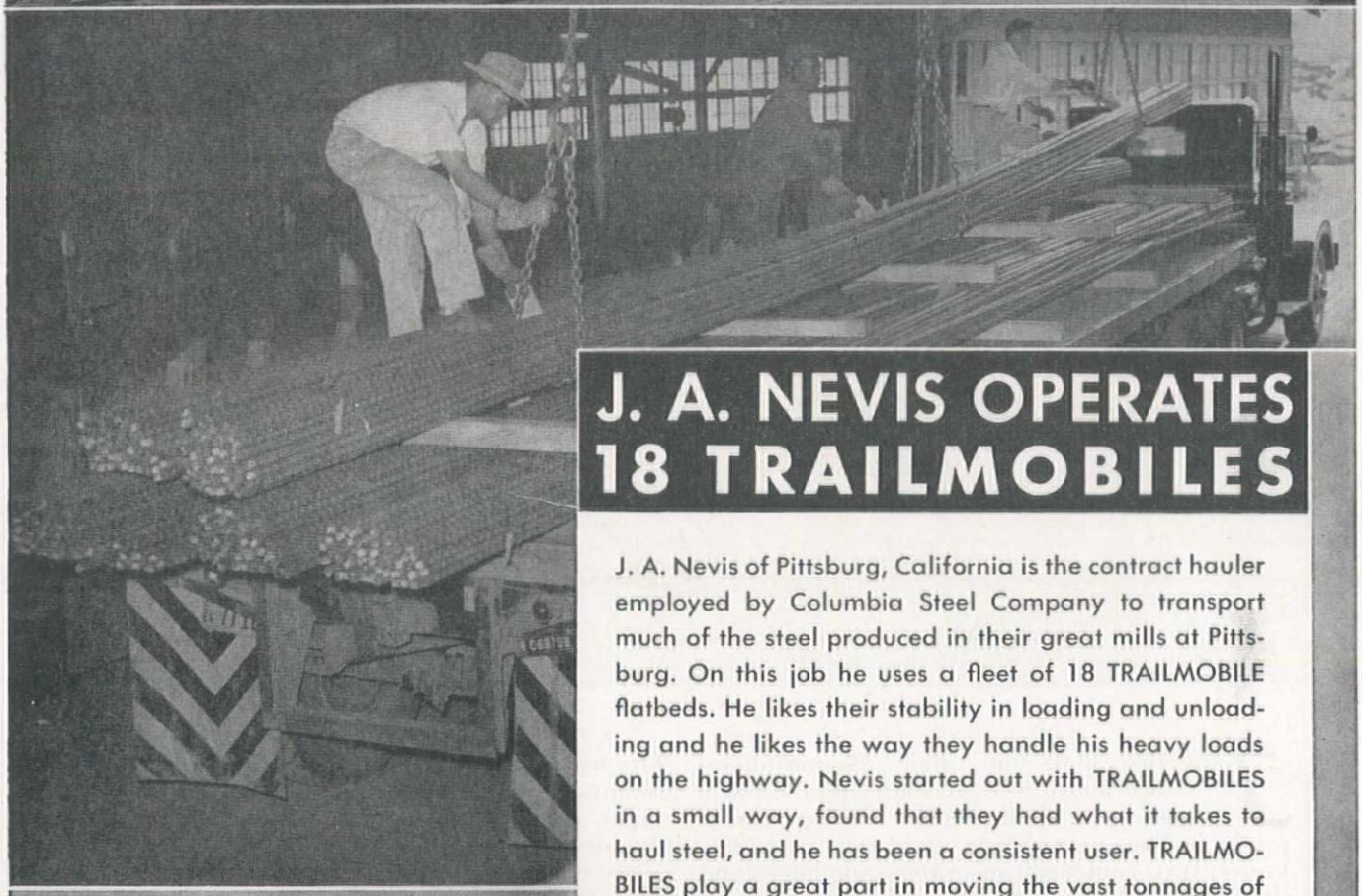
SOON the Treasury Department and the banks of America will make it possible for farmers, doctors, and other self-employed people to participate in "automatic" Bond buying by special arrangement with their banks. This extension of the Savings Bonds program is not a partial payment plan and is intended *only* for people who are not in a position to take advantage of the Payroll Savings Plan.

The Treasury Department acknowledges with appreciation the publication of this message by

WESTERN CONSTRUCTION NEWS

503 Market Street San Francisco 5, California

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and The Advertising Council.



J. A. NEVIS OPERATES 18 TRAILMOBILES

J. A. Nevis of Pittsburg, California is the contract hauler employed by Columbia Steel Company to transport much of the steel produced in their great mills at Pittsburg. On this job he uses a fleet of 18 TRAILMOBILE flatbeds. He likes their stability in loading and unloading and he likes the way they handle his heavy loads on the highway. Nevis started out with TRAILMOBILES in a small way, found that they had what it takes to haul steel, and he has been a consistent user. TRAILMOBILES play a great part in moving the vast tonnages of building materials produced and consumed on the Pacific Coast—be it steel, lumber, clay products, cement, or aggregates. They are all big loads—heavy loads—and those are right down TRAILMOBILES alley. If you contemplate buying trailers, investigate TRAILMOBILE.

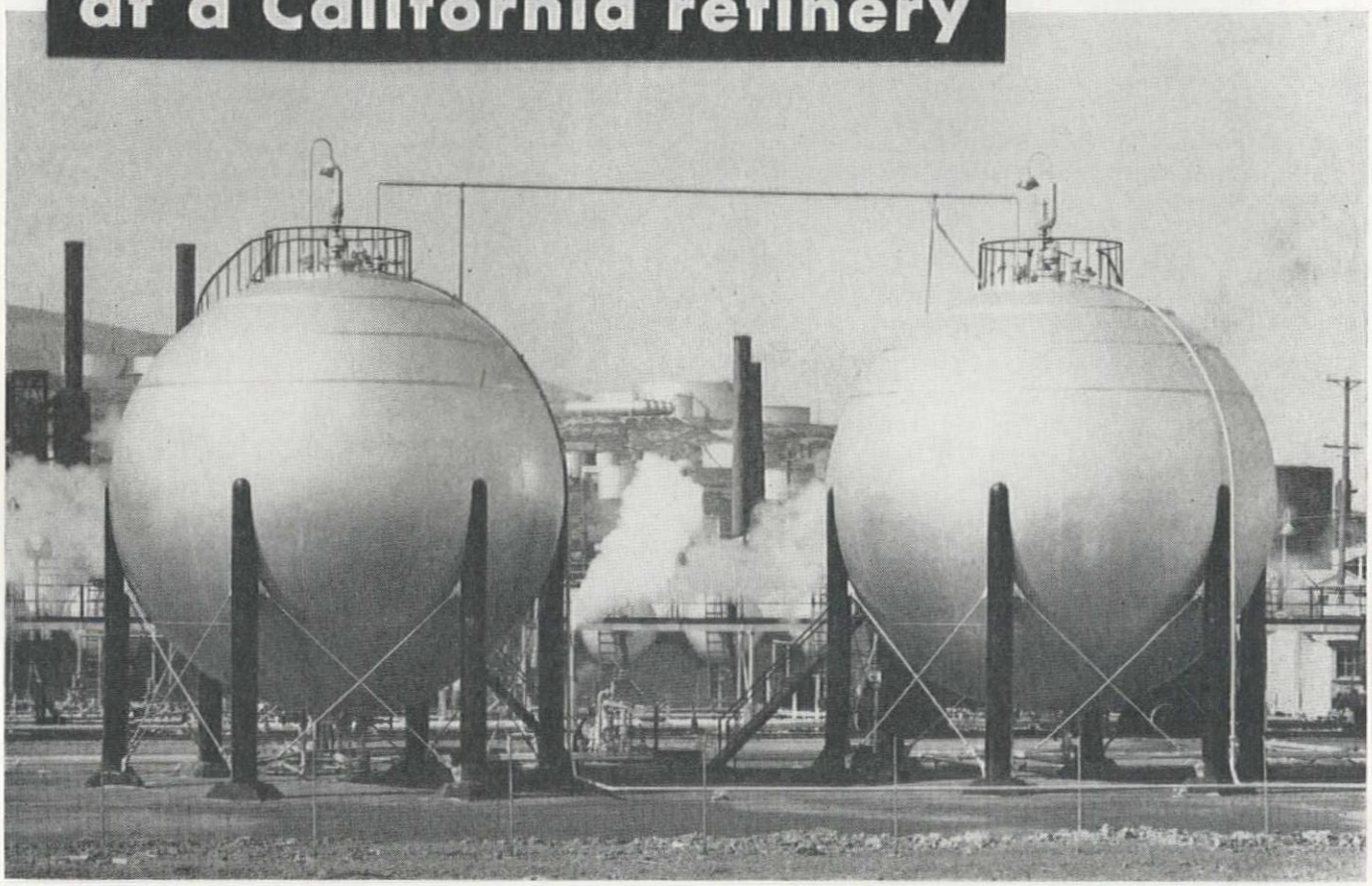
THE TRAILMOBILE COMPANY
BERKELEY, CALIFORNIA

TRAILMOBILE

LOS ANGELES • BERKELEY • SACRAMENTO • SANTA ROSA • FRESNO • SAN JOSE • BAKERSFIELD • STOCKTON • OGDEN • SEATTLE
HONOLULU • SANTA BARBARA • PORTLAND • EUREKA

TWIN HORTONSPHERES provide dual service at a California refinery

The two Hortonspheres shown below are located at a refinery in California. They are 30 ft. 9 in. in diam. and are designed to operate at 55 lbs. per sq. in. pressure.



THE two 30-ft. 9-in. diam. Hortonspheres shown above were recently installed at a refinery in California for storing volatile products. They provide a two-fold service . . . they protect their contents from evaporation lossses and they reduce the danger of fire during the storage period.

Hortonspheres are recommended for products that require storage at a relatively high pressure. They are usually designed to withstand the pressure that builds up during normal operation*. As long as this pressure does not exceed the setting of the relief vent, there will be no evaporation loss. Fire hazard is reduced by simply eliminating the conditions which cause fire or explosion. (The vapor content of air-vapor mixture above the liquid surface in a Hortonsphere is almost always above the ignition range.)

Hortonspheres are recommended for the storage of butane, butane-propane mixtures, volatile grades of natural gasoline and volatile refinery charging stocks. They are built in a wide range of sizes for pressures up to 150 lbs. per sq. in. in the smaller sizes. Get quotations on the Hortonsphere the next time you must provide storage facilities for volatile liquids.

**HERE IS A FACT to keep in mind when requesting quotations on Hortonspheres. It is often desirable to provide a working pressure somewhat higher than actually required. The cost of building a container to withstand a slightly higher pressure is not great, and the investment may prove highly profitable if it becomes necessary to store a more volatile product in a tank at a later date.*

CHICAGO BRIDGE & IRON COMPANY

Los Angeles 14.....1444 Wm. Fox Bldg.	Cleveland 15.....Guildhall Bldg.	Birmingham 1.....1598 North Fiftieth St.
San Francisco 11.....1213-22 Battery Street Bldg.	Detroit 26.....LaFayette Bldg.	Atlanta 3.....2183 Healey Bldg.
Chicago 4.....McCormick Bldg.	Philadelphia 3.....1700 Walnut Street Bldg.	Havana.....402 Abreu Bldg.
New York 6.....165 Broadway Bldg.	Tulsa 3.....Hunt Bldg.	Houston 1.....Clinton Dr.

Plants in BIRMINGHAM, CHICAGO, and GREENVILLE, PA. *In Canada*—HORTON STEEL WORKS, LIMITED, FORT ERIE, ONT.

August, 1947

WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED WESTERN HIGHWAYS BUILDER

Vol. 22, No. 8

Hagie for Interior!

WE PROPOSE Floyd O. Hagie, for years secretary-manager of the National Reclamation Association, and now general manager of the Seattle Chamber of Commerce, to fill the post of Secretary of the Interior when that post becomes vacant through the resignation of its present occupant, J. A. Krug.

As we write, Krug has not yet tendered his resignation, but it is inevitable in view of the scandalous revelations by Howard Hughes' front man before the Senate war investigating committee, and other sensational revelations not published. Probably the resignation will be of record by the time this appears.

Hagie is a man of stature on Capitol Hill, and of wide experience, both in the Western region and nationally. He is closely familiar with the work of the Department of Interior and perhaps better acquainted with the needs and ideals of the West, where virtually all of Interior's work is concentrated, than any other man in the country.

We have no idea of Mr. Hagie's party affiliation, and have had no correspondence with him in regard to this nomination. We propose him without political, personal, or prejudicial interest because we know him to be completely qualified in every respect; because he has often demonstrated his capability of exploring problems to their very heart; because he is well-known and well-liked in Congress and by other government officials; because his close association with Western problems has familiarized him above any other man with its needs; and because we feel his demonstrated organizational ability will be adequate to straighten out and stabilize the rotten mess left in Interior by Curmudgeon Ickes and the unlamented Krug.

Or Else!!!

THE BENEFICENT Bureau of Reclamation again shows its colors! Apparently acting in the role Secretary Krug supports, that of the regional authority, with dictatorial power over all the inhabitants of a given region, it has ordered closed the Bureau office in Monte Vista, Colo., where a staff of engineers has been making studies of the Wagon Wheel Gap project, and the San Luis Valley irrigation program.

A great deal of work has been put in on the project studies and surveys are commencing to reach the report stage. Nevertheless, this is all thrown away because Commissioner Mike Straus has ordered the work stopped in October.

Is it because the Republican Congress failed to appropriate funds? No; sufficient money for the whole engineering study has been appropriated by previous Congresses, and the funds may not be diverted to other uses.

Is it because the project is infeasible? No; no report has yet been issued making any statement about feasibility, and anyway the likelihood is very great that the report will be favorable, should it ever be completed.

Is there local opposition or is there already plenty of water? Neither; the farms are badly in need of the water and the farmers want it very much.

What reason is given by Secretary Krug or Commissioner Straus? None.

The only possible explanation for abandoning this important and worth-while irrigation project is that most of the farmers of the area are operating farms of more than a quarter-section in extent, and have told the Commissioner that they cannot and will not break up their holdings into 160-ac. farms, thereby reducing their operations and their annual incomes.

Since the supreme command of the Bureau apparently regards the destruction of efficient large-scale farming and the breaking up of successful farms into small parcels as its most important mission, this sincere and natural desire by the farmers to maintain their farms, while improving them with additional water, was regarded in Washington as rebellion and a development to be crushed.

Hence the order stopping work on the project appears to be an effort to blackjack free American farmers into Socialism. The Congress is making admirable advances toward causing the Bureau to operate as a benefit to the arid West. Correction of the stupid 160-ac. limitation should also be speedily accomplished.

MVA Tricksters

UNPRECEDENTED and disastrous floods on the Missouri and Mississippi Rivers last month have brought joy to the hearts of those Congressmen and others who would destroy the American form of government and substitute in its place a system of regional Authorities with authoritarian control over the people.

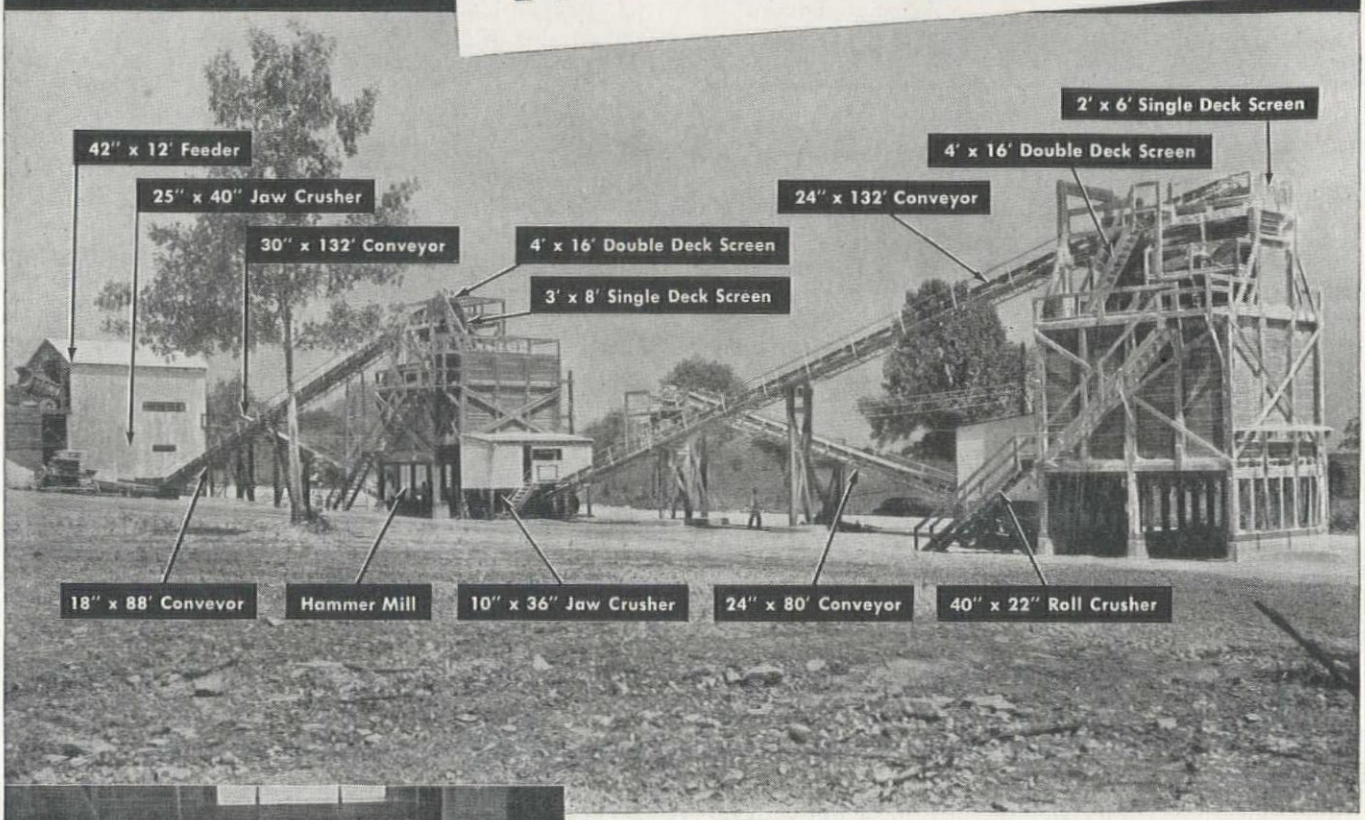
Utterly unmindful of the fact a complete plan of flood control has been designed for the two offending rivers, and that construction has in fact started on some of its most important features, Sen. Murray and other horn blowers have renewed their demands for a Missouri Valley Authority. The President is said to have endorsed such legislation, but doubts if the present Congress, which has just completed its examination of the muddled financial situation of the existing TVA, would go along.

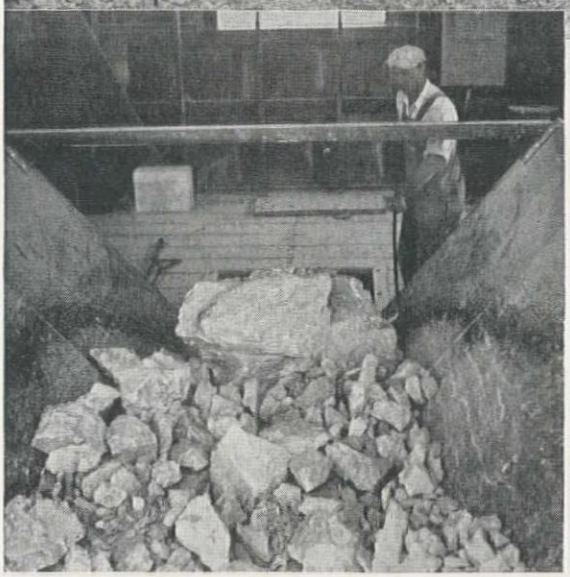
Both Sen. Murray and the President know that the capable and experienced engineers of the Corps of Engineers and Bureau of Reclamation, as well as other smaller federal agencies and the states through which the Missouri River passes, have perfected an over-all plan for maximum use of the waters of that great river, providing not only complete flood control, but irrigation of thirsty acres, power for industrial and home uses, recreational areas, navigation channels, and a host of other improvements. These enthusiasts would scrap all the well-studied plans, organize a new government entity, go through the throes of organizing a new engineering staff and start from scratch with new reconnaissance surveys.

The example of TVA — whose books the General Accounting Office was able to review this year for the first time in history, and which that office discovered has spent $718,000,000 of government funds without any repayment or even a schedule of repayment — means nothing to these great Authority salesmen. They and their fellow-believer in Interior, party-boy Krug, are interested only in extending the Federal bureaucracy, and neither efficiency, engineering integrity, economy, or the republican form of government, is of any interest to them.

To capitalize on the suffering of the stricken citizens of the Missouri and Mississippi Valleys to further their own mean political and ideological fortunes is in this editor's opinion, the lowest possible trick these schemers could conceive. They should be even more soundly spanked by Congress this year than they were last, when Sen. Murray's original MVA bill was sent to the bone pile.

Engineered for Two-Man Operation





The hopper above the Apron Feeder which serves the Primary Crusher is 10 feet wide, 14 feet long and 4 feet deep; has a capacity of 15 tons of stone.

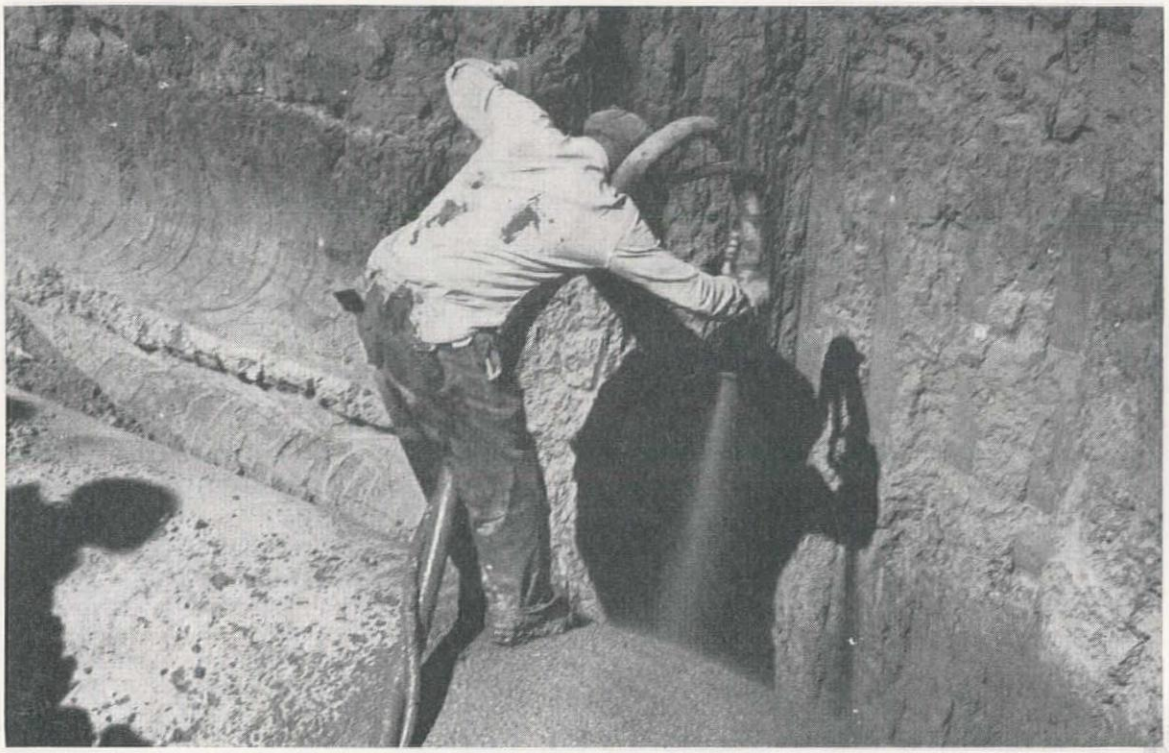
This Indiana Limestone Plant, with its two Jaw Crushers and Roll Reduction Crusher, is typical of the efficiency of design, construction and operation that characterizes every Austin-Western Crushing and Screening Plant. But two men are needed; one at the Primary Breaker; the other to make the rounds of the crushers, screens and conveyors. Varying quantities of various sizes of material are produced, according to trade demands. The Hammermill is used to increase the output of agricultural limestone.

Properly matched crushers, conveyors and screens eliminate bottlenecks and insure maximum, uninterrupted production.

Each Austin-Western Stationary Plant is "tailor-made" for the job. Our Engineering Department will be glad to suggest the size and type of Plant best suited to your requirements.

AUSTIN-WESTERN COMPANY, AURORA, ILL., U. S. A.

ARIZONA—SMITH BOOTH USHER COMPANY.....*Phoenix*
CALIFORNIA—EDWARD R. BACON COMPANY.....*San Francisco 10*
CALIFORNIA—SMITH BOOTH USHER COMPANY.....*Los Angeles 54*
COLORADO—LIBERTY TRUCKS & PARTS COMPANY.....*Denver 1*
IDAHO—COLUMBIA EQUIPMENT COMPANY.....*Boise*
MONTANA—WESTERN CONSTRUCTION EQUIPMENT COMPANY.....*Billings*
MONTANA—WESTERN CONSTRUCTION EQUIPMENT COMPANY..*Missoula*
NEVADA—C. D. ROEDER EQUIPMENT COMPANY.....*Reno*
NEW MEXICO—N. C. RIBBLE COMPANY.....*Albuquerque*
OREGON—COLUMBIA EQUIPMENT COMPANY.....*Portland 14*
UTAH—WESTERN MACHINERY COMPANY.....*Salt Lake City 13*
WASHINGTON—COLUMBIA EQUIPMENT COMPANY.....*Seattle*
WYOMING—WILSON EQUIPMENT & SUPPLY COMPANY.....*Cheyenne*



WORKER on Johnson Western Co. contract guniting the weld on the 68-in. pipe used on the East Bay Municipal Utility District's second Mokelumne pipe line. New line is laid parallel with and 15 ft. center-to-center from the existing line.

Second Aqueduct for East Bay

East Bay Municipal Utility District constructs second Mokelumne aqueduct, necessitated by war-time growth of east bay cities—Completion of system will furnish communities with 200 m.g.d. of water—Construction proceeding rapidly with average of 26 pipe sections laid per day

DUPLICATION of the 94-mi. Mokelumne River aqueduct of the East Bay Municipal Utility District, which serves water to the cities of Oakland, Berkeley, Alameda, Piedmont, Emeryville, Albany, El Cerrito, Richmond, San Leandro, San Pablo, Lafayette, Orinda, San Lorenzo and numerous unincorporated areas along the east shore of San Francisco Bay, has been made necessary by the wartime growth of the area and the fact that the population has not receded but continued to increase since the cessation of hostilities.

The present system was completed in 1929. It consists of a dam near Jackson, Calif., on the Mokelumne River, which forms Pardee reservoir. The dam is 358 ft. high and impounds 68,000,000 gal. of water. The water is conveyed through an aqueduct 93.85 mi. long, which discharges into San Pablo, San Leandro, Lafayette and Chabot reservoirs in the hills to the east of Oakland and Berkeley.

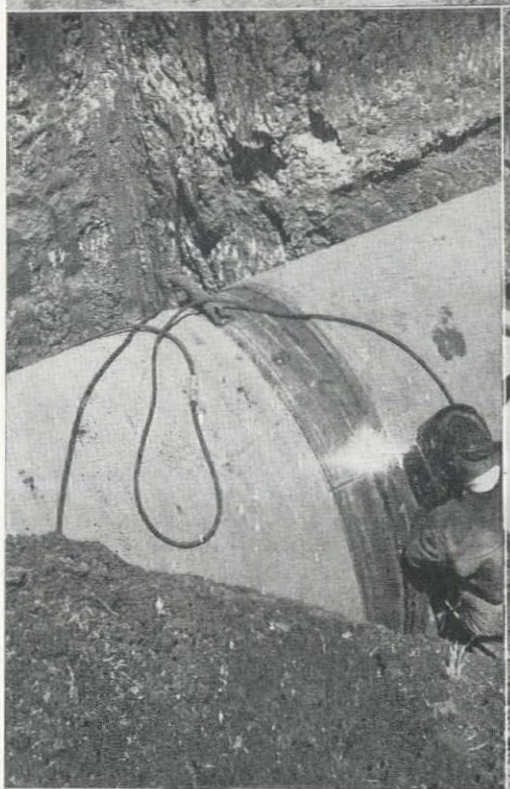
The existing aqueduct was designed to convey 50,000,000 gal. daily by gravity, but the original designers anticipated that the demand would early exceed this figure and prepared for future expansion by purchasing a right-of-way 100 ft. wide for the entire length of the system, to permit the construction of additional pipe lines as required, and also constructed all outlet works, tunnels, railroad and highway crossings, river siphons and other structures in duplicate so that they would be ready for a second line.

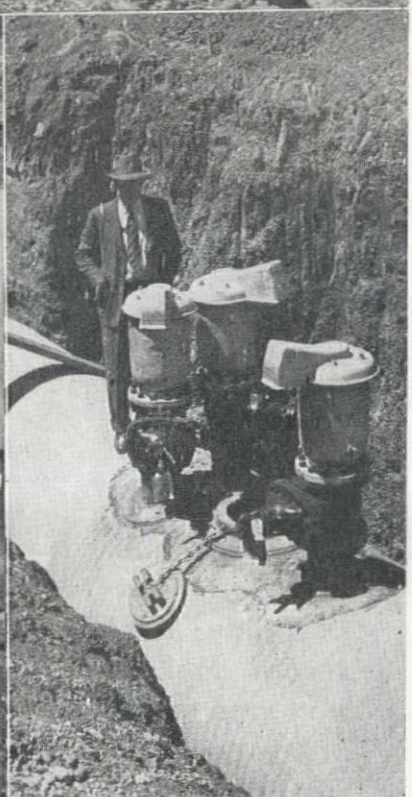
Flow increased by pumping

At the time the original aqueduct was built a pumping plant with two 1,800-hp. pumps was constructed at Walnut Creek, near the discharge end of the aqueduct, which increased the flow in the pipe line to 67 mgd. During 1945 a second pumping plant was constructed near Brentwood and consisted of two 4,000-hp. units. With both of these pumping plants in operation the flow is increased to 95 mgd.

A third unit has been added at Walnut Creek, and is usually reserved as a standby. Contemplated for future expansion is a third pumping plant, also to be constructed near Walnut Creek, and a fourth to duplicate the Bixler plant. With the existing aqueduct and that now under construction both in service, and with all four pumping plants operating at capacity, it will be possible for the system to deliver 200 mgd. at the terminal reservoirs.

Average demand in 1946 was 104 mgd., which was met by the 95 mgd. delivered through the Mokelumne aqueduct and additional supplies from local watershed areas. This, however, does not provide sufficient surplus for operation in the event of any serious interruption in aqueduct service and the District felt obliged to construct the second pipe line





as soon as materials became available after the close of the war. The total estimated cost of the duplicate pipe line is $22,000,000. This is being financed by a $12,000,000 bond issue approved by voters in the District last November, and from postwar construction funds reserved out of operating revenue during the war years.

New pipe line

The existing pipe line is constructed of 65-in. inside diameter steel pipe generally laid underground, but supported on timber piling and concrete yokes across the San Joaquin-Sacramento River delta. The new line, laid parallel with and 15 ft. center-to-center from the existing line, is constructed of 68-in. steel pipe, with a ½-in. concrete lining inside and ¾-in. concrete cover outside. It is laid in a trench dug 90 in. wide and 10 ft. deep, which permits about 4 ft. of earth cover over the pipe. Each pipe section is 30 ft. long, and weighs about 10 tons, lined.

The pipe is belled on one end and lowered into place by mobile cranes which hold it in a double sling and yoke arrangement. The pipe is laid with the spigot end in the trench. The new section is lowered into place at a slight angle, so that the upper edge of the bell slips over the spigot. A tack weld is then made and the pipe lowered so that the lower portion of the bell slips directly into place, rotating around the weld. The average pipe laying speed has been 26 sections per day.

The joint is next welded completely around both inside and out. At angles less than 1 deg., the joints are welded directly. On angles up to 5 deg., a butt strap is welded all the way around. Plasterers working inside the pipe then cover the inside of the joint with mortar which is fed to them through hoses entering the pipe through small holes cut at about 250-ft. intervals. When the plastering is completed, these small holes are closed by a cover plate welded firmly in place. At greater intervals blowers supply fresh air to the workers inside the pipe, welding fumes and other waste gases being exhausted at the newly laid end of the pipe. A battery of 34 Lincoln arc welding machines is used to join the pipe sections.

After the pipe is welded and plastered inside, a layer of 2 x 4-in., 13-gauge wire mesh is laid around the outside of the new joint and spot welded in place. This serves as reinforcement for a layer of gunite which entirely covers the joint and completes the outside concrete covering of the pipe.

The guniting is performed under subcontract by Johnson Western Co. of Los Angeles, who have perfected an automatic gunite mixing machine, especially adapted to this type of work. Gunite is served to the nozzles through

A BATTERY of 34 Lincoln Arc welders are used to weld joints, top. Joints are welded completely around inside and out, left. Three 8-in. vacuum relief valves, right, installed at a high point in the line. Special guniting machine perfected by Johnson Western Co., bottom, combines mixer and pressure chamber in one unit.

150 ft. of hose, making it possible to cover 300 ft. of pipe at one set-up of the machine. Average rate of guniting has been about 8 joints per hour. Ray Beavers is superintendent in charge of the guniting work for Johnson Western.

Backfilling

When a section of the pipe is completed the ends are bulk-headed and as a test the section is filled with water at a pressure 25 per cent over the working pressure which will be used in that section. In testing the first 5 mi. only two small sweats were observed. Although these quickly sealed themselves, they were chipped out and re-welded.

The pipe is laid directly on the bottom of the trench, except in cases of very soft material where a blanket of crushed gravel is placed. Backfilling is performed by a dragline hoe. The material is not compacted, but is settled by flooding the trench.

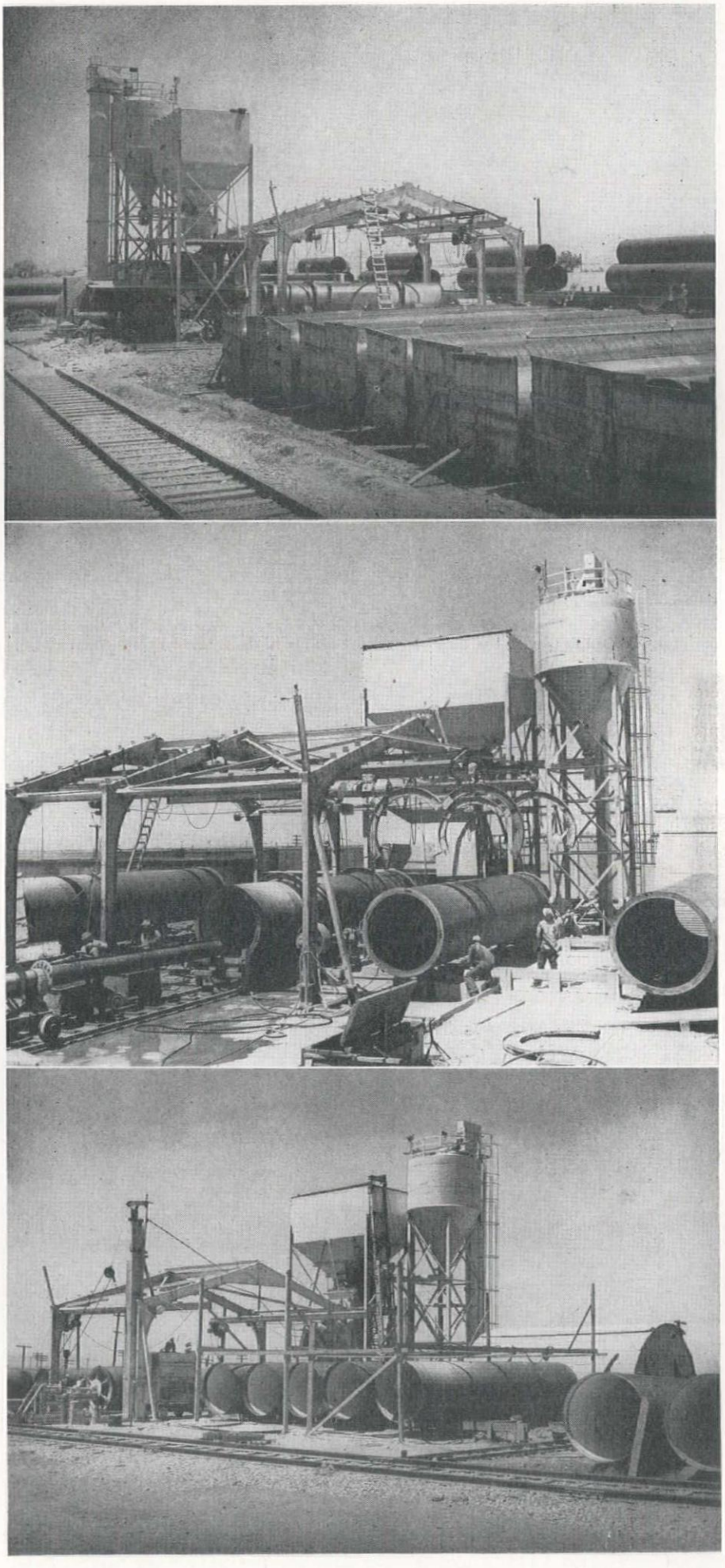
As stated above, crossings of the San Joaquin, Middle, and Old Rivers were installed in duplicate at the time of the original construction and the new line will be hooked directly on to those crossings. Similarly culverts under railroad and highway crossings were made in duplicate and it is now necessary only to remove the earth which was backfilled in them at the time of the original work. However, one highway crossing is being extended at the present time because of a widening program on the roadway. A blanket of reinforced concrete 10 in. thick is placed around the pipe at this crossing. In addition several crossings underneath creek beds are required, the deepest being under Walnut Creek where a depression of about 20 ft. is installed. In this case a 6-in. blanket of concrete was placed around the pipe.

Additional facilities

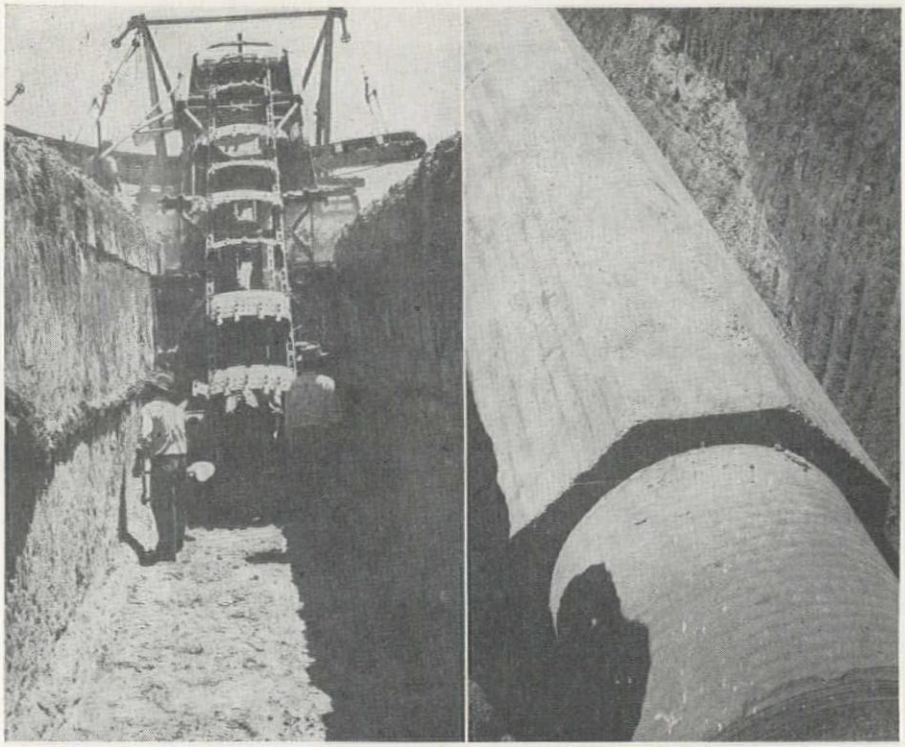
Four automatic relief valves are being installed in the new line at points where similar structures exist in the present aqueduct. These consist of a butterfly valve located in the throat of a Venturi section of pipe and a by-pass to a wasteway. In the event of a break in the line below the Venturi the sudden change of pressure in the throat will automatically sling the butterfly valve to a closed position and divert the water to the wasteway.

At every high spot in the line vacuum relief valves are installed. In most cases the installation is one 6-in. valve, but in two or three instances three 8-in. valves are placed together, where larger air pockets or vacuums might be expected.

Already completed is a 6,000-ft. section of the new line from Walnut Creek pump station to the Lafayette tunnel. This was built by Stolte, Inc., of Oakland last year and is constructed of 60-in. pipe, with a 59-in. inside lined diam-



INTERESTING FEATURE of the aqueduct project is the completely mechanized pipe lining plant operated by American Pipe & Construction Co. near Pittsburg. Top, naked pipe on flat cars and lined pipe being cured in foreground; center, inside lining machine; bottom, exterior covering machine. Both machines are served by Noble batchers.



TRENCHING MACHINE, in this case an Austin, digs a trench 90 in. wide and nearly 10 ft. deep. A Buckeye is also used on the job. A concrete casing 10 in. thick (right) is put around pipe where it will be crossed by major highway now under construction.

eter, this pipe having been purchased by the District as war surplus. At the present time this section of the new line is bulkheaded, awaiting completion of other portions of the aqueduct.

Presently under construction is a 32-mi. section from Walnut Creek pump station to the Bixler pumping plant. Pipe for this section is being fabricated by Western Pipe & Steel Co. and is being lined under subcontract by American Pipe & Construction Co. at a plant specially erected near Pittsburg. The total contract price for fabricating and lining of the pipe is approximately $4,500,000. Installation of the pipe is being carried out by P. & J. Artukovich of Los Angeles on a contract approximating $2,000,000. Geisler Construction Co., Los Angeles, is the subcontractor on concrete structures.

Pipe lining

An interesting feature of the project is the operation of American Pipe & Construction Co. at their Pittsburg plant. This plant is almost completely mechanical, largely operated by compressed air. The pipe is delivered to the plant on railroad flat cars, three sections to one car. It is lifted from the cars by a railroad crane and deposited on timber tracks at one end of the plant. The sections are then rolled easily by hand into the lining machine, stopping en route to have handling jigs applied at each end by air pressure. In the lining machine, the pipe is whirled rapidly and rich mortar applied through long troughs which are inserted from either end. As the pipe is whirled, centrifugal force causes the solids to compress tightly against the pipe surface and the water is freed. After the initial set the pipe is tipped so that the water runs off. After this draining it is again whirled for several minutes to completely eliminate voids and water. The pipe is then removed from the machine by the railroad crane and set on additional timber rails while the final set is achieved. The ends of each section are bulkheaded to prevent wind blowing through the pipe and sprinklers on the outside maintain a constant temperature.

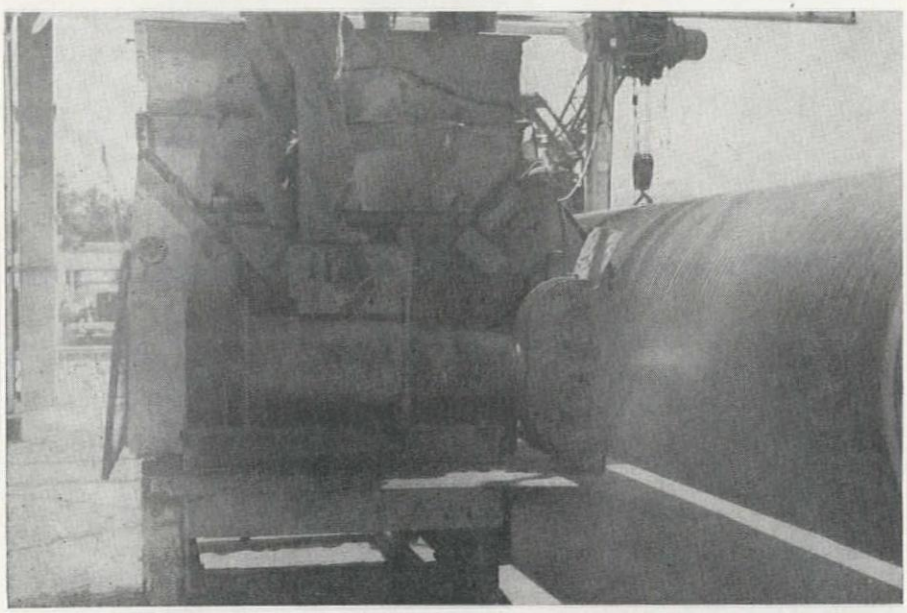
When the mortar lining has set the pipe is transferred to a wire winding machine by the railroad crane and there ¼-in. steel wire is wrapped around the outside at 2-in. spacing, the ends of the wire being spot welded to the pipe. It is next conveyed to the coating machine, where the ¾-in. layer of mortar is applied by shooting through two brushes, the bristles of which meet tangentially while whirling at high speed. When the covering has been applied, the pipe is laid in a bed of sand until the concrete is sufficiently set, after which it is conveyed to the job site on trucks and trailers.

Organization

Engineering work on the new aqueduct is being carried out by forces of the East Bay Municipal Utility District, of which John S. Longwell is chief engineer and general manager and R. C. Kennedy is assistant chief engineer and general manager. The plans and specifications were prepared by J. W. Trahern, supervising civil engineer, and field construction is being supervised by E. L. Macdonald, engineer in charge of the Mokelumne Division.

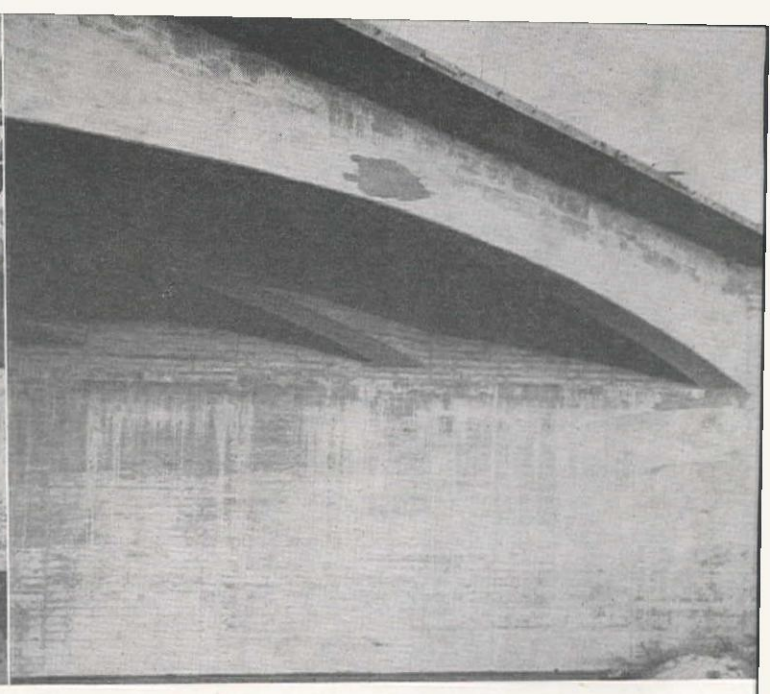
Pete Artukovich is project manager for the contractor and H. R. Dorst is pipe laying superintendent.

OUTSIDE LAYER of concrete is put on pipe by a machine which travels the length of the section spraying concrete on revolving pipe through two brush-like attachments.



Alaskan Way Viaduct Plans Redesigned, Cost Increased

ALASKAN WAY viaduct to be built in Seattle next year will be a double-deck structure three lanes wide, instead of the single-deck 4-lane design originally planned (*Western Construction News*, May, 1946). Final design work, which had been delayed pending analysis of the traffic origin and destination survey made last summer and fall, is now getting under way on the basis of the new plans. The double-decking is primarily intended to provide a safer right-of-way at lower cost; the three lanes of each deck will have one-way traffic. Estimated cost of the structure has been increased from $3,400,000 to $4,500,000. The viaduct is to be a high-speed, through route which will permit traffic to bypass the central business district of the city.



Long Beach Rebuilds Crossing

Modern million dollar crossing to replace narrow timber truss bridges formerly connecting metropolitan areas—New structure located on a skew of 45 deg. as it was impossible to re-align the boulevard without tremendous cost—grade separation at west end of project also under way

By ERNEST DENNING
Long Beach, Calif.

LONG BEACH Boulevard, main highway between Los Angeles and the large ocean-front city of Long Beach, Calif., will have a new and modern crossing over the Los Angeles River flood control channel in November. The crossing is about 6½ mi. up the river from the ocean, and is being constructed by the City of Long Beach as a part of its improvement program which was interrupted by the war.

Plans were prepared by the Donald R. Warren Co., Engineers, of Los Angeles, under the supervision of Paul B. Maurer, staff engineer.

Competitive bids were opened by the Long Beach City Council on July 15, 1946. Four days later a contract was awarded to George E. Kerns of Long Beach. The contract figure was $1,179,000 for structures and approaches.

City Manager Carl B. Wirsching, City Engineer George E. Baker, and the latter's assistant Jess D. Gilkerson supervise the engineering. John E. Miller is the city's engineering inspector on the project.

The old structure consisted of two parallel twin timber truss bridges with exceedingly narrow roadway, which have long been inadequate for the traffic flowing between the two metropolitan areas.

The new bridge, as was the old one, is located on a skew of 45 deg. It was impossible to re-align the boulevard in this highly-developed contiguous area so as to secure a right-angle crossing. Even though considerable saving would have been effected in length and cost, it would have come nowhere near balancing the cost of additional right-of-way and paving of a new location for the road.

Being constructed simultaneously with the river bridge is a grade separation structure on the west end of the project, to carry Long Beach Blvd. over the Los Angeles River Freeway which will be constructed at a later date by the California Division of Highways. Pending actual construction of the freeway, the inter-connecting ramps will not be built, but the main structures will be completed in all other details. This is also being built on a skew, the angle of intersection being 47 deg., 50 min.

The project has a total length of 2,685 ft., including the river bridge, 1,001 ft., 6 in., the freeway separation, 280 ft., roadway approaches, 714 ft. and 266 ft. on the south, and the roadway between the two major structures, 532 ft. These structures provide for two roadways, each 36 ft. wide running parallel and 4 ft. apart. They are flanked by conventional concrete curbs and 4-ft. sidewalks. The 4-ft. dividing strip runs the entire length of the project.

OLD LONG BEACH Boulevard timber truss bridge before demolition started, top of page, left. Under side of completed Span No. 2 of the new bridge is shown at the right. Distance from bottom of girder to top of slab is 9 ft. at the pier, 5 ft. at center. The floor slab is 8½ in. thick.

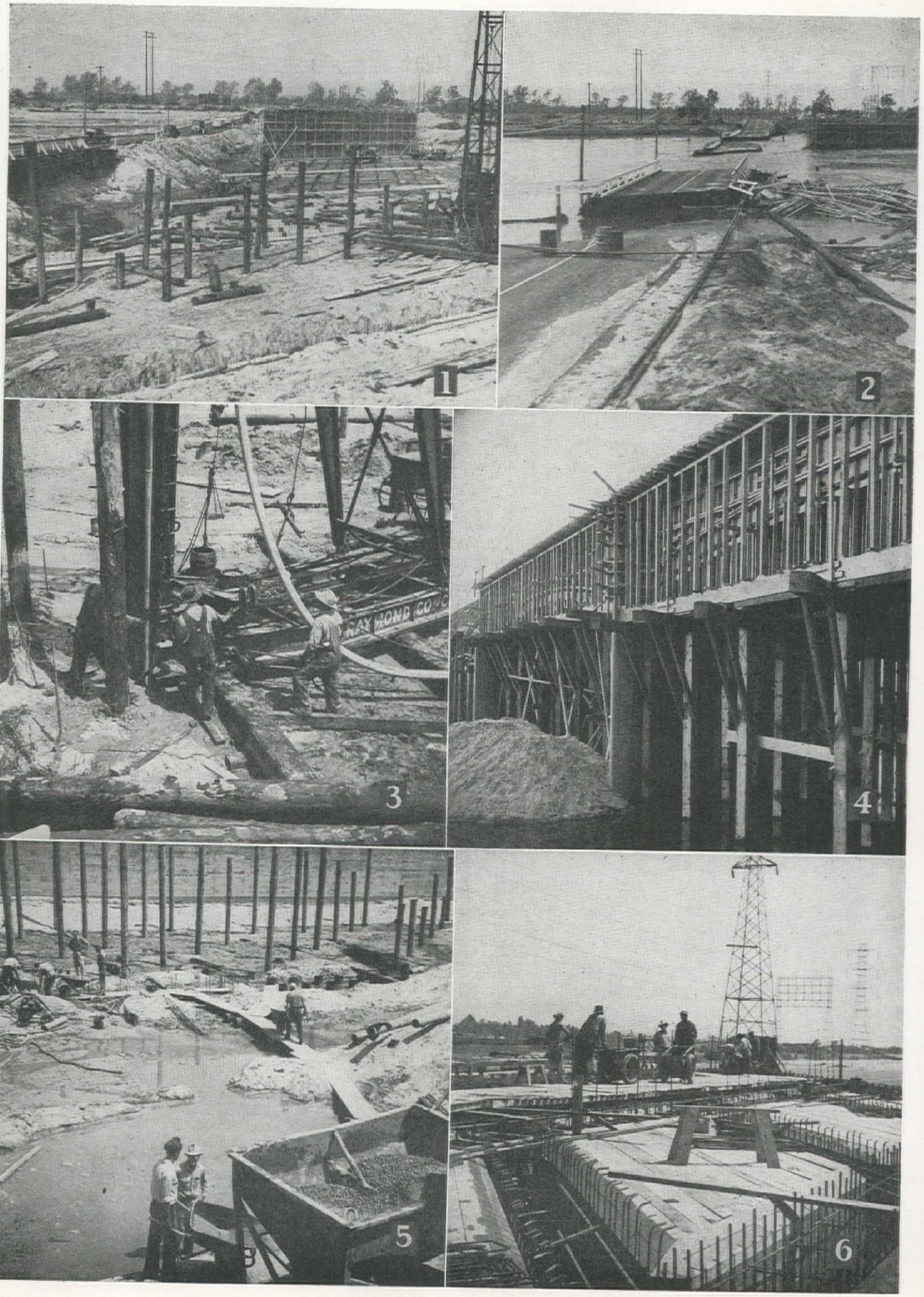
The bridge is constructed in reinforced concrete girder style designed for the H20-S16 loading of the American Association of State Highway Officials. It is a rigid frame with expansion joints through the deck and girders every third span.

There are ten full spans, each 86 ft., 9 in. long, and an approach span 67 ft. long at each end. In the separation structure, there are two main spans of 90-ft. length each and approach spans of 50 ft., 3 in. at either end. Because of the skew, the right angle distance between pieces is only 61 ft., which is the minimum opening permitted by the Corps of Engineers, who have charge of keeping waterways open.

The piers are solid concrete walls, heavily reinforced, of the French hinge type construction. They taper slightly, being 1 ft., 1½ in. thick at the bottom, and 2 ft., 1 in. thick at the construction joint with the superstructure. Each pier is 122 ft., 6 in. long.

The piers rest on concrete footings which in turn are supported on cast-in-place reinforced concrete step taper pilings designed for a load of 35 tons each.

Since the new structure is being constructed on the same centerline as the old one, the first operation was to demolish one of the original twin bridges. Material salvaged from this was used to erect temporary timber detour trestles. These, along with a section of fill across the river bottom were included in the contract price. The fill was placed by bulldozer, moving the material from the river bottom along the location of the new bridge, the trestles at the ends providing passageway for the normal flow of the river. Excavation to a depth of about 8 ft. was carried all the way across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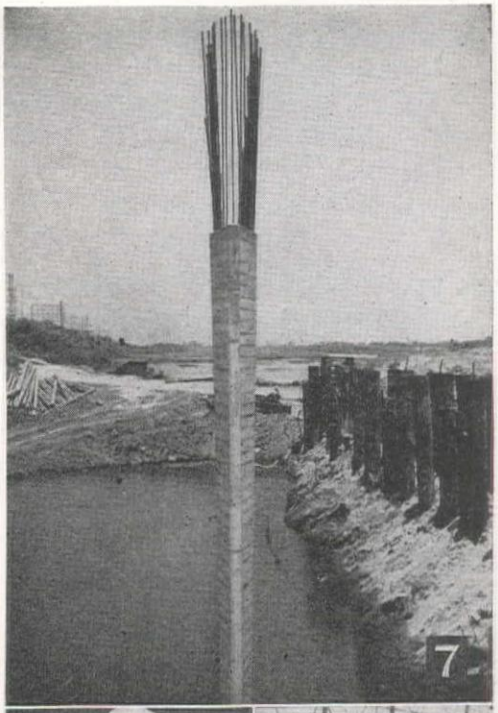
CONSTRUCTION SCENES ON LONG BEACH BOULEVARD BRIDGE

MAINTAINING traffic on Long Beach Boulevard during construction of the new concrete bridge over Los Angeles River was but one of the problems successfully met by G. E. Kerns, contractor. Various phases of the job are illustrated herewith: 1. Traffic was re-routed over a fill and two temporary trestles, shown at the left of the picture. 2. The same view as picture No. 1, but taken four days later—on Nov. 13, 1946—at the height of a mid-winter southern California rain storm. This scene was reenacted twice more during the winter, seriously interfering with the contractor's operations, though not destroying much of his finished work. 3. Jetting and pulling piles of the old bridge. Raymond Concrete Pile Co. was the subcontractor for this work, as well as for driving the new piling. Much of the salvaged lumber was reused in falsework and temporary structures. 4. Falsework and girder forms in place on two spans of the new bridge. 5. Pouring concrete in the steel shells of the cast-in-place concrete piling, which varied in length from 29 ft. 6 in. to 51 ft. 6 in. Concrete was delivered to the hopper by transit mix trucks. 6. Pouring the stems of the concrete girders for the separation structure which is being constructed simultaneously with the river bridge. 7. An unusual end-on view of one of the piers of the new bridge. The piers are 122 ft. 6 in. long (the dimension not visible in this picture), 23 ft. high, 1 ft. 1½ in. thick at the bottom and 2 ft. 1 in. thick at the top. Piling from the old trestle is shown at the right. 8. GEORGE E. KERNS, contractor on the $1,179,000 bridge and grade separation structure, who is also serving as project manager. 9. JIM NASON, resident engineer for the contractor. 10. HAL MORSER, carpenter superintendent on the project. 11. JOHN E. MILLER, inspector of engineering construction for the city of Long Beach, which is building the new structure. 12. Steel rocker supporting the free end of one of the girders. For comparison, the handle of the pocket knife is 4 in long. 13. Pouring the footing for one of the main piers, each footing measuring 122 ft. long, 6 ft. 4 in. wide, and 3 ft. high. At the top of the footing the reinforcing steel is crossed to provide the French hinge construction feature of the piers. Concrete for the footings was delivered by transit mix trucks and placed by buckets moved by a crane. Behind the bucket is W. T. GRAY, inspector for the city. Grouped at the right are GEORGE E. KERNS, contractor; FRED KERNS, co-partner and job superintendent; and PAGE FISK, assistant chemist and testing engineer for the city.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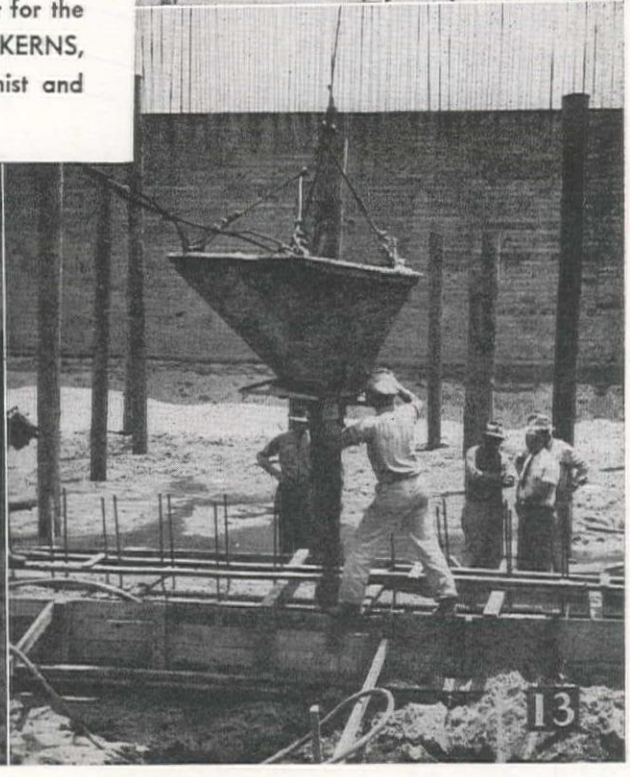
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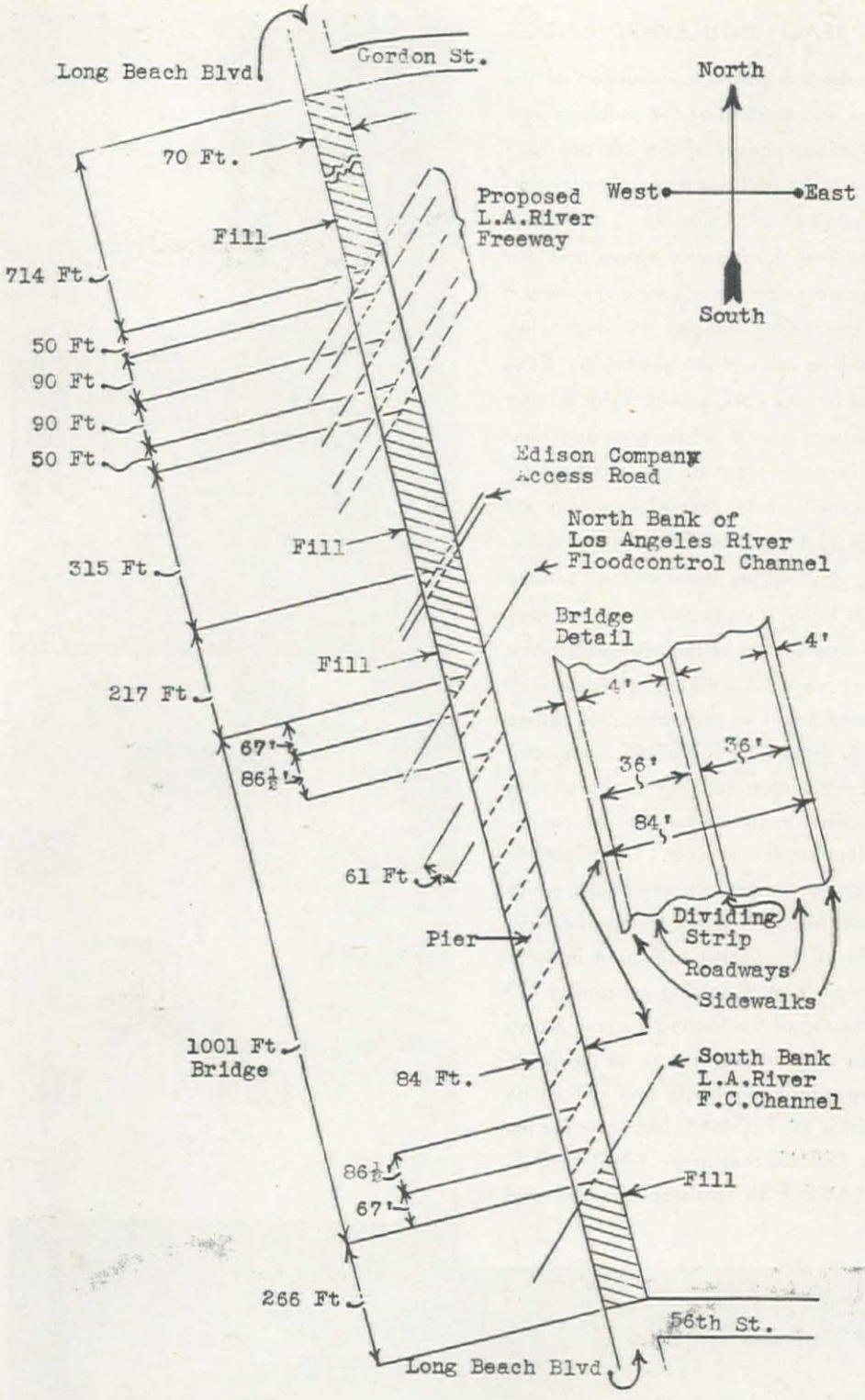


the channel, thus dropping the whole working area to the level of the top of the footings.

On Nov. 13, 1946, when about half of the required pilings had been driven, a severe rainstorm occurred, which raised the level of the river, and washed out the temporary detour crossing fill. The fill was replaced as soon as the water subsided, but similar delays occurred twice more, on Nov. 20 and Dec. 25. Only minor damage occurred to the construction work itself, but considerable delays were experienced, due to flooding and the necessity for rebuilding the detour.

Erection of the superstructure was commenced at the south end, where work could progress safely through the rainy season, since only the highest of flood levels could reach the falsework. This latter was obtained principally from the demolished wooden bridges, and was supported on timber piles driven into the river bed.

The grade separation was constructed simultaneously with the river crossing, but in this case, a considerable saving in labor and falsework was effected by excavating only the material at the site of the footings. All the earth under the span, which will have to be removed when the freeway is completed, was left in place, and with a concrete blanket over it, served to support the falsework.

The 8½-in. slab deck is supported on girders between the piers. These girders are slightly arched on the under side, being 9 ft. deep at the pier and 5 ft. deep at the center. The deck is cantilevered over the edge of the outside girder for a distance of 5 ft.

Pavement on the project is of asphaltic concrete, 7 in. thick. Curbs, gutters, and sidewalks are of Portland cement concrete and steel handrails will be erected on the structures.

The principal items of the contract were 13,182 cu. yd. of Class "A" concrete, 515 cu. yd. of Class "B" concrete, 1,108 concrete piles, 2,380,000 lb. reinforcing steel, 70,000 cu. yd. of imported borrow.

Among the subcontractors on the job were Raymond Concrete Pile Co., driving concrete footing piles and removing timber piles of old bridge; Consolidated Rock Products Co., ready-mix concrete; Bethlehem Pacific Coast Steel Co., reinforcing steel; Anthony C. Meehleis, placing reinforcement; and C. P. Form Clamp Co., form clamps and ties.

For G. E. Kerns, general contractor, Kerns himself acted as project manager, and Fred Kerns as superintendent; Jim Nason, construction engineer, and Hal Morser, carpenter superintendent.

Private Home Building Reaches Peak in 1947

MORE HOUSES are being built in 1947 by private builders than for 20 years, the National Association of Home Builders has reported. The 20-year record rate of construction was revealed by a check of official Bureau of Labor Statistics reports.

Reviewing the BLS figures, the Home Builders reported that 362,800 homes for veterans and others were completed in the first six months of 1947. This is nearly three times the output (128,600 units) in the same period a year ago.

Starts of new houses in the first six months of the year were ahead of last year, the Association reported. A total of 75,000 units were started in June, according to preliminary BLS estimates —the highest number of houses started in June since 1925. (The peak year for home building in the United States.)

If the number of completions in the last half of the year merely equals those of the first half, the Association pointed out, total production by private builders would amount to 725,600 units, the highest annual output since 1928 when 753,000 units were built. (BLS)

However, the rate of new starts is jumping sharply. New units started leapt from 40,100 in January to 75,000 in June. The sharp increase in the starting rate during the first half should mean a corresponding increase in rate of completions during the second half.

Highest output of houses was in 1925 when 937,000 units were built. The next three years saw 849,000, 810,000, and 753,000 respectively. From that time on the annual output fell to a low of 93,000 in 1933 and then climbed to a high war peak of 715,000 in 1941. It then dropped steadily until private home builders were allowed to resume operations in 1946 when they turned out 437,800 units.

Kiska Mission...
A Drama of Alaska War Construction

Dramatic story of a small construction crew on Kiska Island in the earliest days of the war—Trials of life in the northern outpost where contractors erected a military outpost almost on the enemy's doorstep, with only the meagerest of tools and supplies

By WADE W. WHITE
formerly Job Superintendent,
Siems-Drake-Puget Sound Co.
AS TOLD TO
HARLAN H. EDWARDS
formerly Assistant Chief Engineer,
Siems-Drake-Puget Sound Co.
Seattle, Wash.

FARTHEST FROM the thoughts of fourteen construction men, who with 2,000 others were working on the Dutch Harbor naval base in 1941, was the idea that they would find themselves on their own on a bleak island of the windswept Aleutians at the beginning of a war. Never did they think that the first day of a war would find them almost on the enemy's doorstep, erecting the necessary structures and facilities for a military outpost.

Even less did they imagine that they would have a scant two weeks in which to complete their mission with only the help of a few sailors, a small model 20 Marine Cletrac crawler-type tractor and trailer, a 10-in. electric Skilsaw, a 125-kw. gasoline powered electric generator, and ordinary hand tools. However, through ingenuity and the ability to improvise, characteristic of the American "construction stiff," many seemingly insurmountable obstacles were overcome to get the job done on time.

This play-by-play account of their experiences is told by Wade W. White, superintendent of the operation for Siems-Drake-Puget Sound, general contractors for the Alaskan naval bases, who was working under the general direction of O. I. Hall, general superintendent of the Dutch Harbor project. Although finally disclosed long after the completion of the secret mission and the end of the war, the account is graphic testimony of the invaluable part played by many unsung contractors and their men in winning the war. It is typical of what can be accomplished when men work together for a common goal. White's account of the mission follows:

Sailing to Kiska

Early in November, 1941, I was asked to take charge of a job on Kiska Island in the far Aleutians, and was given my pick of the men working on the Dutch Harbor naval base. The job on Kiska was the building of a combination barracks, messhall, and cold storage building, a power plant, a sewer system and water supply, and a radio and aerographer's office with living quarters combined.

For access to the site 1,500 ft. of 5-ft. wide trestle across swamp and lowland was required. With fourteen construction men and eight sailors we were to complete all of these facilities in ten days so that we would not hold up the naval minesweeper, U.S.S. Oriole, which was to transport us to another island for other work.

No other equipment could be taken aboard ship because we already had 115 tons of freight and 24 men to transport. This was twice the ship's capacity in men and far more than the normal cargo of freight, but no other ship was available and the job had to be done.

The North Pacific Ocean lived up to its reputation as an area tough to travel —tough on both men and ships. Sailing from Dutch Harbor on the morning of Nov. 28, tons of cold blue water cascaded over the bridge for four days straight. Deck cargo had to be lashed and made secure several times to keep from losing it. On the fifth day the weather calmed, and on Dec. 3, 1941, our little party sailed into Kiska Harbor and dropped anchor.

WADE W. WHITE, superintendent for Siems-Drake-Puget Sound, contractors for Alaskan naval bases, who chronicles story of Alaskan construction on Kiska.

Emergency bulldozer

We lightered the deck cargo and aviation gasoline ashore and piled it on the beach, every man doing the work of two. Then we came to the task of taking the Cletrac ashore. For this purpose we had an old 7 by 14-ft. barge with 5-ft. draft that the Navy had brought to Kiska a month earlier. The barge wasn't large enough to take the tractor without becoming unbalanced and upsetting, but in anticipation of this situation we had included in our cargo two dories and two 6 by 6-in. timbers 26 ft. long. Fitting these up as outriggers, we ferried the tractor ashore without mishap.

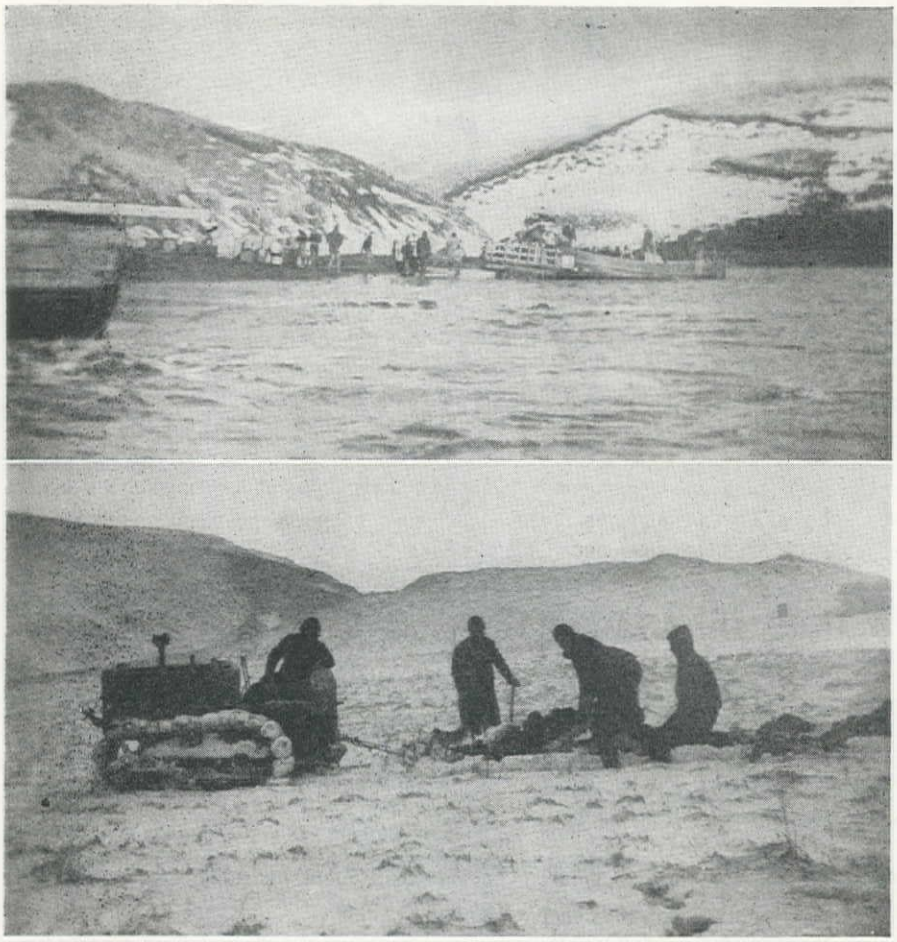
But this was only the beginning of our problems. Along the shore a sand dune had been built up by high seas and wind. It was about 30 ft. high and too steep for the tractor to climb, even when empty. Darkness had fallen. We had an unexpected road-building job to do and no equipment with which to do it except the Cletrac. So, using three 4 by 12-ft. timbers 5 ft. long we built an old fashioned bull board. Two handles were spiked to its sides, a cable was attached, and two timbers were extended from the frame of the tractor to carry it.

Although crude, this apparatus worked, and moved dirt a hundred times faster than manual labor could have done it. We would drive up the bank, pull the bull board as far as possible up the bank, and then back down, taking out about a yard of dirt each time. The maximum cut was about 20 ft. in the total length of 200 ft. The cut was made 10 ft. wide and sloped to keep it from caving at the bottom. About 1,000 yd. of dirt had to be moved quickly for we were working against time and the sea.

More roadbuilding

If a storm such as we had experienced on the way were to occur again, we would lose not only our road, but also a large part of our material, all of which was still on the beach. This would cripple us, and prevent completion of the job until more material and help had arrived. As we worked like beavers building the road and unloading the ship, the chief radioman set up a tent inland for the field transmitter, and the cook got a messhouse set up with the help of the plumbers, carpenters and seamen.

In the early morning of the second day the tractor and trailer started the first load moving inland. Beyond the sand dune lay 1,500 ft. of swamp which could be crossed only with great care. Hauling material for a quonset hut to be used for sleeping quarters, we picked our way across successfully but the second trip was doomed to failure. Bogging down in the swamp, we had to take



MATERIAL and equipment was unloaded on the beach with the aid of a small Cletrac and auto trailer (upper picture). Getting off the beach and inland was more of a problem than unloading. Improvised plow of timber and corrugated iron (in lower picture) pulled by Cletrac dug 1,200 ft. of 3½-ft. water pipe trench through thick tundra in less than five hours. By hand methods, it would have taken 24 man-days.

4 by 12-in. timbers and pry the tractor and trailer out, then corduroy the road.

Not having enough plank to do the whole job, it was necessary to keep bringing them up from the rear and laying them down in front. Knowing that our planks would not last until we got all of our material to the site the ship's captain asked what we needed most.

"Pray for cold weather to freeze the swamp so we can cross," I replied, "it's our only hope."

The Lord must have heard us, for that evening the temperature dropped, and before morning there were 2 in. of ice on the swamp. By taking different routes each time and traveling as fast as the tractor would go, we were able to start material rolling to the site.

Prehistoric tank traps

We had been warned that on the next island we were to go to, sink holes or soft spots would be found and these might also exist on Kiska. We never came across any, fortunately, but instead found other hazards to the Cletrac in the form of "barabaras" that the Aleutian Indians were said to have dug there for homes several hundred years ago. These were caves approximately 6 by 8 ft., about 6 ft. deep, and covered with whalebone. In the passing years they had been covered or grown over with tundra grass, making a perfect prehistoric tank trap, or in our case tractor trap, camouflaged by Mother Nature.

While walking over seemingly solid ground, a man would suddenly drop out of sight, or perhaps just to his shoulders, in one of these pits. It was not very harmful, but could be quite effective in putting out of commission the only transportation we had. Fortunately, we avoided these traps, and after 42 hr. of continuous, intensive labor we went back to the ship for our last night's rest.

The sky was overcast and a frigid wind was roaring out of the Bering Sea the next morning when we brought our personal duffle ashore. Sailors and officers continued getting the materials off the beach to the camp site while we construction men were getting quarters established. By mid-morning the storm was on.

The captain left four more sailors to help us, and put out to sea, battling waves that were already 20 ft. high. The williwaws (winds with velocities often more than 100 mph.) were coming and we were not ready. Twenty-eight men worked like slaves until midnight to make shelter secure over their heads. Twenty-eight exhausted men bunked their first night on Kiska in a 30-ft. quonset hut.

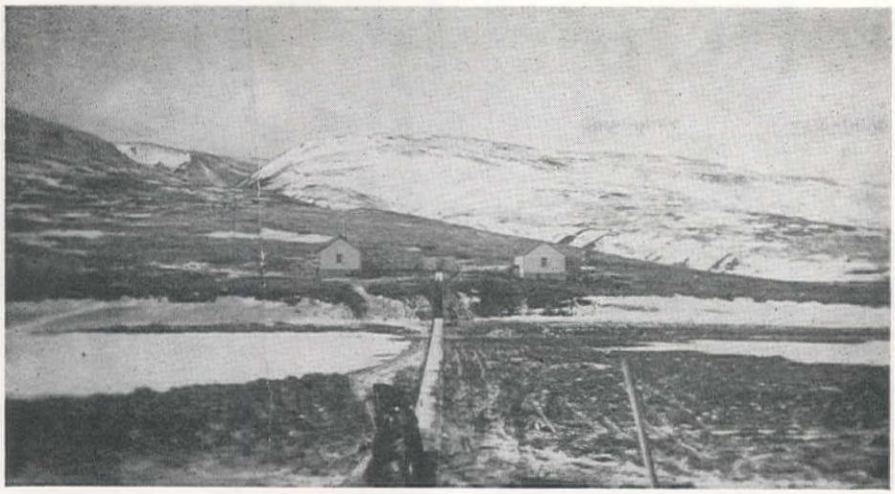
Making a ditcher

Construction work started next day in the raging storm. Winds 70 and 80 mph. whistled overhead all day, making the men lean almost horizontally into the wind to keep from being blown over. It was plain that short cuts and ways to save labor had to be developed or we would fall far short of our goal.

The water supply system required 1,200 ft. of ditch to be dug 4 ft. deep through tough, 2-ft. thick tundra grass sod. To do this by hand would have required six men working four days at top speed. Instead, we rigged up a ditcher to be pulled by our tractor. It was made from a 4 by 12, using a hammered-out piece of galvanized corrugated iron sheeting, left over from the hut, for a mold-board, and two pieces of ½ by 2-in. strap iron. One piece was sharpened on one edge to cut the thick sod, and the other was used to hitch the plow to the tractor.

The tractor driver and four men did the job. With one man on the plow handles, a man on each side, and the fourth man to push the sod off the mold-board, we dug the ditch 3 to 3½ ft. deep

WATER SUPPLY structure at the Kiska outpost was constructed of T & G sheeting driven beside a creek and excavated inside to secure a four-foot water depth. Water was then pumped with a jet pump through 1,200-ft. pipeline.



NEARLY COMPLETED at the time this picture was taken, the Kiska military outpost consists of the three buildings in the background. The line running to the foreground is the 1,500-foot trestle approach which crosses a wide swamp at that point.

and had the pipe laid in 5 hr. We then had to insure our water supply by driving sheet piling made from 2 by 6-in. T&G lumber. The piles were driven right beside the creek, then the ground inside the piling was dug out until we had about 4 ft. of water in our well. With our jet pump this gave us a supply of water that was more than adequate.

Making a pile driver

To drive the 4 by 6-in. piles for a 1,500-ft. long trestle across the swamp was another job to be done quickly. By filling an empty nail keg with concrete, and casting guides onto it so that it would travel in 2 by 6-in. leads, we made an excellent drop hammer which could be operated by two men. With it we were able to drive piling to a depth of from 4 to 10 ft., and cap them ready for applying the decking, all in two days.

While this was going on, other men were building a combined barracks and messhall including 600 cu. ft. of built-in cold storage space, as well as a separate aerographer's office with living quarters combined. Bad luck did catch up with us, however, for while we were doing all of this we sheared a set screw in our Skilsaw, putting it out of commission. We had no other screw like it so we did the only thing possible — made another by filing down a bolt and cutting the required thread on it with a thin file like a nail file.

We heard that war had been declared while we were hard at work, and we were instructed to get off the air and stay off except for weather reports, or to report any suspicious craft that we might sight. With the United States at war, current news became unavailable, and we were at the enemy's doorstep. All the men redoubled their efforts to complete the job so that we would surely be on schedule when the boat came for us, if it ever did.

Waiting for attack

We got Japanese broadcasts all the time on a small receiving set, and from the propaganda they spread our complete fleet had been sunk and the Japs were ready to invade the United States. Perhaps Kiska would be invaded first! If we were attacked, however, any attempt to fight would have been futile because all we had for our defense of our farthest Aleutian outpost was two .22-cal. rifles and a 12-ga. shotgun.

The job was done, all material was used up, and the buildings were painted by Dec. 20. We awaited the arrival of the ship for days, not knowing that it was busy removing women and children from Dutch Harbor.

One night in late December, the rattle of an anchor chain was heard. Visions of prison ships and concentration camps flashed through our minds, for we were sure that the Japs had arrived on Kiska. But blinker lights soon flashed instructions to black out, and to be ready to load and leave for our next job in the morning.

Thirteen hours later we had all our equipment—Cletrac, Skilsaw, and hand tools—aboard ship and were on our way, relieved that we were not, instead, in the stinking hold of a Japanese ship on the way to Tokyo. It had been a tough task for the small crew, but they did it well.

OBITUARIES . . .

Ulysses B. Hough, 83, pioneer Spokane construction engineer, died in Spokane on May 29. Prior to his retirement from active practice in 1932 Mr. Hough had specialized in the construction of logging flumes of which he had built a total of 150 mi. He built the first unit of the smelter at Trail, B. C., and during six years with the Bunker Hill Co. in northern Idaho, constructed the Kellogg tunnel. He served as city engineer for Spokane for a period starting in 1893.

* * *

L. Standish Hall, 55, principal hydraulic engineer for the Eastbay Municipal Utility District, Oakland, Calif., died Saturday, July 5, of a heart attack. Since joining the utility district in 1944, he had investigated various possible sources of water supply, drafted preliminary designs on water flows for Pardee Dam and the South spillway and in recent years had been in charge of the hydrographic division in directing studies of the district's population growth and water requirements. In 1940 he received the Karl Emil Hilgard Medal for the outstanding paper of the year on hydraulics. A well-known engineer, he was a member of the American Society of Civil Engineers.

* * *

Andrew R. Porter, 90, general contractor of Portland, died in Portland on June 8. President and member of the firm of Porter Bros., building constructors, Mr. Porter had been engaged in building several principal railroad and ocean terminals. He was one of the builders of the main line of the Great Northern Railway from Havre, Mont., to Seattle, and was engaged in railroad construction in Washington until 1917.

* * *

Edward C. (Ted) Panton, 58, heavy construction manager of the Bechtel Corporation and well-known Western construction man, died at his home in Del Mesa, Calif., June 20. He had been in Western construction business for 30 years, and at the time of his death was in charge of construction of the Friant aqueduct of the Central Valley Water Project. Panton was also in charge of right-of-way maintenance for the Western Pacific Railroad. He had been associated with the Bechtel organization since 1933.

* * *

Gill C. Baker, 56, employee of the Spokane district office of the Washington state highway department, died in Spokane on July 13. He had been employed in the Spokane district office since 1945, and prior to that time had held a similar position with the Idaho bureau of highways at Moscow.

* * *

John H. Houser, 47, district foreman for the Seattle Water Department, died on June 17. A veteran of World War I, he had served as district foreman for the water department of Seattle for 25 years.

* * *

John R. Bain, 79, retired building inspector of Billings, Mont., died in Missoula, Mont., June 20. Prior to his retirement Bain had served as city building inspector in Billings for 20 yr.

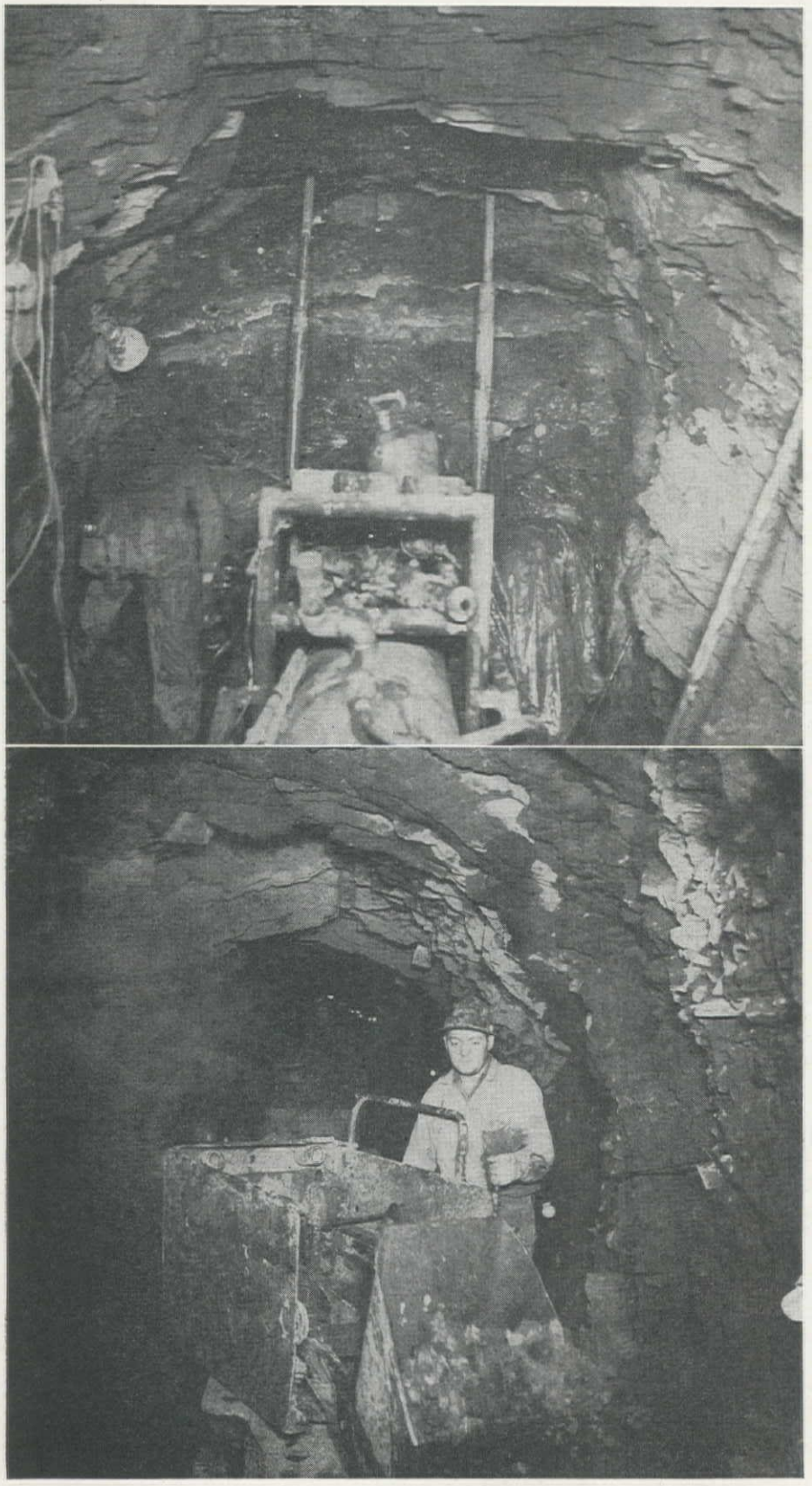
* * *

Garwood N. Sheldon, 92, former street lighting superintendent for Seattle, died in Roseburg, Ore., June 24. He had been retired since 1931 after 30 yr. with the Seattle lighting department.

* * *

William Barnett, 65, retired general contractor of Seattle, died in Seattle on June 24. He had been engaged in contracting for about 10 yr., retiring in 1940.

Small Tunnel Quickly Driven



TWO-DRILL jumbo at work in the 1,200-ft. diversion tunnel for Soldier Canyon Dam, top. Two 3-in. pneumatic columns are fastened to the jumbo frame by clamps and air pistons extend the columns to the roof to give support for the drills. Eighteen to 20 holes were drilled at each advance. The best record for driving was 40 ft. in one day. Small mucker machine, bottom, was used by Samuels & Franklin, contractor, to clean up after each shot, about 200 cars being taken out per day. The 8-ft. 9-in. horseshoe section tunnel was holed through after only 84 days of tunneling work.

Diversion tunnel for Soldier Canyon Dam, one of four earth dams which will form Horsetooth Reservoir, major distributing unit on the east slope of the Colorado - Big Thompson Project, is completed, using mechanized equipment in smaller sizes, and after careful planning by the contractor

By A. J. DUFF
Field Engineer,
Gardner-Denver Company
Denver, Colorado

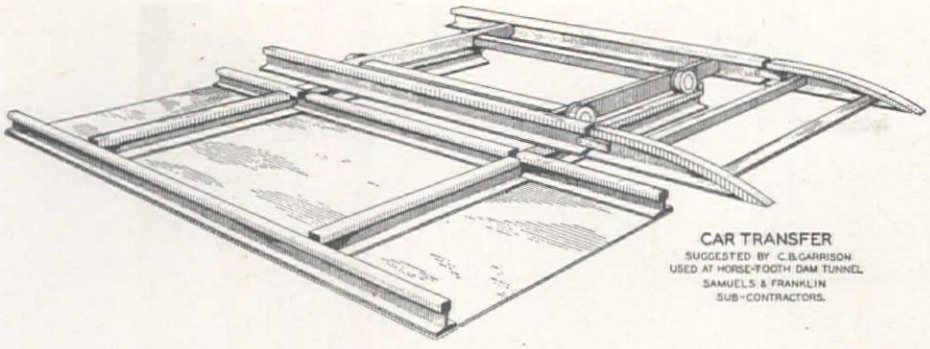
WITH COMPLETION of several of the structures of the Colorado-Big Thompson project lying on the west slope of the Rocky Mountains, and diversion of the first water into the Alvah B. Adams Tunnel through the Continental Divide, the center of construction activity on the big Bureau of Reclamation project has now shifted to the east slope, where reservoirs, conduits, powerhouses and other distribution facilities must be readied to handle the 550 cu. ft. per sec. of Colorado River water which will be transferred to needy farmland in the valleys of the South Platte River and its tributaries.

Among the east slope facilities currently under construction is the Horsetooth reservoir, which will be one of the principal storage reservoirs on that side of the mountains, with a capacity of about 150,000 ac. ft. The reservoir will be about 6.5 mi. long and vary from ½ to ¾ mi. in width. It will be formed by constructing Horsetooth dam at the north end of the basin, and three smaller dams, Soldier Canyon, Dixon Canyon, and Spring Canyon, across channels which have been eroded through the upthrust strata which will form the east edge of the reservoir. All dams will be of rolled earthfill.

Diversion tunnel completed

The 1,200-ft. diversion tunnel for Soldier Canyon dam is constructed on an 8-ft., 9-in. horseshoe section, and was holed through recently by Samuels & Franklin of Hollywood, Calif. It provides an excellent example of what good organization and planning, and the use of modern methods can do in speeding tunnel advance on a relatively small job and without the use of heavy equipment. Samuels & Franklin sub-contracted the tunnel from the prime contractors on the Horsetooth reservoir project, Grafe-Callahan and Gunther & Shirley of Los Angeles.

Work was started on the tunnel Nov. 2, 1946, under J. E. Petral, manager, C. B. Garrison, day superintendent, and Ray Powers, night superintendent. The formations encountered were mainly



CAR TRANSFER
SUGGESTED BY C.B.GARRISON
USED AT HORSE-TOOTH DAM TUNNEL
SAMUELS & FRANKLIN
SUB-CONTRACTORS.

medium to soft shales which stood well, with 200 ft. of sandstone which required some timbering.

Only two rock drills were used, Gardner-Denver 3-in. drifters which at the start were mounted on conventional double screw columns and arms. Setting up the columns with blocks and wedges consumed too much time and it was decided to build a small jumbo using two 3-in. pneumatic columns, 7 ft. long attached to the jumbo truck by universal clamps. The air pistons or "stingers" of the columns when extended to the tunnel roof under pressure, provided the rigid support to the drills necessary for efficient drilling.

Fast set-up time

This pneumatic jumbo cut the time required for set-up from 30 minutes or more to an average of 5 minutes after reaching the face, until actual drilling was started. When the advance had reached 900 ft., a check was made from the time the last load of muck left the face until the jumbo was brought in, the set-up made, and the drills started. Total elapsed time for this cycle was 7 minutes.

A fifty-foot 1¼-in. "bull hose" was connected to the rear of the tubular frame of the jumbo and short permanent connections of 1-in. hose carried the air from the front end of the jumbo frame to the drills. Water was not available for piping to the heading and a large water tank under air pressure was installed in the jumbo with permanent connecting hoses to the drills. The supply of water was more than ample for drilling the complete round.

From 18 to 20 holes were drilled in a "hammer cut" pattern, modified occasionally to meet changing ground conditions, and about 6 ft. advance per round was made. The drilling, blasting, blowing and mucking cycle required 3½ to 4 hours per round and was carried on continuously by three shifts working 22½ hours in each 24. An advance of 1,000 ft. was made in one period of 40 days, which is an average daily advance of 25 ft. The record rate of advance attained in any one day was 37 ft. It is probable that a faster advance could have been maintained if more powerful ventilating equipment had been available.

Cleaning out

Each round of holes broke from thirty to thirty-five 16-cu. ft. cars of muck, or a total of 180 to 210 cars in a day's operation. Loading was done by a Gardner-Denver loader, and storage battery locomotives were used for haulage.

Track gauge was 24-in., with 52-lb. rail, and car transfer to service the loader was effected with a cross-over switch illustrated in the accompanying sketch, the novel design of which was suggested by Mr. Garrison.

The method of car service with this switch permitted the locomotive to come in and go out at the head of the train of cars. At the spoil dump the locomotive made a flying switch, thus again putting itself at the head of the train for the return trip with the empties. No haulage accidents were experienced with this method.

Air supply for drills and loader was a 500-cu. ft. portable air compressor.

The tunnel was holed through only eighty-four days after the work was started. A maximum of 30 men for the three shifts, 10 men per shift, was used including drillers, chuck tenders, compressor men, mucker operators, welders and laborers.

Tunnel lining will be started soon, using two Pumpcrete machines with standard collapsible steel forms furnished by Universal Form Co. The finished inside diameter after lining will be 6-ft. horseshoe section.

New Federal Funds Asked For Local Public Works

ADDITIONAL Federal funds are needed to expedite advance planning of State and local public works, according to Andrew L. Harris, executive secretary of the Producers' Council.

"The $65,000,000 previously appropriated by Congress for this purpose has been virtually exhausted and there still is much additional planning to be done," Harris said. "The new funds should be advanced as loans to be repaid when the construction eventually is financed, as was the case with the original money.

"If there is to be a reserve of public projects, such as water and sewerage systems, schools, bridges, roads, and public buildings, with which to sustain employment in the construction industry in case of a future recession, it is essential that the advance planning be expedited.

"Many local governments will not have the funds with which to finance the planning until the projects are ready to start, and the availability of Federal aid will help to make certain that construction of needed public projects can start promptly whenever the volume of private building shows signs of tapering off."

New Mexico Reconsiders Plans for Super Highway

THE PROPOSED $44,000,000 plan for an elevated super highway system which Albuquerque, N. Mex., rejected three years ago is once again up for consideration in modified form. The engineering study for Albuquerque announced by state highway engineer Burton G. Dwyre will be a resumption of the survey which recommended the elaborate system of elevated super highways to carry U. S. 66 and 85 through, over, and around the metropolis.

Between $10,000 and $15,000 already has been spent for the engineering study, which will eventually cost an estimated $69,000 in federal and state funds. The money already spent is part of a federal-aid "advance engineering project" started during the war. Although the surveys are being made at no cost to the city, the city government will make the final decision regarding the type of through-traffic highway construction project to be submitted to the Federal Public Roads Administration for approval.

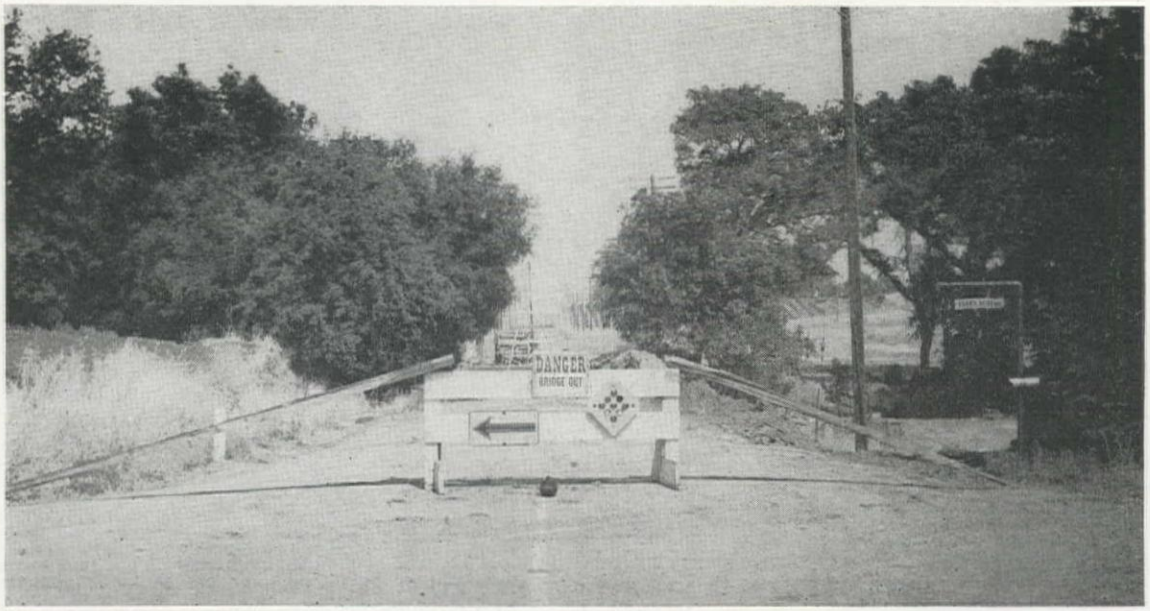
In addition to routing east-west and north-south traffic through Albuquerque, the survey probably will suggest possible truck by-passes and connecting roads to bus, truck, railroad depots and other concentrated traffic points. The $44,000,000 highway plan which was submitted to the city over two years ago, called for more clover-leafs and limited access roads than the modified plans will. The survey is being conducted in conjunction with other projects for the cities of Las Vegas, Santa Fe, Gallup, Las Cruces and Clovis. The entire cost of surveys for the six cities' through-traffic problems will amount to approximately $225,000, Dwyre estimated, of which the state will pay about 36 per cent and the federal government 64 per cent.

Bonneville Operations Net Large Fiscal Year Surplus

OPERATIONS of the Bonneville Power Administration during the fiscal year ending June 30, 1947, resulted in a surplus of $6,255,230 after deduction of all charges on Bonneville and Grand Coulee dams and the transmission system, Bonneville Administrator Paul J. Raver has disclosed. This net return to the government compared with $4,754,-895 for the fiscal year 1946, and was higher than had been anticipated at the beginning of the year.

Administrator Raver said that the preliminary financial statements as of the close of business for the past fiscal year showed revenues from power sales to be $21,860,970, compared with $19,-884,285 for the previous 12-month period.

The year's power sales brought total revenues of the Administration since the first sale of power from the Grand Coulee and Bonneville plants in 1939 to $105,322,497, and the total accumulated net surplus after all charges for operation and maintenance, depreciation and interest on investment to $22,582,177.



"DANGER—BRIDGE OUT" is a familiar sign along rural California roads these days. Scene above is the Arcade Creek crossing of the Madison Ave. county road about 10 mi. northeast of Sacramento, during replacement job.

California Rebuilds Rural Bridges

Fifty-five inadequate secondary road trestles to be replaced by modern bridges—Construction sparked by three-year highway program backed by matching federal and state funds—Average California county is spending $174,000 to mend its bridges—Los Angeles County plans $1,315,000

By CLYDE J. GORMAN
Sacramento, Calif.

A FEW WEEKS ago one of California's back country citizens came boiling down the pike on one of the feeder roads to U. S. 40. Suddenly he stopped short, hot water splashed out of his radiator, and he peered at a sign tacked to the road block: "DANGER—BRIDGE OUT—Sacramento County Engineer's Office."

"Waal, she finally busted," he said to himself, backed up with shuddering clutch, turned and made a loop around three more sections before he could reach the highway, and town.

This rural observer was only partly right. The bridge had been "busted" on purpose, in order to build a new one. This was one of 55 bridges that are being or will be replaced around the state. These are mostly little secondary road trestles that represent the worst of those that are either unsafe, inadequate, or too expensive to maintain.

Counties need bridges

As evidence that this county bridge problem has been building up for a long time, we have the word of C. L. Hollister, Senior Bridge Engineer for the State of California. Says Hollister, "The counties of California have approximately 11,600 bridges of which 5,261 are inadequate and need early replacement because of structural weakness or impaired clearances."

Fifty-five isn't much of a bite out of 5,000, but it is a start. This start was sparked by a three-year highway program backed by matching federal and state funds established by national and state Acts in 1944 and 1945 respectively. The idea behind this aid to counties goes further than the local advantage of better farm-to-market routes. There is the matter of tapping mines and forests, of increased recreational use that will divert some of the bumper-to-bumper holiday traffic off the main arterials, and the very practical consideration of a useable secondary network of roads for emergencies.

State cooperation

Besides helping out with funds, the counties have at their call engineers of the State Highway Department and the U. S. Public Roads Administration. These men have cooperated closely to assure success of the program. For example, the State set up a separate section within its Division of Highways under H. B. La Forge. The function of this section is cited in their official journal as follows:

"(1) Working with the counties in selection of bridge sites and the most economical and serviceable type of structures.

"(2) Reviewing plans and estimates and preparing specifications for advertisement.

"(3) Assisting counties with construction problems.

"(4) Advising and working with counties in maintenance and repair of these structures after completion."

The counties have generally asked for such of this engineering service as they need to round out their own ability, or facilities. The average county is spending about $174,000 to mend its bridges. Glenn County seems to have the smallest requirement with $20,000 needed to get timber, cattle, and sheep safely across Willow Creek. As might be expected, Los Angeles County plans the biggest outlay with $1,315,000 as the estimated requirement to cross the Los Angeles, San Gabriel, and Santa Clara Rivers. All the other counties fall somewhere in between.

None of the counties have been bound by State standards, though Hollister reports good acceptance of these standards. In design the bridges vary in accordance with setting and function from an eye-catching high level 140-ft. steel arch span over the South Fork of the Smith River in Del Norte County to ordinary sturdy little crossings of California's countless creeks. At least two of them traverse navigable waters: one over the Napa River sports a 90-ft. vertical lift center section, and one over the Grant Line Canal in San Joaquin

County will have a 250-ft. electrically operated swing span.

Most of the bridges replace an existing structure, and big or little there is no comparison with the modern crossings the counties have in mind.

Arcade creek

As a typical modest example, photos with this article depict current progress on a new crossing of Arcade Creek on the Madison Ave. road some 10 mi. northeast of Sacramento. During the war this road took a beating from military traffic and stepped-up civilian activity, and the bridge that at one time might have won a merit badge for good Scouting, was just about ready for Freddie. No bridge would mean a detour of several miles in either direction, and left with the job of handling important suburban and rural traffic, Sacramento County engineers wisely elected to replace it.

For a cost of around $20,000 there will be completed early this summer a bridge with a reinforced concrete deck allowing a 30-ft. roadway. The bridge is being poured in a continuous slab of three 26-ft. spans. The slabs are cambered with measurements of 1 ft., 4 in. at the crown and 1 ft., 6 in. at the haunch. There are 5-ft. cantilevers. For support, 10-in. steel H-piling is used. Around these, 18-in. metal forms were placed to construct concrete pile encasements. An earth dam, a temporary culvert, and supplemental pumping was found sufficient to handle the low flow of Arcade Creek at this time of year.

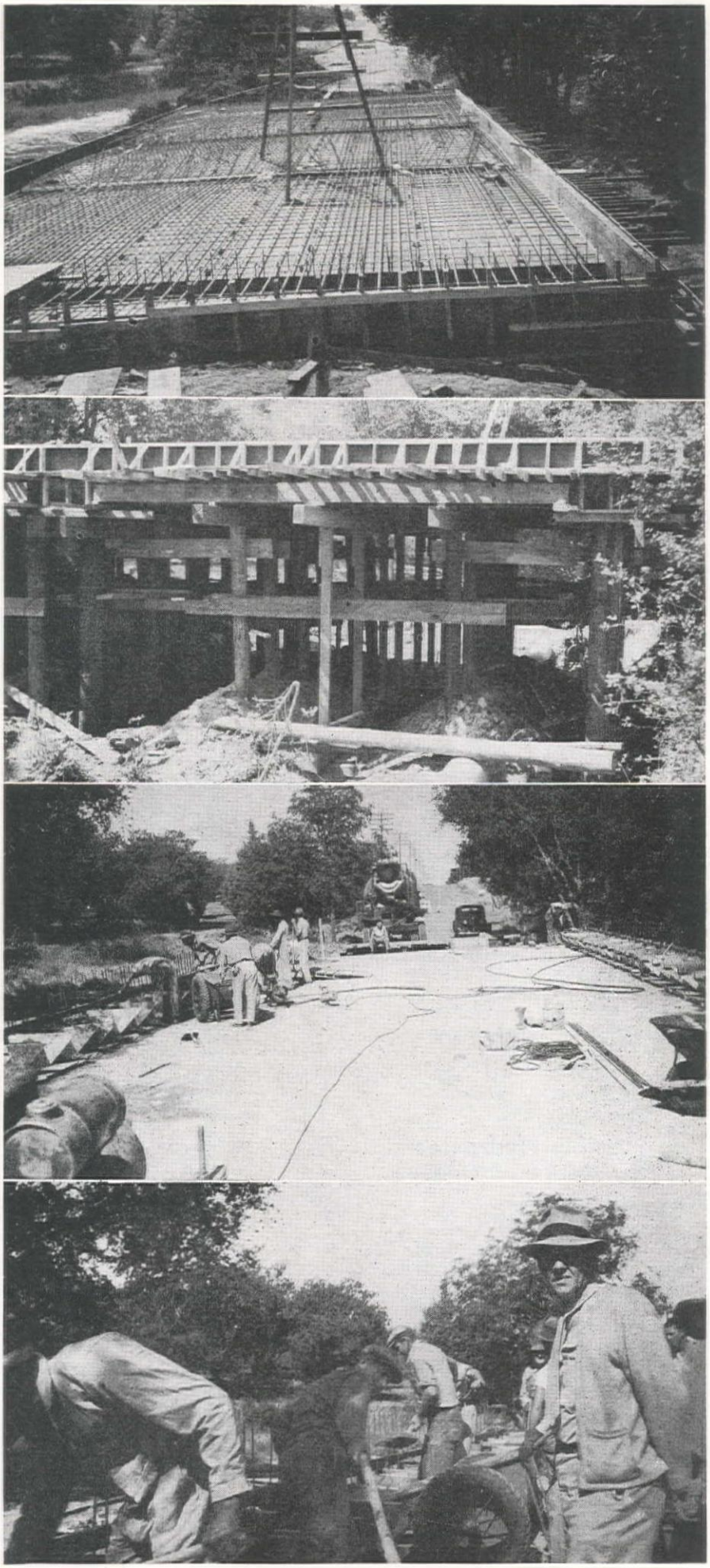
Contractor for the job is William E. Thomas of Sacramento. The county delegated engineering and jobsite supervision of the bridge proper to the State's secondary road section previously mentioned, and will put in the approach fill when the bridge is finished. The County Engineer is Edwin A. Fairbairn, and the State man-on-the-job is Forrest Manhart.

Improved driving

One feature regular users will discover and appreciate is improved visibility. By raising the height of the new bridge only three feet, a car making a crossing can be seen for a safe distance in either direction. In the old days many a fast car came to a screeching halt when they discovered both lanes of the old bridge occupied.

In fact, it appears that all over California, truck drivers, tourists, and backcountry citizens will soon miss many romantic old river crossings. But they will also miss crashing through the center span, as some of them have been doing. They will miss backing off the approaches to let another driver through.

Yet, for nostalgic historians some



DECK OF Arcade Creek Bridge is laid in three continuous reinforced concrete slabs of 26 ft., upper picture. Underpinning below shows 18-in. pile casements in place around 10-in. steel H piles. Third shot shows work beginning on concrete guard rails. Bottom, Forrest Manhart (right) supervises construction of the county highway bridge for State Division of Highways.

comfort remains. The old suspension bridge that crosses the South Fork of the Feather at Bidwell Bar, for example, will continue in service—for pedestrians. At this pace there will be ample time to reflect on the days of 1856 when the bridge was built, and of the sailing ships that brought her cables and rods around the Horn. But for those who want to ride—there will be safer, faster crossings—55 of them, anyway.

Jury for Design Contest Convenes at Dartmouth

WINNERS OF 452 awards totalling $200,000 in the Design-for-Progress Award Program sponsored by The James F. Lincoln Arc Welding Foundation of Cleveland will be determined by a jury of 22 engineering and business educators now in session at Dartmouth College.

Entrants from 47 states have submitted papers in the competition which has as its objective the encouragement of the study of welded design, research, application and the use of arc welding.

The first grand award amounts to $13,200.

Announced in June of 1946, the Design-for-Progress Award Program signals a post-war renewal of similar competitions conducted by The James F. Lincoln Arc Welding Foundation in 1937-38 and in 1940-42.

The jurors are all professors of electrical, mechanical and metallurgical engineering from nationally-known colleges.

In rating the merits of each paper, the jury will give consideration to the following factors: (1) completeness and thoroughness; (2) clarity of description; (3) practicability, and (4) originality and ingenuity, and cost savings.

The James F. Lincoln Arc Welding Foundation was created in 1936 through a deed of trust to encourage and stimulate scientific interest and research, study and education in the arc welding industry through advance in the knowledge of design and practical application of the arc welding process.

Two Possible Hydroelectric Sites Surveyed by Tacoma

SURVEYS OF TWO dam sites on the Cowlitz River in southeastern Washington have been authorized by the state board of conservation and development at the request of the city of Tacoma. The city's Department of Public Utilities will make the surveys to determine the economic and engineering feasibility of hydroelectric dams at the Mossyrock and Shut-In sites. Tacoma had filed application with the state a year ago for rights to 3,500 c.f.s. on the Cowlitz and the surveys will provide the additional information required for the project. Tacoma has already been granted authorization to construct a power dam farther downstream on the Cowlitz near Mayfield where the city has rights to 3,300 c.f.s.

Additional FWA Advances REA Loans to Western Area

THE LARGE amount of Federal Works Agency and Rural Electrification Administration loans to Western states, communities and territories granted during the past month appear below in tabulated form. FWA advances are made to finance the preparation of drawings and specifications and are to be repaid, without interest, when construction on the project is begun. REA loan funds are used to finance rural electric facilities including distribution lines. Construction on these projects will proceed as soon as materials are available, and necessary contract arrangements can be completed.

Projects listed in the table below are both FWA and REA. They are listed alphabetically according to state and community.

Community	Agency	Project	Estimated Cost	Federal Advance
ALASKA				
Anchorage Independent School District	FWA	Elementary school	$ 395,000	$13,000
Anchorage Independent School District	FWA	Elementary school	535,000	16,350
Fairbanks	FWA	Utilities system	3,500,000	63,000
Fairbanks	FWA	Civic arena and pool	600,000	15,000
ARIZONA				
Globe	FWA	Water system additions	116,450	5,250
Globe	FWA	Installation of new pumps	17,950	750
Globe	FWA	Water storage reservoir	57,500	2,500
Holbrook	FWA	Buffalo St. grade. and pave.	56,798	2,150
Holbrook	FWA	Hopi St. grade. and pave.	23,590	1,000
Maricopa Co.	FWA	County hospital at Phoenix	318,000	12,000
Prescott	FWA	Street improvements, No. 1	140,360	6,400
Prescott	FWA	Street improvements, No. 2	103,400	4,700
Prescott	FWA	Street improvements, No. 3	41,250	1,900
Prescott	FWA	Street improvements, No. 4	32,600	1,500
CALIFORNIA				
Alum Rock School District	FWA	Elementary school unit No. 1	55,000	3,000
Alum Rock School District	FWA	Elementary school unit No. 2	55,000	3,000
Belvedere	FWA	Sanitary sewer additions	172,800	7,600
Clovis Union High School District	FWA	High school addition	248,060	13,500
Corona	FWA	Sewage plant improvements	186,000	5,100
El Monte	FWA	Grading, paving, curbs	36,600	1,650
El Monte	FWA	Grade., pave., sewers	39,500	1,750
Forestville Union School District	FWA	Elementary school additions	36,300	2,000
Gustine	FWA	Sewer system additions	186,200	10,000
Hermosa Beach	FWA	Hermosa Pier improvements	356,000	8,400
Hermosa Beach	FWA	Hermosa Ave. grade. and pave.	50,400	1,150
Inyo County	FWA	Elementary school at Olancha	40,633	1,850
Los Angeles County	FWA	Intermediate school	810,000	35,650
Los Angeles County	FWA	McGirk School additions	94,680	3,500
Los Angeles County	FWA	Arden School additions	205,700	8,250
Los Angeles County	FWA	Arden School cafeteria bldg.	95,180	3,500
Madera	FWA	Sewer system additions	248,000	11,250
Marin Sanitary Dist. No. 5	FWA	Sanitary sewer system	120,000	6,600
Menlo Park Sanitary Dist.	FWA	Sewage and pumping plants	534,500	20,000
North Sacramento	FWA	Water system	144,192	7,400
North Sacramento	FWA	Sewer system extensions	81,500	2,000
North Sacramento	FWA	Reinforcements for sewers	29,185	1,600
North Sacramento	FWA	Fire house and police station	37,200	1,050
Orange Union High School District	FWA	Senior High School	800,000	35,000
Oro Loma Sanitary District	FWA	Storm drain additions	618,500	17,500
Otay Elementary School District	FWA	Elementary school additions	61,835	2,750
Redondo Beach	FWA	Sewer additions Unit No. 2	463,440	17,450
Redondo Beach	FWA	Sewer additions Unit No. 3	460,840	17,350
Rialto Elementary School District	FWA	Elementary school additions	154,000	6,600
Rialto Elementary School District	FWA	Primary school	65,000	2,700
Riverside County	FWA	Indio elementary school	300,000	12,500
Sacramento	FWA	Two school additions	67,020	3,700
Sacramento	FWA	High school additions	40,850	2,250
Sacramento	FWA	Shop-classroom facilities	35,980	2,000
Sacramento	FWA	Four school constructions	295,600	16,200
Santa Clara County	FWA	Sewer additions at Palo Alto	24,990	1,250
Solana Beach Sanitation District	FWA	Sanitary sewer system	149,133	6,800
Solana Beach School District	FWA	School cafeteria additions	70,000	3,000
Sonoma	FWA	Sanitary sewer additions	108,000	5,900
Tamalpais Union High School District	FWA	Swimming pool for school	50,425	2,700
Tulare County	FWA	Strathmore school additions	63,282	3,450
Ukiah	FWA	Water system additions	194,300	10,500
Vallejo City Unified School District	FWA	Junior college additions	446,334	10,000
Valley Center Union School District	FWA	Elementary school	53,250	2,300
COLORADO				
Aspen	FWA	Sanitary sewer system	130,000	4,400
IDAHO				
Bancroft	FWA	Sanitary sewerage system	41,400	1,200
Bancroft	FWA	Sewage treatment plant	25,400	750
Bear Lake County	FWA	Montpelier gen. hospital	200,000	7,550
Bear Lake County School District No. 1	FWA	Montpelier school addition	119,200	4,750
Bonner's Ferry	FWA	Power facility improvements	257,500	19,500
Buhl	FWA	Sewer system extensions	100,000	4,150

Community	Agency	Project	Estimated Cost	Federal Advance
Challis	FWA	Street improvements	14,500	500
Craigmont	FWA	Sewer system, treatment plant	67,100	4,000
Grace	FWA	Sanitary sewerage system	56,400	1,450
Grace	FWA	Sewage treatment plant	29,100	800
Grangeville	REA	48 mi. line to 70 consumers		68,000
Lewiston	FWA	Sewers, Imhoff tank	141,500	5,900
Lewiston	FWA	Water system improvements	453,000	18,000
Nampa	FWA	School buildings	650,000	15,550
Twin Falls County	FWA	Castleford grade sch. add.	90,000	3,350
Twin Falls County	FWA	Filer grade school additions	65,200	2,400
KANSAS				
Brewster	REA	650 mi. of lines		730,000
MONTANA				
Dillon	REA	40 mi. transmission lines		405,000
Great Falls	FWA	Street paving project	737,000	5,400
Ronan	FWA	Street grade., surf.	59,900	2,750
Wilbaux	REA	System improvements		84,000
NEBRASKA				
Bartley	FWA	Water distribution system	50,461	2,300
Benkelman	FWA	Water system extensions	47,347	1,700
Benkelman	FWA	Sewage plant additions	44,400	1,600
Springview	FWA	Pavement, curbs, gutters	88,727	3,250
NEW MEXICO				
Grants	FWA	Class I airport	86,700	3,000
Las Vegas	FWA	Recreational facilities	36,000	1,400
Mosquero	FWA	Sanitary sewer system	47,340	1,550
Springer	REA	159 mi. distribution lines		152,000
Taos	FWA	Water system extensions	89,000	3,000
Wagon Mound	FWA	Sewage system, treat. plant	60,000	1,850
NORTH DAKOTA				
Bowbells	FWA	Water system extensions	60,000	1,650
Bowbells	FWA	Sewer system extensions	24,000	750
Bowbells	FWA	Sewage treatment plant	20,500	650
Hazen	REA	111 mi. power lines		250,000
Williston	FWA	Waterworks additions	246,300	6,750
Williston	FWA	Intake structure, lift station	49,500	1,350
OKLAHOMA				
Carter County	FWA	Ardmore jail, courthouse, etc.	250,000	9,500
OREGON				
Astoria	FWA	John Day waterworks system	17,700	900
Canby	FWA	Sewage system, plant	301,434	11,200
Clackamas County	FWA	Oswego grade school	88,300	3,200
Clatsop County School District No. 37	FWA	Cannon Beach elem. school	40,000	1,800
Coos Bay	FWA	Sewage plant, improvements	268,600	15,000
Coos Bay	FWA	Waterfront improvements	151,600	5,000
Fairview	FWA	Sewage system, treat. plant	56,100	3,500
Florence	FWA	Water facility extensions	220,330	7,650
Glendale	FWA	Water system improvements	22,000	1,000
Mount Angel	FWA	Sewage treatment plant	55,000	3,300
Oakland	FWA	Sewer system, treat. plant	193,000	8,750
Oakridge	FWA	Sewer system, treat. plant	139,500	6,700
Riddle	FWA	Water system improvements	23,500	1,200
Roseburg	REA	63 mi. transmission lines		150,000
Southwest Hills Sanitary District	FWA	Sewage system, facilities	800,000	36,000
Springfield	FWA	Recreation bldg., facilities	112,500	3,000
State Fish Commission	FWA	Fish hatchery near Sisters	165,426	7,250
Sutherlin	FWA	Sewage system, treat. plant	175,500	9,000
Tillamook People's Utility District	FWA	Electrical distribution system	430,000	20,000
Troutdale	FWA	Sewer system, treat. plant	66,600	4,000
TEXAS				
Corpus Christi	FWA	Sewage system improvements	1,840,000	50,850
Corpus Christi	FWA	Water system improvements	2,000,000	60,000
Dalhart	REA	231 mi. distribution lines		500,000
Perryton Independent School District	FWA	Junior high school additions	399,462	14,500
Taylor	FWA	Pavement resurfacing	81,000	2,900
Taylor	FWA	Storm drainage facilities	48,520	1,750
Taylor	FWA	Storm drainage facilities	68,320	2,500
Taylor	FWA	Storm drainage facilities	111,020	4,050
Taylor	FWA	Storm drainage facilities	116,200	4,250
Taylor	FWA	Street paving, curbing	169,730	6,200
Taylor	FWA	Street paving, curbing	80,170	2,950
Taylor	FWA	Additional trunk sewers	26,690	1,000
Taylor	FWA	Additional trunk sewers	21,830	800
Wellington	REA	193 mi. distribution lines		209,000
Whitney	FWA	Water, sewer extensions	50,000	1,600
UTAH				
Kane Co. School District	FWA	Kanab elementary school	128,000	3,400
WASHINGTON				
Quinault	REA	System improvements, line		43,000
Whatcom County	FWA	Grade school addition	274,500	8,200
White Salmon	REA	500 mi. distribution lines		775,000

Alaska Railroad Buys War Surplus Colorado Building

THE FORGE building at Denver Federal center has been sold to the Alaska Railroad, operated by the Department of Interior, it was announced recently by the War Assets Administration. The structure, built by the government at a cost of $885,330, will be dismantled and shipped to Anchorage, where it will be set up as a machine shop and railroad roundhouse.

The government-owned power plant facilities of the International Mineral & Chemicals Corp. at Carlsbad, N. M., was also sold by WAA to the Alaska Railroad. The installations originally cost $592,000. Sixty railroad cars will carry both the railroad's purchases to Seattle for transfer to Alaska destinations.

U. S. Engineers Building New Yuma Test Station

AN EXTENSIVE construction program at the Yuma Test Branch of the Engineers' Research and Development Laboratories, near Yuma, Ariz., is being carried out at the present time by the Army Engineers.

The construction will include family quarters, barracks, mess hall, an office building, shops, utilities and the additional research facilities. All work will be under the supervision of the Los Angeles Engineer District, South Pacific Division.

Work was initiated with the awarding of the first of the construction contracts to the William Radkovich Co., Inc., of San Francisco. This company will construct 38 two-family dwellings at a total cost of $283,143.

Cost of the current phase of the program will be approximately $1,100,000 with funds for the work already provided by the Congress. Additional funds have been requested for further construction during the fiscal year 1948, for additional family quarters, utilities, roads and streets.

The new installation, when completed, will be among the world's largest laboratories for testing full-size fixed and floating military bridges, reconnaissance and assault boats, marine power units, and other items of engineer equipage. It will also provide a modern proving ground for all arms and services of the Army for the testing of equipment under desert conditions.

Of the approximately 13,000 ac. of land required for the Yuma Test Branch, a total of 7,700 ac. is being transferred by the Department of Interior to the War Department under a withdrawal order. An additional 5,100 ac. are in the process of being transferred under a "use" agreement. This acreage is on the Colorado River near the Imperial Dam and includes the area formerly used by the Engineers in testing water equipment.

The Testing Branch and proving grounds have proved excellent for testing land equipment under desert conditions. Consequently, other branches of the Army, in addition to the Engineers, will continue to utilize the location for this purpose.

Steel Bridge Bids Rejected by Idaho Bureau of Highways

BIDS WERE REJECTED by the Idaho Bureau of Highways for construction of a new steel bridge over the Clearwater River at Lewiston. Low bidder for the 1,352-ft. structure was the Paul Jarvis Co., Seattle, which submitted a figure of $955,167. The state's estimate for the job had been $858,272. E. W. Sinclair, Idaho Commissioner of Public Works, has indicated that bids for the project will not be called again before March, 1948, when the working schedule will permit completion of the sub-structure before high water of the 1949 season.

Airport Planning... Is Engineering Training Adequate?

In an effort to "needle" engineers into a thorough understanding of the multiplicity of problems involved in designing an airport, this prominent CAA official points out engineering failures in the past and challenges modern technical men to be pioneers in a broad new field

By R. W. F. "BOB" SCHMIDT
Superintendent of Airports,
Civil Aeronautics Administration,
Los Angeles, Calif.

BECAUSE SOME of us have forgotten just what a civil engineer is, I want to recite the definition as found in Webster: "civil engineer—an engineer whose training or occupation is in civil engineering, the designing and construction of public works, as roads, harbors, irrigation." That definition is quoted because it declares that civil engineering has to do with public works. Civil engineers, then, irrespective of the firm or agency which pays the salary or fee, are public servants. Airports are public works, and civil engineers who have to do with them have a serious and grave responsibility if they are liberal enough to accept the concept that they are public servants always.

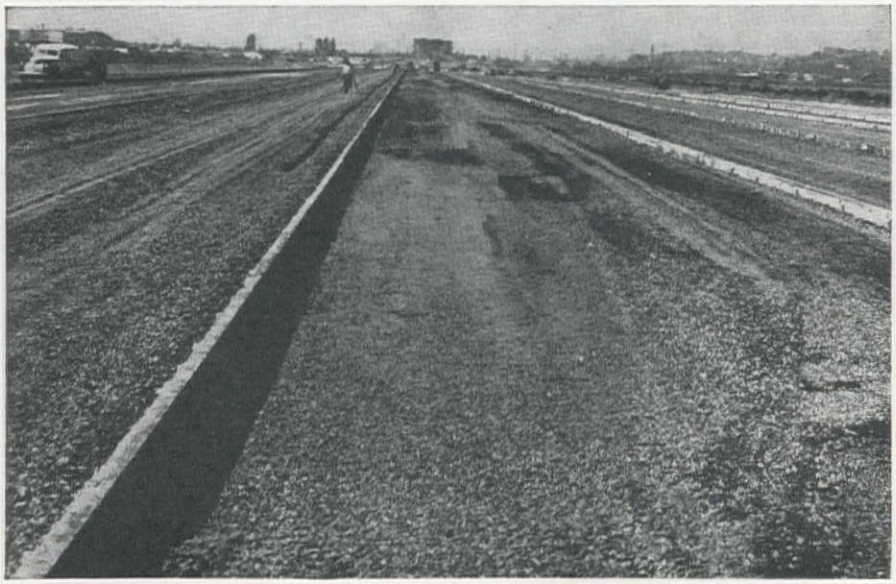
Civil engineers have played a great and lasting part in the development of these United States. The names of George Washington, John C. Fremont, General Dodge, Theodore Judah, Joseph Ripley and Harry Thomas Cory appear among those brilliant in the pages of our history as examples of the courage, skill, and daring exhibited by members of the profession in permitting new lands to be conquered and the pathways of commerce to be opened to them.

Engineers in airport design

It was not until 1941, however, some twelve to fifteen years after the building of the airport had begun in a serious if but small way, that civil engineers generally began to accept it as a challenge. A few had rubbed noses with it, but most regarded it as something akin to foreign relations or the release of atomic energy and refused to let it disturb them. However plausible the explanation may be, for once in history they weren't pioneers; and so it came about that many airports were actually planned and built with little or no engineering as we popularly conceive it.

There are three prime factors which must always be considered in the development of the airport, whether it be a site or a system: Aeronautical, Economic and Engineering. While there are certain basic principles to be followed in the application of each, only one in the aviation industry itself can hope to keep up with the advancement which affects airway and airport traffic control, operational procedures, and the location of airport sites and their layout and design. Unless you are an engineer giving undivided attention to airports, you certainly are not keeping up with the many ideas and formulae, some new—many old, which affect the design and arrangement of runways, taxiways, aprons, fueling systems and night lighting installations.

DESIGN OF PAVING and other facilities for modern airports are often excessively expensive in relation to the use for which the field is designed. Paving for Boeing Field, Seattle, shown here, is much heavier than needed for local ports.



Those who object to the statement that one cannot comprehend the entire problem of the airport are asked to consider the economic aspect alone. How much do you know about the distribution of public expenditures by income groups, the shifting and incidence of taxation, or general business fluctuations which affect governmental policies? Most engineers will say, "Why, in our other work, we leave that up to the economist!" I beg of you to avoid being so cocksure, then, that you can whip the airport problem of a given community by simply saying, "We have had some experience building airports, and we know what to do."

Frankly, we're getting just a little weary of the engineer who happens to have set foot on an airport runway, dutifully noting that fact in his diary for future reference, so that one day he may claim the entire achievement. The old time engineer who conceived the idea, surveyed the location, plotted it up, estimated it, promoted the financing, sold the bonds, let the contract, supervised the construction, accepted the job, and caught hell for it ever after, is no more. In his stead, the design engineer seldom sees his product until it is finished, and then he often doesn't recognize it, and the poor devil who ran the preliminary surveys never sees the finished product!

Complexity of problem

Airport engineering as a field is probably more complex than any other because it requires a working knowledge of so many phases of both everyday community life and features peculiar to aeronautics. Meteorology, drainage, soils, dynamic and static loadings, disposal of wastes, communications, water supply, building layout and design, alignment of runways, special structures, illumination, integration with community planning, policing, fire fighting, surface transportation, zoning, maintenance, operation, traffic potential, revenues, useful life, obsolescence, and amortization are all items for consideration in the development of nearly every airport, however small.

It must be obvious, then, that no one man—particularly one who has had but a passing contact or who does not work at it—can claim to have even a portion of the answers. We have specialists in airport engineering just as there are specialists in all the other fields of civil engineering — hydraulics, sanitation, structural, highway, and so on. Nonetheless, we find that a large number of engineers and engineering firms—specialists in their own right—have seized upon the airport as an opportunity to generalize again.

The small community, or the large one, or the private investor, seeking to embark upon an airport development is

entitled to something beyond a colorful brochure and a fee. Up to now, that is unfortunately and too frequently about all they've gotten. I have already seen one elaborate leather-bound survey stuffed into the wastebasket by an irate city council, and I've seen several more permanently shelved. One state board of registration for professional engineers has already written me protesting that certain planning work has been accomplished by non-engineers, holding that these men are not legally qualified to do this work. They refrained, however, from commenting upon the fact that some preliminary and area-wide plans prepared by those acceptable in the eyes of this board were no better, if as good, as those accomplished by others. The license to practice engineering in a state is not a license to prevent other qualified persons from doing a job complementary to that of the engineer, nor is it license for the engineer to attempt to do work for which he himself is not trained or qualified. Because a few of the unthinking engineers have simply demonstrated that there are rascals in the profession, the remainder may suffer. In fact, I do not believe it is a misstatement to say the profession is already suffering loss of prestige and respect in this regard. But what concerns me more, is that aviation may suffer.

Students of government know that the development of transportation changes not only government itself, but appreciably alters the status of the various units and subdivisions of government. The automobile caused cities to begin to build horizontally again, whereas in the decades before it, the development of street car lines and interurban systems of rapid transport built arteries permitting bunching or concentration of population in restricted areas and brought the skyscraper era. County government, so necessary a century ago, became just so much parsley. The expanded incorporated city and the active state government left little need for county rule. But now, we find that the cities can't expand rapidly enough governmentally to perform their functions, and as we contemplate the Air Age, we see the county, or a district comprised of whole counties, becoming the prime unit.

Yes, we need more than a colorful brochure and a fee from the engineering profession. We need some of that old time zest for community and empire building—pioneering, if you please.

Engineers make plenty mistakes

We have only to look at the abandoned highway rights of way with their culvert headwalls and bridge abutments shining as monuments to the foresight used by highway engineers. We need only look at the beach erosion in my home town to see what the hydraulic experts did. And look at some of the monstrosities created in the name of airport engineering. Oh, how well some of us remember that momentous occasion at the American Road Builders' Convention in San Francisco a few years back when a contractor offered the toast, "Here's to the engineers—they've kept me in business for twenty-five years."

R. W. F. (BOB) SCHMIDT, airport superintendent for Western region, who presented this challenge to engineers at Phoenix meeting of Civil Engineers.

The silence was deafening. The engineers present were astounded, and the contractors were appalled at the fact that one of their number should have let a trade secret out of the bag!

Now, I've overdrawn the picture somewhat so that engineers will realize that none are infallible, that aviation is a big industry, that airports are a major public works problem, and that the role which they must assume is nothing to be sniffed at. There is more to it than a soil analysis, locating suitable aggregate, or figuring a difficult intersection. There is a lot of deep, hard, serious work for a lot of engineers, but it must be regarded in that light, and not as a routine, perfunctory task.

In considering costs, I always like to think of Boss Kettering's remarks to Alfred Sloan when he was asked why it was that the Diesel engine, notwithstanding its higher efficiency in turning heat units of fuel into energy, had made so little progress. Kettering said, "That's an easy one: Because engineers insist on making it so it cannot work effectively." A few engineers, inadvertently or not, are doing their best to see that the airport cannot be developed effectively or operated economically.

Engineering exaggerations

This mumbo-jumbo of the past few years about high wheel loadings, repetition of load, optimum moisture, liquid limit, plasticity index and compaction every time we want to build a simple and, perhaps, temporary facility is all right to a certain point—as amplifying material to be used as a guide in the preparation of specifications and estimates and to tell the engineer on the job what is happening—but it is high time that top engineers call a halt to the inflexibility of laboratory control and theory which has been running base course and paving costs clear out of sight.

The following are typical examples:

(1) The paving at the same site inadvertently evaluated twice by different crews of the same agency. When the two reports were compared—what red faces!

(2) An existing airport evaluated in 1941 as entirely unsuited for military use, but an operational unit, being blithely unaware of the stigma, handling several thousand military aircraft on it in the ensuing years without any reconstruction of runways, taxiways, or aprons.

(3) The same site, the same contractor, the same source of material, the same weather, the same specifications—but different construction agencies and, therefore, different laboratories and different supervising engineers. One project "super" after three years of heavy pounding, the other ragged after but one.

Who is master? The written word, conceived by man himself, often at a remote point without benefit of realistic experience, or the man on the job, backed by his judgment and supported by an intelligent front office?

Of course, we can't ignore the large number of operations by relatively heavy aircraft (50,000 lb. and up) at certain key airports, but before we are so positive about that extra six inches of select material or dozen passes with the roller, let's do a little evaluating on the cost. Let's have someone define a paving failure. I have yet to see a complete, total, and dangerous condition develop on any runway pavement overnight. I have seen checks, cracks, displacements, indentations, and disintegration, but on only two occasions have I seen a condition so serious that intelligent maintenance could not have bridged the gap and prolonged the useful life.

Economy a prime necessity

Again I, openly and frankly, charge that too many engineers have been interested in exploiting their own design theories or in covering their gross ignorance by demanding and insisting upon such heavy and costly runway construction. In war, they got it because no one dared to do more than lift his voice in protest. In peace, they cannot get it if aviation is to survive. Airports are going to cost enough as it is. Land must be purchased. Buildings and structures must be built. Obstructions must be liquidated. Utilities must be introduced. Roadways and parking areas must be constructed. There must be lighting for night operation, and landscaping to coincide with community planning. A modestly designed runway generally holds up as well, and when it doesn't the

THIS PAPER was presented at the Phoenix meeting of the American Society of Civil Engineers by R. W. F. "Bob" Schmidt, and caused considerable comment, both favorable and critical, by those in attendance. It is presented here in the hope that his message will reach a greater audience and result in further comment.

differential will often have covered a lot of maintenance. Many of the tears shed over so-called failures of pavement may be likened to the wails of the housewife about the poor pie crust. The user or the consumer just doesn't know the difference.

The communities now planning and hoping for a feeder line operation of some kind with aircraft weighing up to 25,000 or 30,000 lb. won't have much money to spend, even with a Federal and/or state grant. If engineering practices which cause use of extra and special equipment by contractors and insist upon costly importations and procedures to gain a few per cent on some theoretical figure are allowed to influence design, the publicized airport programs, public and private, may well break down in their inception.

A big job is cut out for engineers in helping to produce both preliminary and detailed planning, in holding costs to a fair level through judicious and improved design, and in seeing to it that other facilities developed in the community are properly coordinated with airport planning so that there may be a minimum of confusion. I submit that improved design should not only have as its objective the creation of structural betterment and the development of longer useful life, but that it should produce even lower costs. I reiterate that the Air Age is going to cause wholesale changes in ways and means of existence, and that engineers had better really alert themselves to the tasks.

How nice it would have been if our freeway system could have been planned thirty years ago and developed as needed! How wonderful it would have been if our mass transportation experts, in their zeal to get streetcars off the downtown streets in the scores of communities now battling the bus menace, had begun to develop separate rights-of-way for real high speed surface transportation! How good all would feel about so many things that could have been accomplished at a time when the cost was less and when the ultimate need was so apparent to the serious and sincere.

Can plan overall now

This great nation is now embarking upon the greatest public works program the world has ever seen. New water systems are being installed, irrigation and flood control projects are getting under way, highways and freeways are past the planning stage, slums are being cleared, housing development goes forward, and airports are poised for construction.

Engineers who plan for tomorrow, who lay out these new communities and revise the old ones, still have a wonderful opportunity in most instances to avoid the errors of their predecessors and to ignore the whining of a few of the ultraconservatives by making provision for the Air Age. In some cases, they will have to be ruthless about it—to have courage because whole blocks of someone's pet real estate scheme may be right where a landing area should be. They'll have to listen to a lot of pleas about nuisance factors which largely don't exist but which are nonetheless presented as convincing arguments. There will be political pressure from proponents and opponents. But, as engineers, they should know what is coming. They don't need to wait for the accumulation of statistics to prove that a bottleneck exists as has been the unhappy procedure heretofore. As public servants, then, are engineers going to miss the greatest chance they've ever had to really plan for the future?

Utility Company Okehs Two New Hydro Projects

TWO HYDRO-ELECTRIC dams and power houses on the north fork of the Feather River in Butte and Plumas Counties of California were recently authorized for construction by the Pacific Gas and Electric Co., San Francisco.

To be known as the Rock Creek and Cresta projects, the new structures will be part of a scheme of development of the north fork between Lake Almanor and the intake to the Big Bend plant. The Federal Power Commission, in authorizing the job, stipulated that construction of the Cresta development be started by next December 31 and completed by July 1, 1950. Rock Creek construction must be begun by July 1, 1948, and completed by July 1, 1951.

A concrete dam 115 ft. high and 550 ft. long is included in the Rock Creek project. The reservoir will extend upstream about two miles, to near the junction of Yellow Creek with the north fork. It is to have a powerhouse with two 73,500-hp. turbines. The Cresta project includes a dam about 113 ft. high and 360 ft. long.

Shortage of Iron and Steel in U. S. Foreseen

THE NATION is facing the worst scrap iron and steel shortage since 1942, according to H. W. Christensen of Columbia Steel Co., chairman of the Northern California Steel, Foundry and Scrap Industries Committee for Expediting Iron and Steel Scrap.

"The crisis is directly attributable to the exportation of some twenty million tons of ferrous scrap during the ten years preceding the recent World War, plus the tremendous tonnages of steel in many forms sent abroad during the war," Christensen said. "Present collections of scrap are not sufficient to meet the demands of the steel and foundry industries, and if this scant supply is not augmented immediately, the production of finished steel and castings may be curtailed drastically."

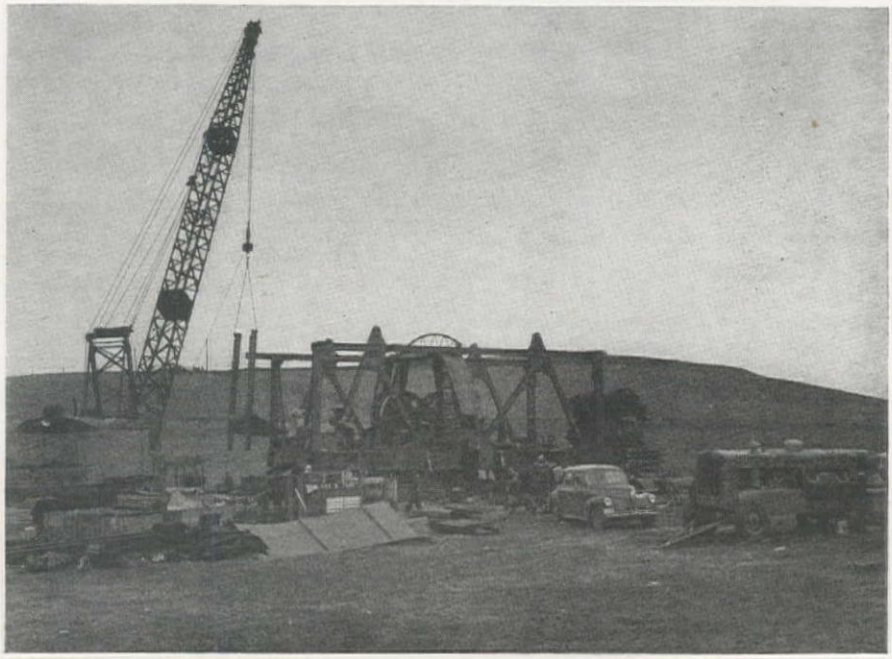
Christensen pointed out that the major hope for breaking the scrap bottleneck has been the huge amounts of obsolete war materiel held under control of the Federal Government.

"John Steelman, Director of Reconversion, in a statement issued March 7, promised that about 1,250,000 tons of wartime materiel, equipment and other scrap would be returned to the nation's stockpiles during 1947," Christensen said. "Actually, there has been only a very slight increase in inventories. This is the time of year when there should be a large flow of scrap into dealers' and consumers' inventories. The movement has been much smaller than anticipated."

GIANT WALKING SHOVEL USED ON DELTA MENDOTA CANAL CONSTRUCTION

ASSEMBLING the 13-cu. yd. Monighan walking shovel is a construction job in itself for construction workers of the Morrison-Knudsen Co., Inc., Los Angeles, Calif. The company is contractor on the Delta Mendota Canal, part of the Bureau of Reclamation's Central Valley project, near Bethany, Calif., and the Monighan is to be used in excavation of more than 11 mi. of main canal, on the $3,025,121 contract.

Photograph courtesy Caterpillar Tractor Co.



CONSTRUCTION DESIGN CHART

LXXXVI . . . F. E. M.—Load Concentrated at Third Points

By JAMES R. GRIFFITH
Birch-Johnson-Lytle
Seattle, Wash.

THE ACCOMPANYING chart is the third one of the related series giving fixed end moments for beams under various loadings. Such a chart for uniformly distributed loads was published in the July 1946 issue, and one for concentrated midspan loads in the January 1947 issue.

In order to illustrate the use of this chart and to demonstrate its comparative accuracy, I am again referring to Fig. 3 of "Continuity in Concrete Building Frames"[1]. Therein an example of fixed end moments is given for the following conditions:

Given:

Span = 18 ft.

Uniformly distributed loads
L.L. = 0.4
D.L. = 0.4

Total = 0.8 kips per ft.

Concentrated loads, at each ⅓rd point
L.L. = 14
D.L. = 12

Total = 26 kips.

The same figure gives the following tabulation:

Load	*Fixed End Moments, Ft. Kips*			
	Ends		*Midspan*	
	TL	DL	TL	DL
Conc.	104	48	52	24
Unif.	22	11	11	5
Total	126	59	63	29

It will be noted that on the accompanying chart, the load scale is designed for use of the total span load. This has been done in order to conform with the tables shown in Ref. 1. Thus for the total concentrated load of 26 kips at each 1/3rd point, a value of $2 \times 26 = 52$ kips must be used on the chart. A solution line has been drawn on the accompanying chart between the value of $L = 18$ ft. and $W = 52$ kips. On the moment scale will be noted the following values:

$-$ Mom. = 104 ft. kips
$\times$ Mom. = 52 ft. kips.

These values agree with those shown in the tabulation for total concentrated load. By substitution in the equation we would have

$$-\text{Mom.} = \frac{WL}{9} = \frac{52 \times 18}{9} = 104 \text{ ft. kips}$$

$$+\text{Mom.} = \frac{WL}{18} = \frac{52 \times 18}{18} = 52 \text{ ft. kips}$$

If the same load was applied to a beam with simple supports, the maximum bending moment would be the sum of the two fixed end moments. Thus for a simple span we would have

$$M = 104 + 52 = 156 \text{ ft. kips.}$$

[1] *Continuity in Concrete Building Frames*, 3rd Edition, Portland Cement Association.

First Contract Completed on Big Columbia Basin Project

SIX AND A HALF MILES of the main canal for the irrigation system of the Columbia Basin project have been excavated to mark completion of the first contract for irrigation facilities on the project. Morrison-Knudsen Co. completed the work specified in the contract in about half of the allowable time. Extending from Long Lake Dam to the bifurcation works, the canal is 50 ft. wide at the bottom and 120 ft. wide at the top, and required 2,000,000 cu. yd. of excavation and 530,000 cu. yd. of compacted embankment. Although the canal will be concrete lined before being placed in use, the lining was not included in the contract in order to get the work under way before plans and specifications had been prepared for the completed job. Supervising the work on this first contract were Philip M. Noble, resident engineer for the Bureau of Reclamation, and Roy F. Johnson, superintendent for Morrison-Knudsen Co.

L. A. Municipal Asphalt Plant

Replacing the city's largest batching plant, condemned before the war, the new structure will help maintain nearly 5,000 mi. of city streets

AN ULTRA-MODERN $325,000 asphalt plant is Los Angeles' answer to her gigantic problem of road building and maintenance within her 465 sq. mi. area, containing 4,828 mi. of streets. The new 4,000-lb. installation replaces the largest of the city's three batching plants, condemned before the war.

Since some 2,358 mi. of city streets are asphaltic concrete or plant mixed rock and oil, the maintenance of these streets requires the operation of three mixing plants having a total batch capacity of 9,000 lb.

In addition to the new black top batching plant, facilities on the city's 2-ac. site near central Los Angeles include garage space for twenty 10-ton dump trucks, a shop, showers and lockers, living quarters for the caretaker, switch house, compressor house, and a modern office and scale. All heating of materials, except for flame dried aggregates, is done electrically, and no steam boilers are used for any purpose.

Specifications for the entire plant, begun in December, 1945, were prepared under the supervision of H. P. Cortelyou, engineer director of the maintenance and sanitation department, and L. Miller, general superintendent of the street maintenance division. F. Sandusky, superintendent of asphalt plants and transportation, was in direct charge of construction, while Louis Graham, electrical foreman for the city, designed and supervised the installation of all electrical equipment. H. E. Norell is foreman of the newly completed plant. Standard Steel Corporation of Los Angeles was awarded the contract for construction of the asphalt plant proper.

Plant construction

Aggregate bunkers for feeding the plant are constructed to approximately 11 ft. below ground level and have a capacity of 1000 tons of material. Seven different compartments are provided in the 12-in. thick reinforced concrete bunkers, which are 28 ft., 4 in. wide and 153 ft. long. The bins, which include those for 1½-in. stone, ¾-in. stone, ¼-in. stone, pea gravel, rejects, sand, and crusher waste, all are equipped with grizzlies made of steel rails.

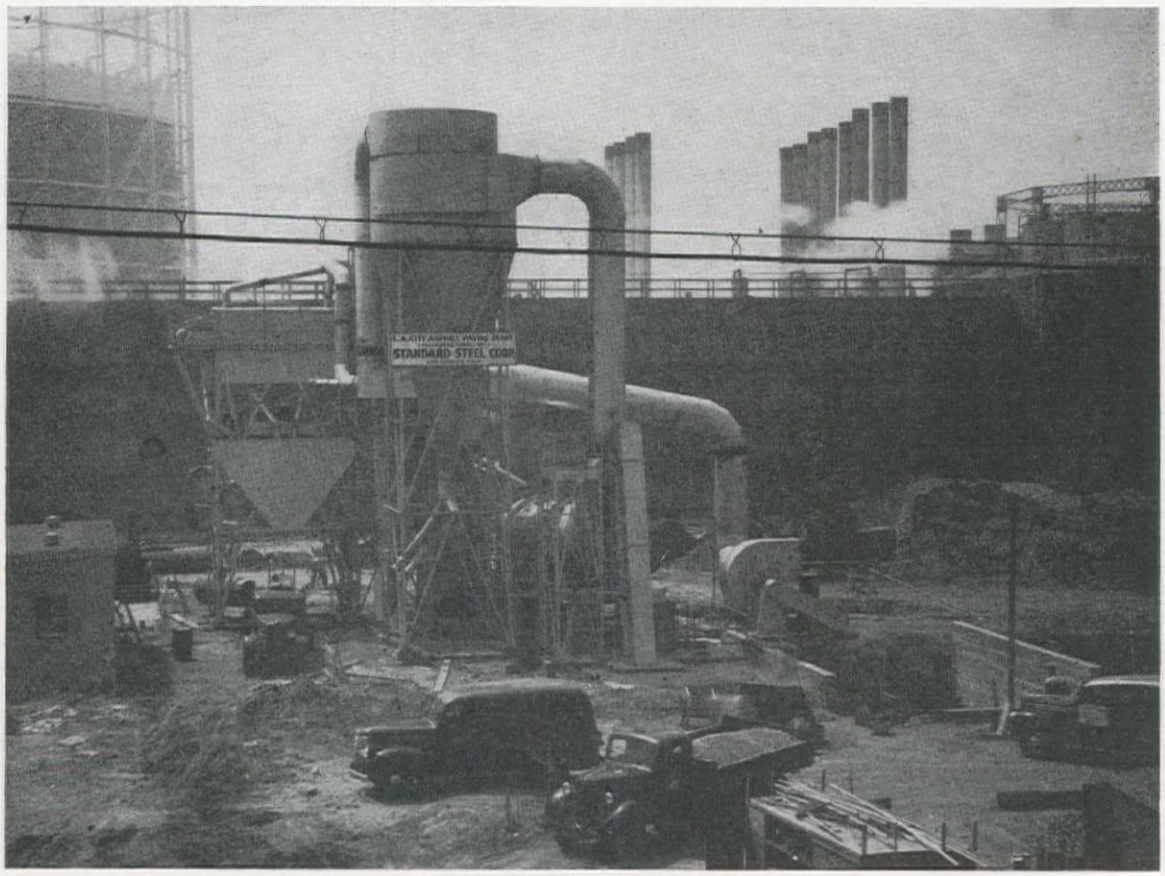
A concrete tunnel 7 ft. high x 8 ft. wide immediately below the bunkers contains the belt conveying system, designed by the city. The main belt is 304 ft. long x 24 in. wide and is carried on 38 sets of flat roll idlers 5 in. in diameter. Power is provided by a 5 hp., 30 rpm. synchrogear motor. Six 24-in. feeder belts on 5-ft. centers are installed under the bins for sand and crusher waste.

A 39-ft. elevator, completely enclosed except for the top, conveys the aggregates from the pit. Elevator speed is set to deliver 150 tons of aggregate to the dryer per hour.

Dryer

The shell of the drying unit is ½-in. steel plate, 30 ft. long by 84 in. in diameter and is of continuous automatic welded construction throughout. It is equipped with 21 lifters of varying heights spaced equally around the inside perimeter. Differences in heights result in the aggregates being cascaded at different times and in different locations within the drum as it revolves.

Both the cold end cowl and the firebox end cowl are supported by the frame of the dryer. The cold end cowl, designed so that any dust falling back from the air stream is delivered directly into the dryer shell, combines the dryer inlet chute and the base of the dryer exhaust. A dustproof seal is maintained at all times regardless of any shell travel. Sides and bottom of the inlet chute are lined with ½-in. armor plate. A hanging door within the chute minimizes draft loss.



ULTRA-MODERN $325,000 batching plant as seen from Olympic Blvd. Cold elevator and exhaust fan of the 4,000-lb. plant on right, with the sand and crusher-waste bins on the right in front of the exhaust fan.

Single flanged type trunnions 24 in. in diameter are used, with a working face of 9 in. and chilled to a depth of 3/8 in. Dryer tires have an 8-in. face and are made of 2½-in. hot rolled mild steel with an outside diameter of 96 in. Twenty breather bars support each tire. The bars mount on a reinforcing steel pad, ½ in. thick and 30 in. wide, which is welded to the dryer drum. The two tires are spaced 16 ft. apart.

A similar arrangement of breather bars on a reinforcing pad carries the dryer's girth sprocket, located 9 ft. from the cold end of the dryer. An idler sprocket to adjust the tension of the chain is provided.

Power and driving mechanism

The drum is turned approximately 6½ rpm. with a 40-hp. uniclosed ball bearing induction motor. Power is transmitted to the 12-in. pitch diameter line sprocket by a 3⅞-in. shaft.

The firebox is shaped like a cone, made of ⅜-in. welded steel plate, and is 4 ft., 6 in. in diameter at the fire entrance end and 5 ft., 6 in. in diameter at the fire outlet end. Ten feet long, it is considerably longer than most firing chambers for dryers of this size. The interior is lined with a 6-in. layer of Plibrico, a type of firebox material that can be applied like wet cement and does not completely set until the firebox is put to work.

The burner is a Bunsen type using eight nozzles when firing with natural gas. When firing with fuel oil, air from a 360-cu. in. compressor powered with a 75-hp. motor is used to atomize the fuel which eliminates the need for the usual steam boiler, fireman, etc. Separate control valves are provided for each gas burner as well as one master control. With gas having a BTU content of 1050 and a nozzle pressure of 20 psi., the burner can raise aggregates having a 10% moisture content to a temperature of 325 deg. F., and can dry 150 tons of material per hour.

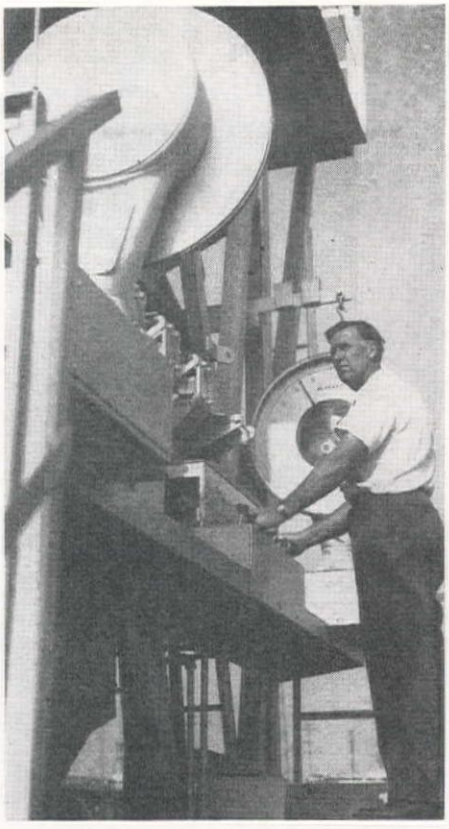
Hot elevator

After drying, the aggregates are discharged from the dryer into the boot of the hot elevator which conveys them 42 ft. to the vibrating screens at the top of the plant proper. Two completely enclosed units, when bolted together form the complete elevator assembly including all bearings, shafts, and the bucket line. Power is provided by a 30-hp. geared-head motor which direct drives the headshaft through a flexible coupling.

Vibrating screen

A 48-in. x 14-ft. double deck vibrating screen is used by the plant. A 15-hp. 1800 rpm. motor is mounted on the screen base frame and transmits power to the eccentric head with V-belts. Isolation spring mountings which absorb the vibration of the base, support the screen at each corner. Four sizes of steel wire screens are used for sand, ¼-in. rock, ½-in. rock, and ¾-in. rock.

Located directly below the screen is the storage bin for the hot aggregates with a total capacity of 25 tons. Four compartments separate the various type aggregates, with a six ton overflow bin



H. E. NORELL, plant foreman, at the hydraulic controls which operate gates between aggregate bins and weighbox, asphalt weighbucket discharge and pugmill discharge gate.

mounted on the side of the mixer plant. Any spillage from the four storage bins is carried to this bin in a completely enclosed chute.

The weigh box is carried on a 4-point suspension mounting, the tapered portion being lined with ¼-in steel plates. Materials are weighed by a Kron springless scale having a 30-in. dial and a capacity of 5,000 lb. Weigh box and mixer are completely enclosed in a dustproof housing.

Mixer

Powered with a 100 hp., 600 rpm. motor, the pugmill mixer has a net working capacity of 4,000 lb. Two parallel shafts, each equipped with 16 paddles, rotating in opposite directions, accomplish the mixing. A hydraulically operated slide-gate allows a 4,000-lb. batch to be discharged in six seconds which includes the time necessary to open and close the gates.

The side-bottom, center-bottom, and gate sections of the pugmill are made of cast Meehanite having a Brinell hardness of 450 to 500. Shanks of the mixer paddles are of cast steel with tips of chilled Meehanite having a Brinell hardness of 500.

The 400-lb. asphalt weigh bucket has an 8-in. outlet valve and can be emptied in 10 seconds. Free flow of asphalt is facilitated by electrical heating of both valve and bucket bottom. A 500-lb. capacity Kron Scale is provided to measure the asphalt charge for each batch.

Dust collecting system

A highly efficient dust collecting system, which utilizes both a cyclone and a multiclone in conjunction with a spray chamber and settling tank is in use in the new installation. The cyclone is estimated to remove 75% of the solids, the multiclone another 15% and the spray chamber 9.9% for a total efficiency of 99.9%. The system is designed to handle 30,000 cu. ft. per min. of combustion gases and dust laden air when adjusted to a temperature of 350 deg. F. and atmospheric pressure.

The cyclone is of conventional design, 14 ft. in diameter. Dust laden gases pass through it and then enter the multiclone, which contains 54 tubes, 9 in. in diameter, and which was made by the Western Precipitation Corp. Gases leaving the unit are picked up by a fan through a 42-in. duct and driven to the spray chamber and settling tank for final and complete precipitation of the solids.

The spray chamber is 10 ft. x 10 ft. x 40 ft. high. Dust laden water from the chamber flows into a concrete settling tank 10 ft. x 20 ft. x 5 ft. high. Water which is cleaned in the settling tank is picked up by a pump and recirculated through the wet house sprays.

The dust which is removed from the gases by this process feeds to an enclosed elevator built in unit sections similar to the hot and cold elevators, and is carried to a 3-ton storage bin by a chute at the top of the elevator.

Twin asphalt storage vats capable of holding 100 tons each were constructed of 12-in. reinforced concrete and are completely below ground. They hold more than four tank cars of asphalt.

Oakland Road Provides Fast Route to Airport

A NEW ACCESS road providing a fast, direct route to the Oakland Municipal Airport and the Southern Alameda County highway system was formally dedicated August 10. Designated as Doolittle Drive in honor of Gen. James H. Doolittle, a native of Alameda, the 2-mi. extension takes the place of Maitland Drive, the former route from Alameda.

Construction of the 10,500 ft. of new roadway was begun in October, 1946. In order to place the rock sub-grade through mud flats along San Leandro Bay, it was necessary to dump the rock from trucks in the form of a wedge, dividing the flats with a solid roadway foundation. Sub-grade is as much as 15 ft. deep in some places.

Two and a half inches of asphalt concrete surfacing was placed over the rock. The roadway is 24 ft. wide, with oil surfaced shoulders seven feet wide. For drainage purposes, reinforced concrete was used.

Contract for supplying 175,000 tons of rock fill was awarded to L. M. Clough & Co., Oakland, Calif., while the job of placing surfacing and oiling the road shoulders was awarded Heafey-Moore Co., Oakland. Entire construction cost of the 2-mi. strip was $190,000. A. H. Abel was engineer in charge of construction work, with J. G. Bastow as his assistant.

Important Association Meetings

AWWA—FSWA

SAN FRANCISCO's impressive Civic Auditorium was the setting for the highly successful joint meeting of engineers in the fields of water works and sewage works, when the American Water Works Association and the Federation of Sewage Works Associations convened together for the first time on July 21-25.

Nearly 2,000 delegates, many from Canada, Mexico and the Hawaiian Islands as well as the United States, viewed the spectacular manufacturers' exhibits on display in the main auditorium and participated in the many scheduled social events, as well as attending the numerous technical sessions.

The twin conventions, which marked the 67th assembly of the AWWA and the 20th meeting of the FSWA, included discussion of all phases of construction and operating problems of water works and sewage works by speakers of national standing. Total delegates of the AWWA numbered 991, with 714 men and 277 ladies in attendance. A registration of 409 was recorded for the FSWA, with 311 men and 98 ladies included in the group. The Water and Sewage Works Manufacturing Association had 555 registered delegates, 401 of which were men and 154 women.

Special sessions of the convention were devoted to ground water pollution problems in California, labor relations in the public service field, the use of radio in water works operation, and the addition of fluorides to water to control tooth decay. Several joint sessions were held during the afternoons.

Wendell R. La Due, AWWA president, was succeeded at the close of the convention by N. T. Veatch, partner in the consulting firm of Black and Veatch, Kansas City, Mo. F. T. Friel, former FSWA president, was also succeeded at that time by George S. Russell of St. Louis, Mo.

The opening session of the AWWA was highlighted by a paper by Oscar G. Goldman, assistant superintendent of the San Francisco water department, who analyzed the design and operation of hydro-pneumatic pumping stations. The need for thorough design, not just building tanks, was emphasized by Goldman, who also urged an analysis of the demand for and use of water in each locale before the plant is designed.

GEORGE S. RUSSELL, elected president of the Federation of Sewage Works Associations for the coming year, 1947-48.

"The Southwest's Great Water and Power Resource," a description of the Colorado River, was a paper read by Samuel B. Morris, general manager of the Los Angeles water department, while Frederick Ohrt, manager of the Honolulu water board, outlined "Water Development in the Pacific Islands."

A study of financing of waterworks expansion and a discussion of recent legislation in that field was included in the Monday afternoon sessions, with C. M. Hoskinson, superintendent and chief engineer of the Sacramento division of water and sewers as one of the speakers.

Ground water pollution

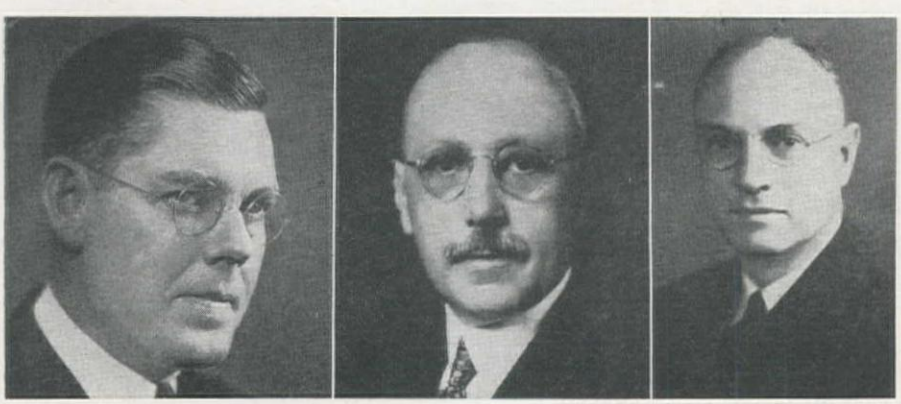
Ground water pollution problems and the various uses of reclaimed sewage effluents were the topics discussed at the joint AWWA-FSWA sessions Tuesday and Wednesday afternoons. A. P. Black, professor of chemistry at the University of Florida, delivered the opening paper of the Tuesday afternoon session, when the Water Works played host. His topic, "Basic Concepts in Ground Water Law" laid down principles for good ground water legislation, mentioning the New Mexico and Kansas state ground water laws as examples. The slowness of states in adopting their own ground water statutes was mentioned, although it was noted that over half of the semi-arid Western states have separate ground water statutes while the rest have interpretations. The three basic laws for interpretation — common law, reasonable use, and prior appropriation—were discussed by Black, who concluded that in many cases, although requirements of towns and cities should be given primary consideration, it might be best to omit specific mention of municipal supplies from the statute and look to the courts for interpretation.

Lantern slides accompanied Malcolm Pirnie's talk, who, together with R. W. Sawyer had prepared a paper on "Ground Water Production Works." He stressed the need for conservation of ground water as well as development of further sources. Pirnie also urged further and much larger appropriations for the United States Geological Survey to further their work.

The notorious Montebello, Calif., case was mentioned in B. E. Doll's talk on "Formulating Legislation to Protect Ground Water from Pollution." Doll told how a discharge of 12 m.g.d. through city sewage treatment plants by a plant manufacturing a weed-killer polluted water throughout the district, giving it a distinctly unpleasant taste because of the phenol discharge. He emphasized that preventative action was needed to protect water for domestic, agricultural and industrial purposes as pollution was not dispersed in ground waters since there was hardly any wave action.

The final paper of the session was given by Ray Goudy, who discussed "Developing Standards for Protection of Ground Water from Pollution." Interstate commissions were commended on their work of protecting waters from pollution, and it was recommended that more should be established.

WATER WORKS Association officers, l. to r.: L. H. ENSLOW, Vice-President; W. W. BRUSH, Treasurer; and N. T. VEATCH, President. The new president is a partner in the well known engineering firm of Black & Veatch, Kansas City, Mo.



Sewage effluent use

"Reclamation of Sewage Effluents," a paper by incoming AWWA president N. T. Veatch, began the Wednesday afternoon joint session. The use of sewage effluents, he declared, was limited to a few instances, irrigation being the first one.

Highlight of the afternoon was Abel Wolman's condensation of his paper on "Use of Reclaimed Sewage Effluents of Baltimore." Departing from the original paper and omitting much of the technical data, Wolman stressed the implications rather than the text of the article. The three main obstacles that a program for reclaiming effluents must meet, he

declared, are public resistance, official timidity, and a residual technological program. He detailed the successful operation of water supply for the Bethlehem Steel Co. plant in Baltimore, Md., which used 50 m.g.d. of reclaimed sewage effluents for industrial processing and other uses. This was later increased to 100 m.g.d., when a large sewage treatment plant was built by the company. Employee-management relations in regard to the reclamation was also discussed. Wolman stated the Bethlehem Co. was the largest plant to use reclaimed effluents. Total operating costs were $17.30 per m.g.

Other papers on the afternoon's program included "Agricultural Uses for Reclaimed Sewage Effluents" by L. V. Wilcox, and "Limits of Pollution of Water for Industrial Use" by S. T. Powell.

Immediate need of $2,200,000,000 of new water systems throughout the country was declared by Atty. J. H. Murdoch of New York, who spoke Wednesday on the importance of the water works industry. Of the two billion dollar amount, he said, one-third is needed for development of water sources, one-half for distribution facilities and the remainder for water treatment plants.

S. S. Green, Los Angeles materials engineer who followed Murdoch on the program, warned that increased university enrollment might overcrowd the field of professional engineers in a few years. Engineers may possibly turn to labor organizations in an attempt to secure adequate wages, he warned.

Local committee

Local committees handling convention arrangements included: AWWA: Robert C. Kennedy, Geo. W. Pracy, James R. Barker, J. H. Peterson, and Nelson A. Eckhart; FSWA: Blair I. Burnson, C. C. Kennedy, George White, Harold L. May and Gilbert T. Bowman.

Chairman of the hotel committee was Nelson A. Eckhart, with George W. Pracy, AWWA; Keeno Fraschina, FSWA; and J. H. Peterson, Water and Sewage Manufacturers Assn., included in the committee.

Section host committee included: H. C. Medbery, Vinton W. Bacon, Harvey M. Cole, Jr., A. L. Dopmeyer, Harold F. Gray, H. B. Hammon, J. C. Jennings, Fred W. Kolb, G. T. Luippold, Thos. M. McMorrow, Herbert P. Nilmeier, Roy E. Ramseier, Norman T. Riffle, and Victor W. Sauer.

E. A. A.

COLLECTIVE bargaining, membership expansion, and professional salaries were among the important discussions taking place at the second annual convention of the Engineers and Architects Association, held July 18-20 in Pasadena. Dr. Robert C. Burt is grand president of the organization.

Opening session of the convention, held at the Hotel Green Friday evening, was followed by a social hour at which the Civic Center Chapter was host. A business session and committee meetings occupied Saturday morning, while in the afternoon Dr. Gray, member of the State Personnel Board, spoke on "Employment Relations Between Management and Engineering and Technical Staffs."

Employment problems, Gray pointed out, actually start long before the man is hired and his name put on the payroll, since the way he is received as an applicant and given information pertinent to the job are both factors which will determine the employment relations between management and that man.

The problem of hours and working conditions, he stated, is one which has been controlled in many ways through legislation and it has been recognized in many cases that certain special privileges can be and in some cases must be extended to professional men. Gray also stressed the necessity for understanding the individual, his ability, environment and surroundings to determine what are his objectives and his usefulness to the organization.

Committee resolutions

Much worthwhile work was accomplished during the three-day meeting, and many committee resolutions were submitted for approval. Among those carried were three by the Collective Bargaining Committee, with Walter G. Rising as chairman. Protestation of the definition of supervisor within the 1947 Labor-Management Relations Act and a resolution that the EAA should take steps to avoid possibility of the parent organization becoming liable for violations of the Act committed within a unit of the EAA was one of the three resolutions carried. It was also resolved that the EAA investigate and advise its members and the interested public of the effect of the Act on free collective bargaining and good labor-management relations. Resolutions to purchase information services and to establish a library of pertinent information were also carried.

Changes in the Association constitution included a new definition of collective bargaining, an amendment to Article VII, "Powers of the Grand Board," and the addition of Article XVI entitled "Official Publication of the Association," which states that the Grand Board shall cause to be published the official publication which shall serve the interests of all branches of the Association. Hal R. Beck was committee chairman.

Salary survey

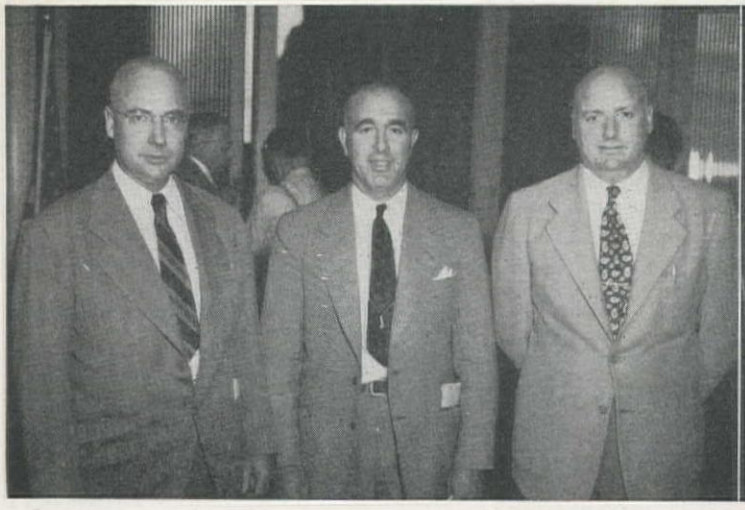
The Salary Survey and Survey Data Committee, under the chairmanship of W. B. Tupper, recommended that the Grand Board use as a minimum recommended salary for various groups of professional engineers the weighted averages submitted on charts compiled by the Civic Center Committee. A comprehensive survey, including all grades and qualifications of engineers accompanied this resolution, which was carried.

Printing of a brochure for membership recruitment was also approved, and a proposed program of professional and educational betterment was also submitted. Other committee chairmen included George M. Zakaryan, chairman, Credential and Registration Committee; Sam Hoyt, chairman, Functions and Finance Committee; J. N. Robertson, chairman, Audit Committee; John G. Becker, chairman, Membership and Expansion Committee; and Roy H. Kreyser, chairman, Professional and Educational Betterment Committee.

Social highlight of the convention was a dinner dance on Saturday night, which was attended by 133. Sunday morning a business session followed by a luncheon wound up the three-day conclave.

In addition to President Burt, EAA officers include Charles T. Ledden, first

ATTENDING the E. A. A. dinner dance were, l. to r.: HAL R. BECK, Grand Board Member; MRS. L. M. FIEN; L. M. FIEN, Chairman of host chapter; MRS. R. C. BURT; DR. ROBERT C. BURT, Grand President; MISS JO WHEELER, Executive Secretary; JOHN G. BECKER, JR.; CHARLES T. LEDDEN, First Vice-President; W. B. TUPPER, Second Vice-President; J. G. BECKER, Grand Treasurer.



COMMITTEE in charge of arrangements for the Portland AGC gathering were, l. to r.: MARSHALL R. NEWPORT; A. H. HARDING, Secretary-Manager of Portland Chapter; and DONALD W. HALL, President of the chapter. Officers of the conference were: H. L. ROYDEN, Arizona; A. L. ATHERTON, Seattle; E. J. MAUPIN, JR., Nevada, Chairman; and CHARLES L. HILL, Nevada, Secretary.

vice-president; Warren B. Tupper, second vice-president; John G. Becker, grand treasurer; and Miss Jo Wheeler, executive secretary. L. M. Fien is chairman of the Civic Center Chapter, which acted as host for the affair.

Western AGC

PLANS FOR SUPPORTING economical development of irrigation and flood control projects in the West were laid as one of the outstanding actions of the Western Chapters Conference of the Associated General Contractors in Portland on July 21-22. Representatives of AGC chapters in the eleven Western states spent two days, as guests of the Portland Chapter, discussing problems peculiar to Western contractors.

The plea for support of a logical and orderly development of irrigation and flood control projects was advanced by George H. Atkinson who pointed out that Congressional appropriations are frequently made with no consideration for the economic factors contributing to the ultimate cost of the projects. If appropriations continue to be made at this year's rate, Atkinson said, it will require more than 30 yr. to complete the construction of McNary dam on the Columbia River.

Support for appropriations

Such methods of appropriating funds for major projects will lead to ultimately greater costs, and defeat the ends of any economy program which makes insufficient appropriations. A lack of knowledge on the part of Congressional representatives as to the requirements of a construction program was held to be largely responsible, and Atkinson recommended that the Western AGC chapters undertake to inform Congressmen as to the detailed needs of Federal construction agencies in the future, backing up requests of the Corps of Engineers and the Bureau of Reclamation that projects be properly scheduled.

Following a general discussion of the subject on the first morning of the meeting, it was turned over to a committee headed by Atkinson which made the following recommendations:

1. That the Western Chapters Conference establish a standing projects committee.

2. That each Western chapter establish a standing projects committee.

3. That each chapter committee compile a report of irrigation and flood control projects contemplated for construction within the chapter area together with an estimated schedule of appropriations required to advance each project most efficiently and economically.

4. That the Western Chapters Conference committee consolidate the project reports from chapters in the eleven Western states.

Before the close of the conference an appropriations coordination committee was appointed to carry out recommendations 1 and 4. The personnel of the committee includes E. J. White, Mountain Pacific Chapter, Seattle; with Verne Warren, Spokane Chapter, as alternate; George H. Atkinson, Northern California Chapter, San Francisco; C. V. Isbell, Nevada Chapter, Reno; with John Isbell as alternate; Donald W. Hall, Portland Chapter; H. L. Royden, Arizona Chapter, Phoenix; Allan E. Mecham, Intermountain Branch, Salt Lake City; and M. F. Kemper, Southern California Chapter, Los Angeles.

Construction costs

In considering construction costs and the market outlook for the construction industry, contractors attending the conference found little promise of any decrease in construction costs during the next few years. It was pointed out that labor costs have materially increased, and that there is no assurance that they will not continue to increase as annual labor contracts come up for renewal. All material costs have increased considerably, and although lumber costs have decreased to some extent, it is the only construction material which has gone down and raises in steel prices are almost a certainty.

Impromptu surveys of various areas in the Western states indicated that building construction had increased measurably since the removal of restrictions on July 1. Reports are indicating that some owners who had postponed major building programs because of what they considered high building costs are now reversing their plans and preparing to go ahead.

It was also pointed out with some emphasis that building costs of today cannot be fairly compared with building costs of twenty, or even ten, years ago. Present day building specifications require installation of elaborate air conditioning, electrical systems, and other accessories which were seldom before considered, even in the years just prior to the war.

Taft-Hartley act

Consideration of the Taft-Hartley act and its effect on existing relations between the contractors and the building trades unions occupied most of the second day of the meeting. Allan E. Mecham, manager of the Intermountain Branch at Salt Lake City, presented a brief review of the act and led a general discussion on the subject.

Mecham pointed out that the Taft-Hartley act goes into effect on Aug. 22, 1947, and that all negotiations between employers and employees after that period will be governed by the provisions of the act. Labor contracts consummated before that date will remain in effect under their original provisions until the expiration of the contract, or until Aug. 21, 1948, whichever is earlier.

While there is some question as to whether all types of construction can be construed as being in interstate commerce and thus liable to the provisions of the act, many types of construction are definitely considered to be in interstate commerce and in general contractors should conduct their negotiations in accordance with the provisions of the act.

Of principal interest to the contractors are the provisions of Section 7 of the act dealing with unfair labor prac-

(Continued on page 106)

HOW IT WAS DONE

JOB AND SHOP TIPS FROM THE FIELD

Two-Step Trencher Made for Russians

AMONG THE many products that were produced in American manufacturing plants for wartime use, but which were at the time cloaked in the secrecy and censorship of those days, was a special two-step trencher designed and built for the Russian Army by the Buckeye Traction Ditcher Co. of Finlay, Ohio.

This special trencher was designed for the purpose of digging a step trench and was used in the "last ditch" stand by infantry troops at Stalingrad, as well as on other battlefields of the eastern front.

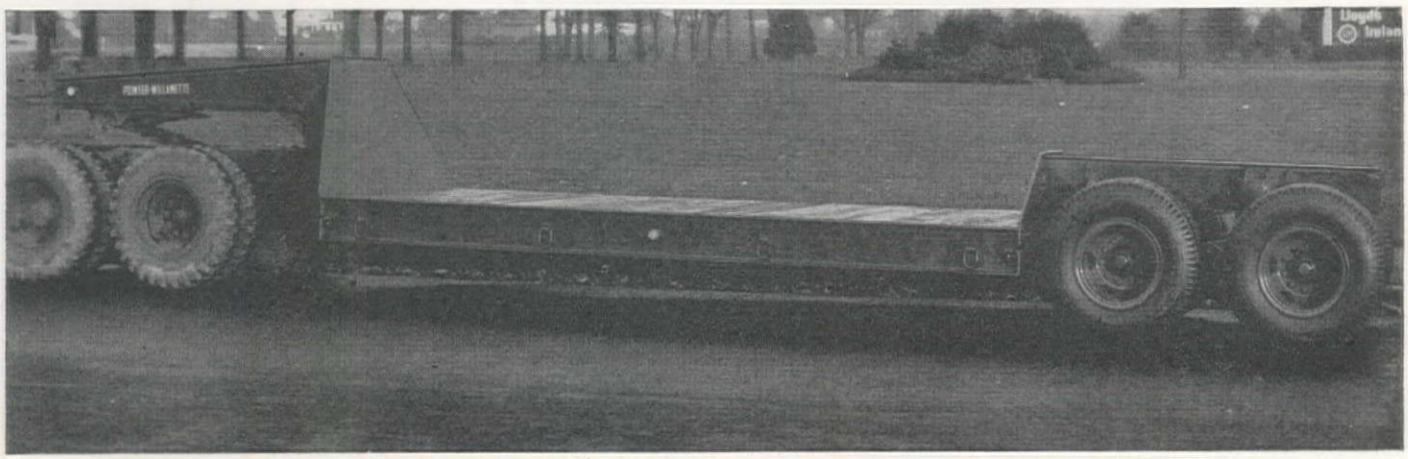
The picture at the right shows one of the experimental models working out on the Buckeye proving ground, digging a ditch with a 2-level bottom. It is believed that there may be adaptations for this type of machine in construction work where parallel pipe lines are to be laid, or special types of foundation walls are to be built.

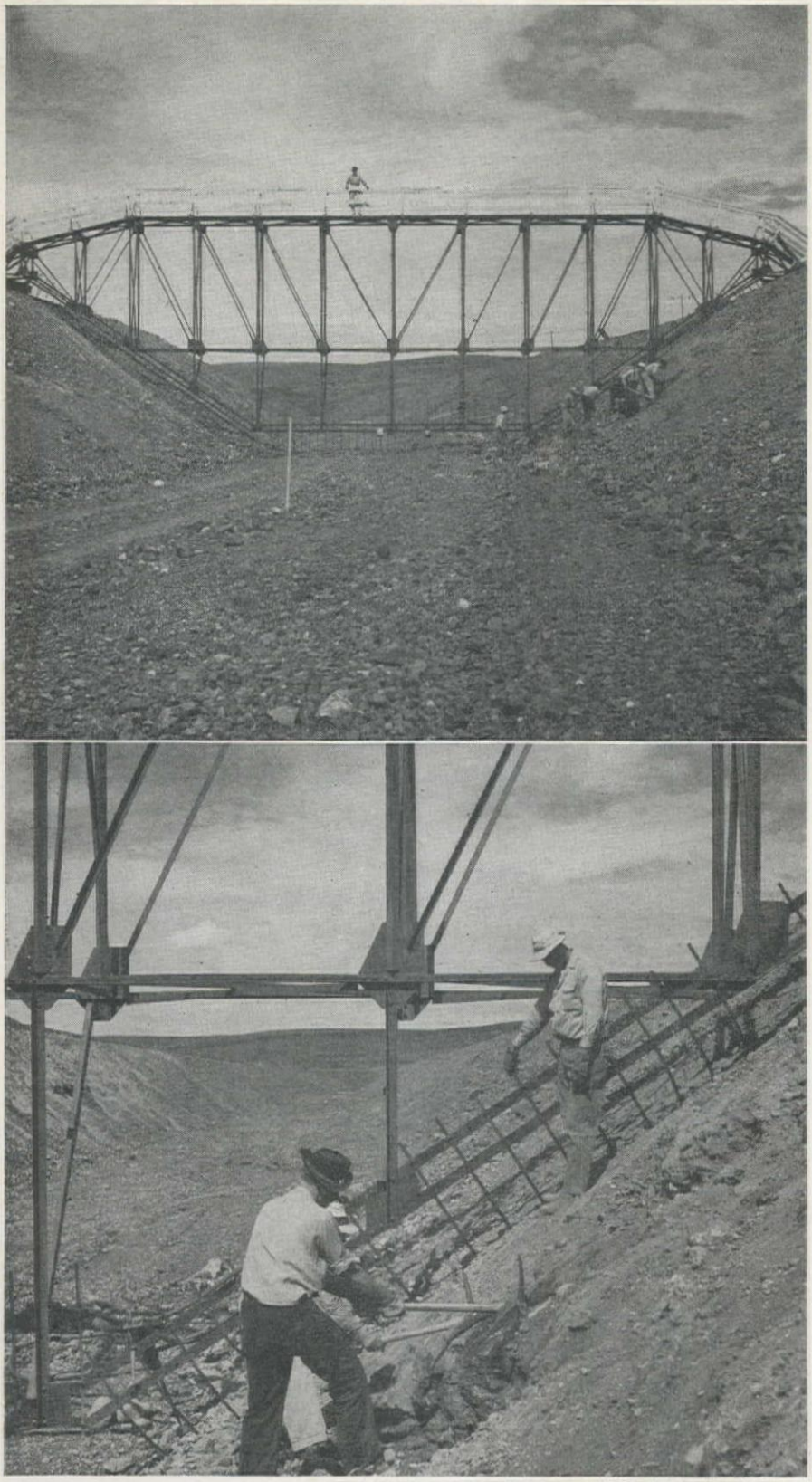
In the case of the trenchers built for the Russian Army, a bullet-proof cab was installed on the machine, but for construction purposes this weighty addition could be removed.

This is but one of numerous special types of trenchers built by American manufacturers. Illustrated, for instance, in the article concerning aqueduct building on page 75 of this issue, is another trencher digging a ditch 7½ ft. wide, using a central bucket line and small added cutters on the sides.

DOUBLE-DROP LIGHTWEIGHT MACHINERY TRAILER INCREASES PAY LOAD, REDUCES EXPENSE

A DOUBLE DROP machinery trailer made entirely of lightweight materials was recently built for Halverson Construction Co., Salem, Ore., by the Pointer-Willamette Co. of Portland. The new 10,900-lb. unit is fabricated from high tensile strength steels which effect a weight reduction of approximately 5,000 lb. Reduced weight of the 35-ft. long trailer, which has a capacity of 25 tons, means more pay-load, reduced maintenance costs, tire wear and operating expense. Loading deck length is 17 ft., 4⅞ in., with a loading deck height of 28⅝ in. Decking is of 2½-in. oak, and ground clearance is 11 in.





HUGE WHISKER GUIDE FOR TRIMMING COLUMBIA BASIN CANAL CONTOURS

A WHISKER jumbo is being used by Utah Construction Co., of San Francisco, and Winston Bros. Co., of Los Angeles, on their joint contract for constructing the West Main Canal of the Columbia Basin Irrigation Project in eastern Washington for the Bureau of Reclamation. The upper picture is an overall view of the big template used in finegrading the canal surfaces, and the lower photo is a close-up of the flexible steel teeth or whiskers showing how they indicate the material to be removed over the entire slope of the canal bank. At the section shown in the photos, the canal will have a bottom width of 38 ft. The jumbo moves on rails set on top of each bank, which will later be used by a concrete lining machine, when that part of the work commences. Considerable adjustment is possible in the whisker jumbo, so that it can be used on canals of several different sizes. The Utah-Winston combination holds contracts totalling $6,848,000 for various Columbia Basin canals.

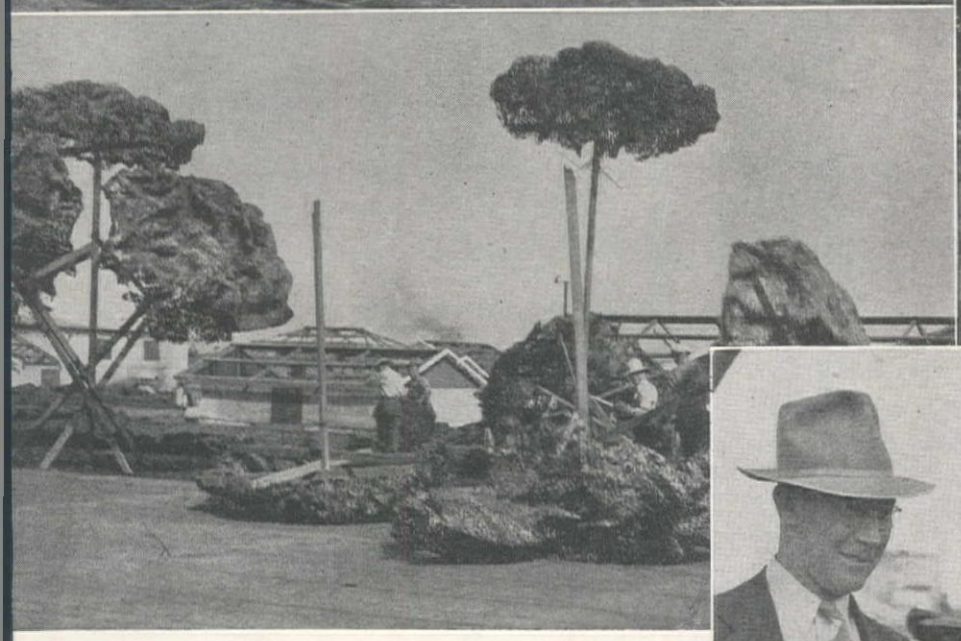
Parking Coin Collector For One-Man Operation

ONE-MAN OPERATED carts used by San Diego, Calif. to replace the heavy four-wheeled wagons which required two men to handle have proved an effective method of collecting parking meter coins. By switching from the seal method of collection to the dump method, manpower has been saved which was put to work on maintaining the parking meters.

According to John Seuss, superintendent of the city shops, the coin tanks were rolled from 18-gauge galvanized iron sheets. The seam was welded and a circular section was welded to the bottom of the tank. Two handles were welded to the side of the coin tank, using Fleetweld electrode, as was used for the other welds described. An angle plate with hole for padlock, was welded at the top of the tank to fit with a similar plate on the lid.

Inside diameter of the lid was made slightly larger than the outside diameter of the tank, but otherwise it was made in the same manner. Arc welding attached the ¼-in. round handles to the top for easy removal, while a hole in the center with tubing welded on top accommodated the coin funnel and tubing. The tank is prevented from turning upside down for removal of coins by a spring-actuated flapper. Angle plate was welded on the top edge for locking the coin tank to the cart and another angle plate fits with the similar plate on the tank for locking the coin container itself.

Photo courtesy Lincoln Electric Co.



CAMOUFLAGE WAS recently removed from Seattle's Boeing Field, aided by a burner manufactured by Gibbons & Reed, Salt Lake City, and J. C. Compton, McMinnville, Ore. Special texture was removed from runway surfaces by the machine, which first threw flame on emulsion compound, then scraped melted substance away (upper left). Jim Finnegan, rigger for L. B. Colton Co., Los Angeles, on their camouflage removal job, cuts support wires from dummy tree (upper right). Tree is shown falling, at left. Lathers and sheet metal men following after riggers, cut timber supports and chicken wire. Right, Walter J. Murphy, Seattle Engineer District engineer for removal of passive defense measures at Boeing Field, discusses the problem with Glenn A. Barcroft, construction engineer. Coast Contractors, Tacoma, battered down 134 air raid shelters and one casualty station in the vicinity, lower left. Tone down paint was removed from CAA building at Boeing Field as part of Brazier Construction Co. contract (lower right). Ordinary method of removal with live steam proved rapid and effective on this latter operation.

NEWS OF WESTERN CONSTRUCTION

AUGUST, 1947

Triple Power Plants Planned For Owens River Gorge Site

A TOTAL COST of $40,526,000 is to be expended by the Los Angeles Department of Water and Power for development of hydro-electric power resources along the Owens River Gorge, with three identical hydro-electric power plants to be built.

The plants, built to utilize the 2,375-ft. power drop from Crowley Lake to the end of the gorge near Bircham's Canyon, will each contain a single turbo-generator of 37,500 kilowatts capacity. It is estimated that 1,250,000 barrels of fuel oil will be saved annually when the proposed plant is completed.

The three plants divide the power drop into approximately equal heads, the first plant being at elevation 6,000, the second at elevation 5,230, and the third at elevation 4,446 ft. Los Angeles will receive the power over a 230,000-volt transmission line, extending from the gorge to Receiving Station E in San Fernando Valley and nearly 250 mi. in length.

Of the total project cost, $4,250,000 has already been spent in the past few years. Power plants are estimated to cost $27,362,000; the transmission line and terminal facilities, $13,164,000.

Height of Long Valley Dam will also be raised by 20 ft. to increase water storage capacity of Crowley Lake from 183,000 to 315,000 ac. ft. Over 18,534 ft. of 8-ft. diameter steel pipes will be required for fabrication of penstocks to carry water to the hydraulic turbines.

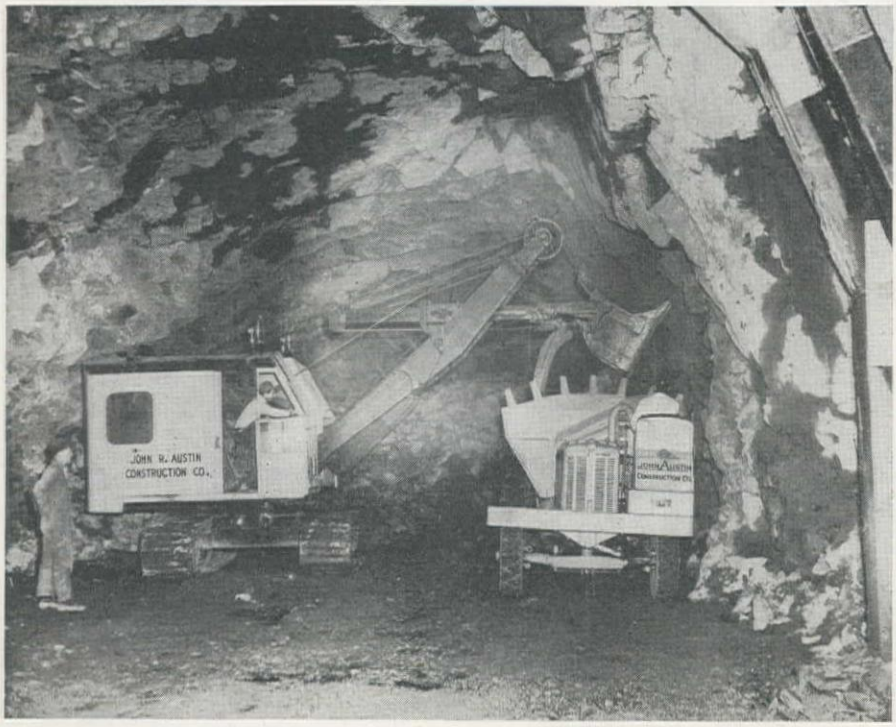
Electrical energy from the project can be delivered at a lower cost than power generated by steam plants when fuel oil cost is as low as $1.35 per barrel, according to Charles P. Garman, chief electrical engineer.

Estimated peak demand for 1950 is believed to be 870,000 kilowatts. This demand, plus a necessary spinning reserve of 150,000 kilowatts, will require total generating facilities of 1,020,000 kilowatts.

In view of the uncertainty of delivery dates for heavy electrical equipment, it was recommended to the Board of Water and Power Commissioners that system engineers proceed immediately with the design and construction of the project.

COLORADO HIGHWAY RELOCATION CAUSES NEW TUNNEL EXCAVATION

RELOCATION of Highway 40 in Colorado required that a new tunnel be driven in Clear Creek Canyon, 2 mi. west of Golden; John R. Austin Construction Co. is the contractor. About 60 ft. had been completed at the time the picture was taken. Approximately 120 holes per round are being drilled in the tunnel, which is 36 ft. in diameter. Muck is removed by Koehring dumpters loaded by a short boom shovel.



Hospital Building Program Approved

CONSTRUCTION of 225 million dollars' worth of hospital and health facilities during the fiscal year of 1948, ending June 30 next year, will be possible under the appropriations act signed by the President on July 8, according to Thomas Parran, Surgeon General, U. S. Public Health Service.

Although no Federal funds were directly appropriated for this purpose, the act sets up a procedure, patterned after the program of Federal aid for highway construction, which obligates the Federal government to pay up to $75,000,000 as its share of approved hospital construction. Since the Federal government pays one-third of the cost, this brings the potential combined total of Federal, State and local funds to $225,000,000. Under this arrangement, states need not delay their hospital construction plans since they have the assurance that any construction project approved by the Surgeon General creates a contractual obligation on the part of the Federal government to meet its one-third share of the cost.

This legislation implements the construction phase of the Hospital Survey and Construction Act passed by Congress last year, authorizing the appropriation of three million dollars for sur-

vey and planning and 75 million dollars for construction annually for five years. Two and a quarter million dollars was appropriated last year to assist the states in surveying existing hospital facilities. The 75 million dollars just appropriated for the fiscal year 1948 is the first money to be made available for construction. Funds may be used for health centers, laboratories, clinics and other medical facilities, as well as for hospitals.

California Gas Supply Shortage Seen Imminent

NATURAL GAS — mainstay of California's fuel supply — is becoming alarmingly inadequate, according to the California Manufacturers Association. Few of the people immediately concerned are aware of it, it was stated by Alvin E. Hewitt, executive vice-president of the association at a recent meeting of the organization's natural gas committee in Los Angeles.

Charging that insufficient action has been taken to remedy the critical situation, Hewitt stated that industry is threatened with serious curtailment of fuel and that job-making industries are deciding against locating in California.

Southern California Gas Co. and Southern Counties Gas Co. have acted on this problem by contracting for gas from Texas and laying a pipeline to bring it to California. Although the line is scheduled for completion some time in September, it will not be operating at full capacity (305,000,000 cu. ft. a day) for two years. Northern California gas companies, also facing a shortage, are endeavoring to divert a considerable share of the Texas gas into the Northern California area.

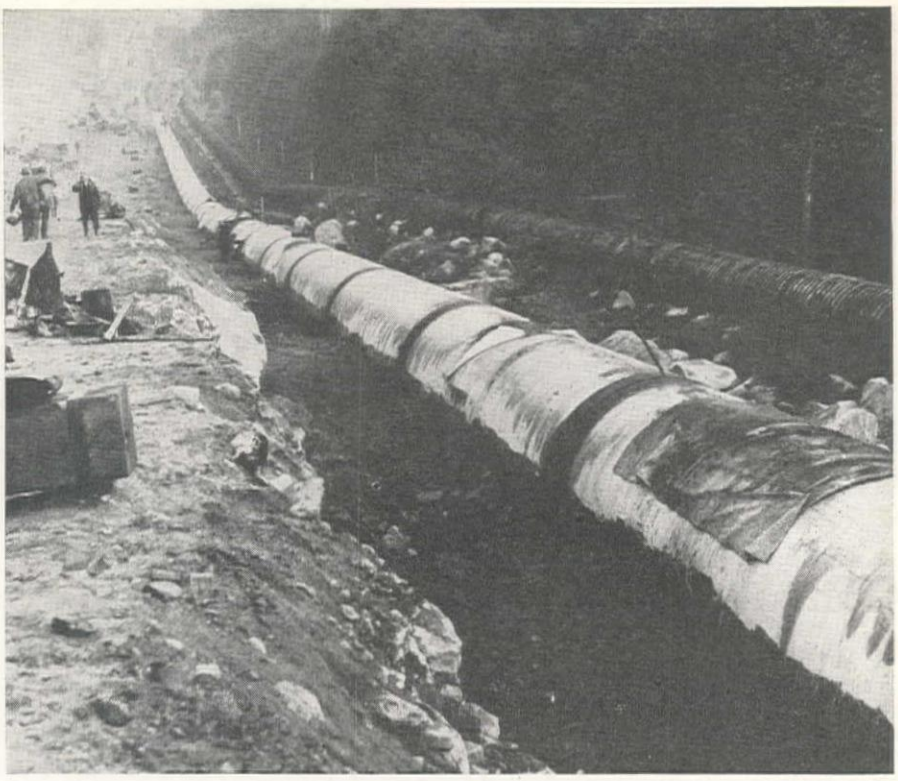
Estimated reserves of natural gas in the entire state will, at the present rate of production, be gone in between 15 and 20 years, it has been estimated by testimony given before the Public Utilities Commission. Only alternative is the use of oil, supply of which is even more acute than natural gas.

The best solution to the problem was offered to the Utilities Commission by its assistant director, Roy A. Wehe, who recommended construction of additional outside pipelines.

Engineers Reject Bids For Vet Hospital Construction

THE CORPS of Engineers has rejected all bids for the construction of the Veterans Administration hospital at Miles City, Mont., the War Department has announced. The low bid of $4,437,000 was submitted by Lease and Leigland, of Seattle, Wash. The only other bidder, the J. C. Boespflug Construction Co., of Billings, Mont., asked $4,590,000 for the job.

Since the low bid was 32½ per cent above the Government estimate of $3,354,020, the District Engineer at Fort Peck Engineer District, Fort Peck, Mont., was notified to reject all bids. No further action will be taken at present.



VANCOUVER, B. C., REPLACES WOOD STAVE PIPE LINE WITH STEEL

CONVERSION of a temporary wood stave pipe line, installed in 1927, to 35,700 ft. of 90-in. steel pipe is being accomplished by the Greater Vancouver, B. C., Water District. Most of the new line is being laid on higher ground, a considerable distance from the banks of Seymour River, which was closely followed by the temporary line.

Bids Soon Invited on Major Western Construction Jobs

BIDS ON MANY major construction jobs throughout the West are soon to be invited, according to a bulletin recently issued by the U. S. Bureau of Reclamation. Bid calls expected this month include a transmission line from Parker Dam, Calif., to Pilot Knob, bids on which are expected to be invited about Aug. 14. The project calls for construction of 123 mi. of 161-kv. transmission line, with overhead ground wire, from Parker Dam to Blythe, thence to Pilot Knob; wood poles, H-frame type.

Other bids are to be invited Aug. 15 for construction of 40 mi. of laterals at the Shoshone Project, northwestern Wyoming; a cableway and gaging station at the Davis Dam Project, Arizona-Nevada; construction of 30 mi. of 115-kv. transmission line at Coolidge Dam to Eloy, Ariz.; construction of 14 mi. of transmission lines for the Davis Dam Project, Ariz.-Nev.; and installation of spillway gates, hoist and bridge on Altus Dam, Okla.

Probable bid invitations around Aug. 22 include construction of a concrete weir at the Cambridge Diversion Dam, near Cambridge, Neb., and construction of 80 mi. of transmission line, wood poles, three phase, single circuit from Gering to Sidney, Neb.

Bid calls expected during the following two months include construction of 83 mi. of 230-kv. transmission lines from Davis Dam to Parker Dam, Ariz.-Nev., about Sept. 1. Other expected Sept. 1 invitations are construction of a pump house at Boulder City, Nev.; drain inlets, farm bridges on the Tucumcari Project, New Mex.; laterals and structures at the W. C. Austin (Altus) Project, Okla.; road relocation at the Canyon Ferry Unit, Mont.; canal for the Colorado - Big Thompson Project, Colo.; transmission lines from Sidney, Neb., to Sterling, Colo., and from Greeley to Loveland, Colo.

Bids for switchyard excavation, footings and surfacing at Keswick Dam, Calif., are to be invited about Sept. 2.

Invitations about Sept. 15 include construction of pipeline and storage tanks at Boulder City, Nev.; wasteway for the Payette Division, Boise Project, Ida.; lateral system at the Deschutes Project, Ore.; construction of a wasteway at the Owyhee Project, Ore.

Bids for construction of a pumping plant on the Boise Project, Ida., will be invited about Oct. 1. Others expected on that date are for: construction of a tunnel, canal and lateral at the Riverton Project, Wyo.; construction of Medicine Creek Dam, Frenchman-Cambridge Unit, Neb.; construction of a canal at the Central Valley Project, Calif.; construction of a flood protec-

tion dike and evacuation channel at the Coachella Division of the All-American Canal, Calif., and construction of laterals for the Coachella Division.

Reclamation Bureau Plans for Office Building Adandoned

ABANDONMENT of plans for construction of an office building for the Bureau of Reclamation at Ephrata, Wash., has been announced by H. A. Parker, supervising engineer for the irrigation division of the Columbia Basin project. Insufficient funds in this year's appropriations to cover the building cost have resulted in the decision to cancel plans for the construction of a new headquarters building to house the irrigation division.

Conventions

(Continued from page 100)

tices on the part of both labor and management, and the provisions for certification of bargaining agents. Much of the certification procedure is not made clear in the act itself and will undoubtedly be the subject of rulings and directives by the reorganized national labor relations board, when that body begins to function.

Under the provisions of the Taft-Hartley act three types of clauses frequently included in labor agreements in the past will be illegal in the future. These are preferential hiring, closed shop, and union hiring halls or preferential hiring lists. The union shop agreement is permitted, but may not be combined with any of the three foregoing provisions. Check-off systems may be continued with the written permission of the individual employees.

One of the main points brought out in the discussion of the act was that its provisions are general rather than specific, and the actual application of the act will have to be defined by directives of the board. The act is directed primarily at industry as a whole rather than the construction industry, and consequently its applications to the construction industry cannot, in most cases, be considered as definitely established until the national labor relations board has interpreted the act by many directives.

Fall meeting

The next meeting of the Western Chapters Conference will be held in Los Angeles with Oct. 19-21 being set as the tentative dates with a possible postponement to a November date. The Portland meeting was presided over by E. J. Maupin, Jr., of Nevada, as chairman, assisted by A. L. Atherton, Seattle, vice-chairman; H. L. Royden, Arizona, vice-chairman, and Charles L. Hill, Nevada, secretary.

Representing the Portland Chapter as host to the conference were Donald W. Hall, president; Marshall R. Newport, first vice-president, and A. H. Harding, manager, who was in charge of arrangements for the conference.

Navy Preserves Surplus Aircraft for Lengthy Storage Program by "Canning"

THE NAVY will begin "canning" more than 2,000 surplus carrier and trainer aircraft in June under a long-term storage program designed to preserve the planes in a near fly-away condition for periods up to five years. Two hundred and fifty of the surplus craft will be stored in metal cells at Alameda, Calif.

In seeking the answer to its airplane storge problem, the Navy decided that the most desirable system was one of long-term preservation which would maintain the planes in operating condition to meet the expected aircraft attrition rate during the next five years. Laboratory tests showed that the optimum condition for storage was in clean air of about 30 per cent relative humidity. Completely dry air causes a breakdown of rubber and other organic materials, and moist air causes corrosion of metals, especially aluminum.

The "canning" process, which involves sealing the planes, with wings folded, in metal containers constructed from 10-ft. panels of corrugated steel is considered more satisfactory for all-weather storage of small aircraft than "cocoons" of sprayed plastic.

Tests of the "cocoon" type of preservation are being continued, however, as the possible solution to the problem of storing larger types of aircraft, since metal containers cannot be procured in larger sizes at reasonable cost.

Both processes involve controlling the relative humidity of air within the storage area, but the "cocoons" are not completely satisfactory in areas subject to seasonal windstorms. In addition, the rigid containers can be used more than once and provide space for storage of aeronautical equipment along with the planes.

Idaho Irrigation Work Authorized by Bureau

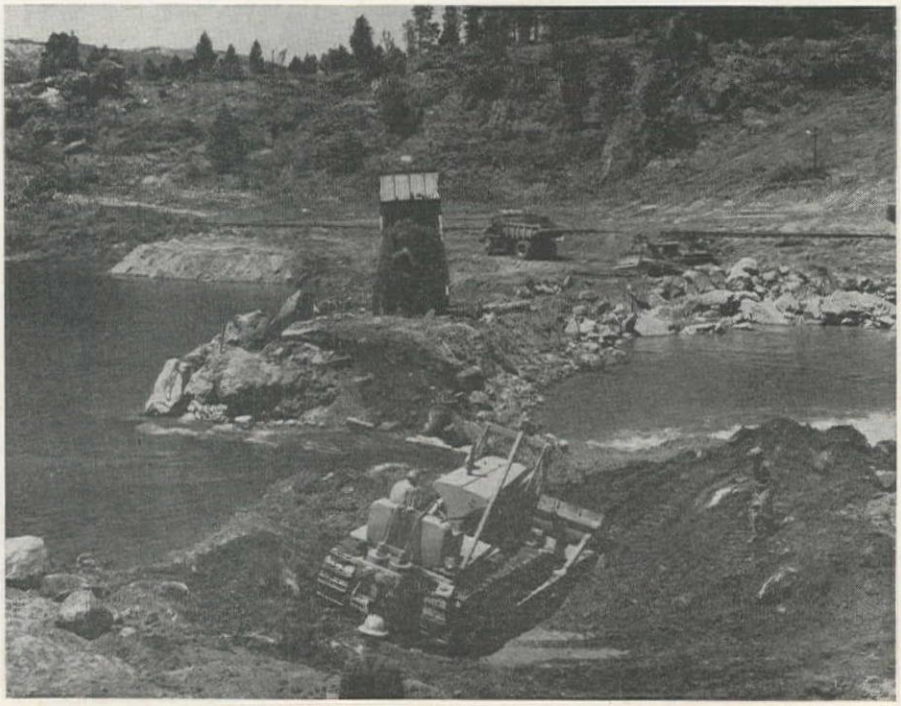
CONSTRUCTION of irrigation works to preserve the improvements and increase crop production on 1,050 ac. of land constituting the Hayden Lake Unit in northern Idaho has been authorized by the Bureau of Reclamation.

The unit, located in Kootenai County, is part of the Rathdrum Prairie project. The land is now served by a deteriorated irrigation system. Repeated failures of the wood-stave discharge line in recent years have made water deliveries inadequate, and reduced the irrigation district from 2,025 ac., when irrigation was first undertaken in 1906, to 987 ac. at present.

The plan provides for replacement of 8,600 ft. of the wood-stave discharge line, and for overhaul of the pumping equipment, at an estimated cost of $90,-650. The development is regarded having a benefit ratio of 3.14 to 1. Water users will make total payments of $72,-800 toward the construction charges over a 40 year period.

RIVER FLOW TURNED FROM CHANNEL BY CASCADE DIVERSION TUNNEL

FOR THE FIRST TIME in its history, the entire flow of the North Fork of the Payette River in southwestern Idaho has been turned out of its channel to a diversion tunnel which will ultimately become part of the outlet works of Cascade dam. A bulldozer is shown removing the earth plug in the inlet channel to the 310-ft. tunnel, while trucks dump earth and rock to close the gap in the temporary diversion dam.



WASHINGTON NEWS

. . . for the Construction West

By ARNOLD KRUCKMAN

WASHINGTON, D. C.—This is written on the last day of the session, with Congress in a turmoil over the effort to investigate the Kansas City election returns, and with the atmosphere of confusion which makes it difficult even for the experts on the Hill to determine what has become law or what has just failed to qualify by the slightest margin of some neglected technicality. It will be a week or more before it is possible to disentangle the details in order to get a clear picture of what has legislatively happened.

Interior funds

We do know, however, that the forecast made in these columns about the final appropriations for the Bureau of Reclamation, and the other sections of the Interior Department, are substantially correct. Approximately $30,000,000 more was added to the funds for the Bureau of Reclamation, raising the total roughly from $60,000,000 to $89,528,038. As sent to the White House for the President's approval—not formalized at this writing, but certain—the items allowed are as follows: Bonneville, which fought for $20,278,000, is given $8,596,400; Davis Dam, which wanted $18,000,000 gets $9,700,000; Central Valley, for which the Governor and others asked a minimum of $20,000,000, is supplied with $9,141,288; Columbia Basin wanted $27,500,000, and was given $17,500,000; Colorado - Big Thompson strove to obtain $14,000,000 and was given $9,500,000; Hungry Horse Project in Montana was allowed $2,500,000; Gila, Ariz., $1,400,000; Missouri River Basin, $17,000,000; project planning and general investigation, for which the Bureau asked $5,000,000, was cut to $2,000,000. The unkindest cut of all, in the opinion of the Interior people, was the reduction in the funds requested by the Southwestern Power Administration: it asked for $3,925,000, and was given $125,000, exclusively for administrative expenses.

Presumably the influence of the Democratic Floor Leader, former Speaker Rayburn, was effective, because the Interior's Power Division, which is headed by Rayburn's friend, Goldschmidt, was perpetuated with an appropriation of $50,000, in lieu of the $124,000 which was requested. The Interior's Oil and Gas Division was given $275,000, which is 60% of the amount approved by Budget. Overall, the Interior Department took a slash of 34.3% of the total approved by Budget, being a final net appropriation of $194,587,859, instead of the $296,135,420 it sought with the backing of the White House, which is the Bureau of the Budget. It may be of special interest to note that the cut suffered by the Bureau of Reclamation totalled 39% of the $145,952,200 which Commissioner Straus confidently expected to get.

When Kinsey Robinson, president of the Washington Water Power Co., appeared before the House Public Works Committee, he pointed out that the Bonneville Power Administration, an Interior organization, functioned presently only as a provisional unit by Executive Order, presumably limited to projects in the Columbia River Basin. He emphasized that the BPA already has followed the familiar New Deal-Interior pattern by taking over marketing plans for McNary Dam in Oregon, and Hungry Horse Dam, in Montana. Robinson sturdily demanded that Congress take over, and create by law a BPA, independent of Interior, and make BPA, as well as every other power marketing agency, subordinate to regulation by the Federal Power Commission, like any other interstate private utility. He pointed out that this would effectively introduce order in the present confusion in the Pacific Northwest which flows from the tangle of utilities, Federal, municipal, power district, and private organizations which are managed as businesses and are taxpayers.

Authority drive

Apparently one answer to this, and other efforts, to bring the Interior Department, and similar reservoirs of liberal ideologies in Government, under control, was the conference held in the Department of Interior by an organization which was announced as the National Valley Authority Conference. For two days this group vigorously and candidly made a drive to launch an agitation for regional authorities, patterned after TVA, in every section of the United States.

It was, to all intents and purposes, the rally of the leading professional public power champions of the North American continent. The principal speakers were Sen. Murray, Montana, sponsor of the MVA bill; Sen. Taylor, Idaho, who presented the virtues of the proposed Columbia Valley Authority; and that other gift from the stage to public life, Congresswoman Helen Gahagan Douglas, California, who told the story of the significance of the Central Valley project as a potential extension of the TVA philosophy.

A number of Governors from the Mid-Western states happened to be in the Capital while the Conference was in progress. The Governors were in attendance at the hearings of the Senate Appropriations Committee on flood control. They came as the result of the intense interest in the subject back home, concurrent with the unparalleled floods in the Missouri and Mississippi river basins. The Governors almost to a man opposed Federalization of their areas; one of them hammered home that the people of the Missouri basin want no Authorities. They championed the Pick-Sloan plan, the proposal to solve river problems jointly by Federal and State agencies, on a local-approval program. Despite this clear attitude before Congress, the Interor Conference claimed the Governors' visit as an evidence of the clamor of the "peepul" for TVA and MVA-type Authorities. At this writing Congress is little interested in Authorities. But the floods in the Missouri and Mississippi Valleys appear to have inspired the liberal ideologists with the idea that now is the time to get the MVA and other Authority issues before the country as a subject of debate in the 1948 campaign.

Truman and flood control

Unhappily, for the liberals, the President did not come all-out for the Valley Authority type of river development. His message on flood control apparently had some of the effect of the action of the boy who finds a hornets' nest and knocks it down with a pole. There were angry buzzes from all over the country. The MVA champions proclaimed that the Truman idea was the method of controlling floods piecemeal. He was charged with supporting the Army Engineers, who were, picturesquely, in turn, charged with being the typhoid Marys of flood control. As a matter of cold fact, what the President had in mind for the Missouri Valley, and, possibly, other Valleys, was the application of the Pick-Sloan Plan—that joint effort of the Engineers, the Reclamation people, and the States and local subdivisions.

At this writing the flood control and navigation appropriation bill has not been enacted by the Congress for transmission to the White House. If the Senate version of the Army Civil Functions Bill, which also is the House Resolution 4002, finally is rushed through the conference between the representatives of both Chambers, it will provide a total of $504,000,000.

This includes the $225,000,000 requested by the President to launch a stupendous 10-year flood control program in the midwest which will cost 6 billions. The President suggested the springboard consist of $250,000,000; the Congress apparently is settling for $25,000,000 less, a mere bagatelle these days. The balance of $315,000,000 is to be spent by the Army Engineers for projects in rivers and harbors in all parts of the country. If the plan as worked out by the President and Sen. Overton is finally adopted the $225,000,000 provided for 1947-48 will be spent on the works necessary from Cairo, Ill., south on the Mississippi; the balance will be spent largely as determined by the Army Engineers according to urgency of need in all parts of the country.

It is the understanding of this reporter that the needs of the Sacramento River will be supplied by a separate appropriation, or by some other arrangement; also that the program on the Columbia River, in Oregon, and on other rivers in Oregon, are subordinate to other flood and river projects.

Alaska's future

The appropriation includes an item of $2,000,000 for expansion and improvement of the Alaska communication system, the framework for all civilian and military communications in the Territory; the system has been operated by the Signal Corps since 1901. Present international conditions, the proximity of Alaska to the extreme eastern edge of Russia with its known air bases on the tundra and on the Kuriles; and the developments which seem immediately pending in the economy of Alaska by means of the establishment of pulp mills to produce a possible 600 tons per day, impelled Congress to urge the Army Engineers to rush improvements for "an efficient integrated system."

Incidentally, a group of Senators, headed by Sen. Martin of Pennsylvania, one of the outstanding men of the Senate, probably are headed towards Alaska by the time this appears, in order to study the pulp problem. Martin, a former Governor of Pennsylvania, and former General officer of the Army, is deeply impressed with the need of swift development of the pulp resources of Alaska.

The Army Engineers' Civil Appropriations also includes an item of $25,000,000 for construction in the Panama Canal Zone.

Interested opposition

Legislation in which you are interested but which will not be cleared this year, includes those two Miller bills, HR 2972 and 2973, which have previously been discussed in these columns. These bills are concerned with the jurisdiction of the Federal Power Commission over hydroelectric works and dams on non-navigable streams, and with the highly controversial question of "slop-over" power sales.

As is growing far too usual in relation to Federal administrative and executive agencies, these bills were actively opposed by the FPC. Congress is increasingly irritated by the opposition stemming from self-interested agencies which fight to preserve their own powers, or the high salary classifications of the agencies; and it is quite possible that Congress, as the very core of Government, which makes the laws and supplies the money, will do something about the recalcitrance of those who are in effect its employees.

It may be remembered that FDR once very questionably held a trial in the White House which involved Dr. Arthur E. Morgan, then head of the TVA, having charged Dr. Morgan with contumaciousness, on very flimsy grounds. Roughly, contumaciousness means that the person who is contumacious is insubordinate to higher authority. It is within the range of probabilities that Congress may hold a trial itself of some of these people in various agencies who have openly flouted the authority of the Congress. The Dondero bill, HR 3036, which sought to take from the Interior Department the authority to market power, and give it to the Army Engineers, when the power came from dams on works otherwise controlled by the Army Engineers, had the usual skilful opposition, manifested in a number of confusing and entangling amendments.

The House Public Works Committee finally realized there was little hope of action, and determined to revive the bill at the next session, stripped of amendments. It is assumed it may then be passed and sent along to the Senate.

The Rockwell bill, HR 2873, which was reported to the House for action on the floor, also failed to come up for action because the Senate Public Lands Committee announced it could not act upon the bill in this session. The action is a delaying maneuver which gives the Department of Interior and, especially Commissioner Straus' Reclamation Bureau, a temporary victory. It will apparently enable Interior to use power interest revenues to repay some irrigation costs this fiscal year. If the bill had been made law the interest from the power revenues of a Reclamation project would have to be paid directly into the Treasury, and could not be used by the Reclamation Bureau to repay other costs of the same project. At present, under an interpretation promulgated by the lawyers of the Interior Department, against the intent of the law as it is understood by Congress, the Bureau accountants have used power interest payments to amortize irrigation costs, and have otherwise used the interest money to pay part of the principal of the project debt. It was this practice which brought on the fight which led the Congress to slash Reclamation funds.

Holdover bills

A new CVA Bill was introduced recently by Sen. Taylor, Idaho, which is essentially the same as the original Mitchell bill. It requires two of the three CVA directors must be 5-year residents of the Columbia River Valley; a 24-man committee must be created to act in an advisory capacity on matters of broad policy—this committee to be made up of eight Federal representatives, four State representatives, and 12 persons from the Columbia Valley at large, to meet at least twice each year; the CVA accounting methods must conform to FPC standards; an existing Federal agency, in this case undoubtedly Bonneville Power Administration, would be authorized to operate as the CVA administrative agency. It was generally assumed the "advisory committee" would be packed by Interior's friends.

The St. Lawrence project was favorably reported by the Senate Foreign Relations Committee, but goes over to the next session for action. The assumption is that it now has a reasonable chance to be made law. The Rizley bill, HR 4051, to amend the Natural Gas Act, also goes over to the next session.

The Water Pollution Control Act, S. 418, authorizing $100,000,000 a year in Federal aid to states planning to combat water pollution, was enacted by the Senate, but will not come before the House until next year.

The general direction comes under the supervision of the Surgeon General, and the Federal Works Administration is charged with the responsibility of administering all Federal loans for design and construction. The law applies to interstate streams. This law has been under consideration since 1897, and 100 bills were introduced in the interim, without action. The bill was reported out of the Senate Public Works subcommittee, headed by Sen. Malone, Nevada, and passed unanimously upon his recommendation. Loans up to one-third of the cost of individual projects are authorized.

Miscellaneous

The Navy appropriation act provides $127,000,000 for construction of shore facilities by the Bureau of Docks and Yards, including $34,000,000 for a guided missile test center at Point Mugu, Calif.; and $39,000,000 for work on Guam; $67,000,000 is provided for work on 44 projects in the United States, and $60,000,000 for jobs outside of the United States. . . . Department of Commerce appropriations include $32,500,000 for construction of civilian airports, which is added to $45,000,000 supplied last year, and which enables the CAA to start work on a billion dollar program, based on a 50-50 division between the Federal Government and the states.

The President has ordered the Public Roads Administration to make plans to complete the Inter-American road between the southern border of Mexico and the Panama Canal. Another $8,000,000 has been allotted to the project, in addition to loans totalling $48,000,000 advanced to Latin American republics. The job thus far has cost $68,000,000. It was severely criticized by a special Senate committee. . . . Congressman Fred Muhlenberg, Pennsylvania, for 25 years an officer of the Army Engineers, introduced HR 3490, which provides $50,000,000 to finance the planning of public works by states and other political subdivisions.

The second general conference has been announced by The Water Conservation Conference, which has headquarters in Washington, D. C. It will take place at the Phillips Hotel, Kansas City, Mo., on Sept. 18 and 19. The Conference consists of 32 organizations concerned with some phase of the economy affected by water. . . . Harrington Wimberly, Oklahoma, who succeeded Richard Sachse of California, has been elected vice-chairman of the Federal Power Commission. He is owner and publisher of the Altus, Okla., Times-Democrat. . . . Don McBride, the secretary-manager of the National Reclamation Association, who is developing into one of the most effective officials concerned with Western problems in the Capital, is making a prolonged tour of the West in the interest of irrigation and reclamation. . . . Senate and House passed bills authorizing the Navy to buy for $2,500,000 the Del Monte Hotel at Monterey, Calif., to be transformed into a post-graduate school for Navy officers. It is expected to accommodate 3,000 officers. The eventual cost of the plant will be $30,000,000.

Survey Reveals Orderly Return to Free Market

"THE RETURN to a free market in the construction industry, after nearly six years of federal control in one form or another, is being accomplished in an orderly manner," H. E. Foreman, Managing Director of Associated General Contractors said when announcing the results of a national spot check survey.

The managers of building chapters of the association were asked what increase, if any, they had noticed in the amount of factory, store, office building, and institutional construction since federal limitations on this type of work were completely removed. Construction controls, with the exception of those on amusement and recreational projects, were lifted on July 1 by the Housing and Rent Act of 1947.

"The majority of AGC chapter managers noted no large or general immediate increase in industrial, commercial, or institutional construction, but were optimistic about the outlook for the months ahead," Mr. Foreman continued. "The indications are that the volume of non-residential construction, long held back by federal control, will increase gradually as local problems of labor and materials shortages are solved and costs are stabilized."

In the West particularly these problems appear to have been answered satisfactorily and construction volume has already increased. Chapters in California, Montana, Oregon, and other Western states report a substantial rise in the amount of work under way. Some other areas report small increases in construction volume.

Residents Protest Dam Construction in North

OPPOSITION to the construction of Boundary and Priest Lake dams in northeastern Washington and northern Idaho was expressed quite strongly by residents of the area at hearings held by the Corps of Engineers in the field. Hearings under the direction of Col. L. H. Hewitt, Seattle district engineer, were heard at Sand Point, Idaho, for the Priest Lake dam, and at Metaline Falls, Wash., for the Boundary dam.

Principal opposition to the Priest Lake dam, which would be located at the lake's outlet on Priest River, came from resort owners on the lake with representatives of the state of Idaho and the U. S. Forest Service indicating unfavorable opinions. Opposition to Boundary dam on the Pend Oreille River in Washington just south of the Canadian River came principally from mining interests and farmers of the area.

Representatives of various mining interests stated the opinion that the proposed reservoir would flood lead and zinc mines which have a potential value of $6 billion. Boundary dam would be constructed at approximately the "Z" Canyon site recommended in 1920 by Hugh Cooper as a feasible site for a hydroelectric project.

TRACTOR WORKS DECOMPOSED GRANITE PIT FOR ROADWAY SURFACING

WORKING ON AN EXTENSIVE deposit of decomposed granite in Monterey Park on the easterly outskirts of Los Angeles, is an International tractor and bullgrader owned and operated by J. A. COOK. Tractor works material to edge of deposit and down to valley where it is picked up by loader. V. O. Kiger Co. works the granite deposit. The material cements firmly when rolled, and gives a non-muddy surface.

California Professional Engineers Must Register After September 19

AFTER SEPTEMBER 19, 1947, any person using the title Professional Engineer, Chemical Engineer, Mechanical Engineer, or Petroleum Engineer in California will be required to register under the provisions of an amendment to the Civil Engineers' Act passed by the 1947 legislature, and signed by Governor Warren on July 17.

Engineers practicing in any of the four branches of professional engineering—chemical, electrical, mechanical, or petroleum—have until June 30, 1948, in which to make application for registration without a written examination. Only applicants who have had not less than six years' experience in the branch of professional engineering for which they seek registration, and who can furnish evidence of good character, are eligible for registration.

Under a provision of the amendment the present Civil Engineers Board is increased from three to seven members. The Governor has sixty days after the effective date of the Act to appoint the new members, one each from the four branches of professional engineering included in the amendment.

Civil engineers, who hold a valid registration at the time the amendment becomes effective have the right, without making application, to use the title Professional Engineer. Civil engineering applicants are not eligible for registration under the so-called "grandfather clause" of the amendment. They are subject to the provisions of the law relating directly to registration of civil engineers.

Although an engineer may be registered as a Professional Engineer, he has no authority to engage in the practice of civil engineering (structural engineering included) unless he holds registration as a Civil Engineer.

A provision has been made in the new law for the registration of "Engineers-in-Training." This means that immediately after graduation from an engineering school that has been accredited by the Board (there are five in California) an engineering graduate may be registered as an engineer-in-training, and after he has had the experience he will then be eligible for registration as a professional engineer in the branch of engineering he has selected as his profession. This provision does not apply to civil engineering graduates.

Application forms for registration will not be available for three or four months, according to the Executive Secretary of the State Board of Registration for Civil Engineers.

IDAHO POWER CO. is planning to start construction of the Huntington, Ore., hydroelectric plant on the Snake River during the fall of this year which will enable operation of the first generating unit to begin in 1950. Total generating capacity of the new dam has been set at 140,000 kw.

Fishermen, Boatmen Argue on Proposed Construction of Columbia Basin Dams

FISHERMEN and Columbia River boatmen met again in arguments over the construction of Columbia and Snake River dams at a hearing before the tenth regular meeting of the Columbia Basin Inter-Agency Committee held in Walla Walla, Wash., last month. The proposal by the U. S. Fish and Wild Life Service of the Department of the Interior to postpone construction of the dams for a 10-yr. period to permit further development of plans to re-establish the salmon runs on the Columbia and its territories was the only subject under discussion at the committee meeting, and drew the largest audience in the 13-month history of the committee.

Rescheduling of construction in the Northwest was recommended to permit undertaking of the salmon preservation program. All further construction below the Okanogan River on the main stem of the Columbia and below the Salmon River on the Snake would be postponed for at least ten years with the exception of McNary dam on the Columbia near Umatilla, Ore. To provide for meeting the present power shortage, the substitute program calls for installation of generating facilities at Grand Coulee, Rock Island, and Kerr dams, and early construction of Hungry Horse, Foster Creek, Detroit, and McNary dams. Scheduling of Hell's Canyon, Mountain Sheep, and Boundary dams were also recommended to precede construction of the four lower Snake River dams and The Dalles dam.

Representatives of fishing interests claimed that construction of the dams on the middle Columbia and lower Snake would result in complete loss of salmon runs, and placed the value of the commercial fishing on the river at a minimum of $20,000,000 annually. Representatives of navigation interests, opposing any postponement of the present construction schedule, claimed that savings of more than $2,000,000 accrued to shippers of grain and users of petroleum products last year in the area served by the river transportation lines and that further development of the river for navigation would result in increased savings in transportation costs.

Two Shoshone Project Jobs Awarded by Bureau

CONSTRUCTION of approximately 23 mi. of the Ralston lateral and sublaterals on the Heart Mountain Division of the Shoshone project in Wyoming, has been placed under two contracts by the Bureau of Reclamation. One of the contracts, calling for three miles of the lateral was awarded to the Askevold Construction Co., Missoula, Montana, on its low bid of $208,959. The other, for construction of 20 mi. of the lateral and sublaterals was awarded to Sharrock and Pursel, Casper, Wyo., on their low bid of $253,091.

The Heart Mountain Division, located near Yellowstone National Park, is one of five comprising the Shoshone project. The division includes a total irrigable area of approximately 39,500 ac. of arable land. Buffalo Bill Reservoir, on the Shoshone River, 50 mi. from Yellowstone Park, with a capacity of 456,600 ac. ft., is the source of storage water for the entire project.

Construction on the division to serve 14,000 ac. between Cody and Ralston is now nearly complete. An additional tract of 18,500 ac. to the north will be served by the completion of 3½ mi. of main canal, a distribution system and a drainage system.

Wage Increase Scheduled for Union Engineers, Surveyors

A. F. OF L. civil engineers and surveyors have secured a 25 cents per hour wage increase as a result of negotiations carried on between all major northern California contractors individually and the A. F. of L. Technical Engineers' Union.

This increase is in line with increases recently won by other construction crafts. Rates of pay are now $1.75 for rear chainmen, $1.87½ for head chainmen, $2.12½ for instrumentmen and $2.37½ for chiefs of party.

In announcing the increase, J. D. Vanderlaan, business representative of the union, congratulated the contractors for their assistance in enabling the field engineers to adequately meet the increased cost of living.

Toll Bridge Authority May Construct Tunnel

FINAL DESIGN and construction of the 2.03-mi. proposed tunnel through the Cascade Mountains at Snoqualmie Pass in Washington would be turned over to the Washington State Toll Bridge Authority under plans now being considered by Gov. Mon Wallgren. The 1947 legislature failed to appropriate $750,000 necessary to complete design work and the state administration is trying to find some method of financing under which work can proceed on the project. Efforts to secure funds from the federal government have not met with much success, although both the Corps of Engineers and the Public Roads Administration have been asked for assistance. The present plan seems to be to turn the whole project over to the State Toll Bridge Authority which would sell revenue bonds to finance both the engineering and the construction.

In Seattle an alternate suggestion was made to the recommendations of Ole Singstad, consulting engineer who proposed the tunnel plan. Construction of reinforced concrete snow sheds over the present highway for a relatively short distance was proposed by Homer Hadley, consulting structural engineer. Hadley points out that 2 mi. of 2-lane highway through a tunnel with 4-lane approaches would create something of a bottleneck. Also, the grades on the Snoqualmie Pass route are not unusually

COLUMBIA STEEL ERECTS $25,000,000 STEEL MILL IN PITTSBURG, CALIF.

NINE TON, 120-ft. steel truss is lifted into place at the Columbia Steel Company's new tinplate warehouse. This building, 720 ft. long, is one of a group of buildings which will enclose 25 ac. of floor space and house 12,500 tons of machinery. Plant will supply nearly 500,000 tons of steel sheets and tinplate to Western industry.

steep for western mountain highways. Two locations at the pass with a total length of about 1,500 ft. where the serious road blocks take place could be covered with snow sheds 4 lanes wide at considerably less cost than driving a 2-mi. tunnel.

Officers Elected for New Utah Water Board

CHAIRMAN of the newly formed Utah Water and Power board is William R. Wallace, president of the Utah Water Users Association, who was elected to serve a one-year term along with State Senator Mitchell Melich, vice-chairman. State Engineer Ed H. Watson is the board's executive secretary under terms of the bill creating the organization.

The 14 members of the board were all present at the opening meeting, held recently in Salt Lake City. Oath of office was administered by Frank E. Lees, deputy secretary of state. Watson and Atty. Gen. Grover A. Giles, official counsel for the agency, were also in attendance.

Preparation of plans for immediate work in the conservation of Utah water, and the survey and inventory of water throughout the state are the prime objectives of the board. An appropriation of $1,200,000 has been made for this.

Six Million Dollars for Montana Road Maintenance

HIGHWAY MAINTENANCE in Montana during the 1945-46 biennium cost the state and 56 counties more than $6,000,000 according to figures compiled by the Montana Taxpayers' Association. Counties with 54,000 mi. of highway spent more than half of the total amount. Maintenance and construction of roads cost the counties $2,045,000; maintenance and construction of bridges, $556,900; purchase of tools, equipment, and shop expenses, $703,000; and supervision and engineering, $133,700. The State Highway Department with 8,561 mi. of improved highways to maintain spent $2,979,600 for repairs, snow removal, and other maintenance services.

Permanente Cement Co. Operates Seattle Plant

ASSIGNMENT of Permanente Cement Co. as operator of Pacific Coast Cement Co.'s Seattle, Wash., plant facilities has been announced by J. A. McEachern, president of General Construction Co.

As lessor of the northwestern cement facilities, General Construction Co. has arrived at satisfactory terms, McEachern explained, by which the Permanente Cement Co. will manufacture cement at the Seattle plant through Feb., 1948.

Manager of Permanente's Northwest Division, which employs some 125 people, is Gordon Tongue who has a background of 25 years in the cement industry. The entire production of the plant will be marketed throughout the Northwestern United States, Canada and Alaska, it was revealed by Ed Kendall, Division sales manager.

Limestone for the Seattle plant will be obtained from a deposit at View Cove, Alaska, which was included in the above assignment. The raw material will be hauled direct to the plant on the S. S. Diamond Cement, a vessel which is now under charter to the Permanente Cement Co.

PICTURE OF A HIGHWAYMAN IN ACTION, TURN PHOTOGRAPH SIDEWAYS

WHAT MIGHT at first glance, when turned sideways, seem like a shooting fray, is in reality a construction man doing experimental operations with asphaltic sealing material for the Bureau of Reclamation in one of the main canals of Black Canyon Division of the Boise Project in Idaho. Thirty-four different membranes are being tested.

ROAD BUILDING WITH A MOTOR GRADER IN WELD COUNTY, COLORADO

WELD COUNTY, COLO., with 4,022 sq. mi., is one of the nation's largest counties, and it has 6,000 mi. of roads to build and maintain, of which 75% are gravelled. Here a Galion grader, with International power, is building up a grade, preparatory to gravelling. The machine starts at the edge of the road on each side, making a cut 5 ft. deep and 12 ft. wide, working the dirt to the center to build a road 3 ft. above the borrow pit. These machines are also used in maintenance work.

PERSONALLY SPEAKING

W. E. Parker, formerly executive secretary of the Washington State Development Board, has been appointed supervising engineer for the Washington Department of Public Institutions. During the present biennium the department of public institutions has $8,000,000 to be allocated among 14 institutions for construction and major maintenance.

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Paul A. Williams has resigned from the engineering department of the city of Seattle and purchased an interest in the engineering firm of William S. Kelton Co. of Seattle. The firm, which specializes in land surveys and designs for water and sewerage systems, will hereafter be known as the American Engineering Co.

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Alfred S. Gray, consulting engineer for the Wenas, Atanum, and Highland soil conservation districts in the upper Yakima Valley of Washington, has resigned to join the engineering staff of the Rain-Bird Sprinkler Corp. at Glendora, Calif. Gray has been succeeded by **Frank Parker,** who has been appointed acting engineer for the three soil conservation districts.

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Robert J. Newell, regional engineer for the Bureau of Reclamation's region one with headquarters at Boise, has succeeded **Col. Theron D. Weaver** as chairman of the Columbia Basin Inter-Agency Committee. Col. Weaver, division engineer for the North Pacific Division, Corps of Engineers, has presided over the committee since its inception in May, 1946.

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Lt. Col. James H. Beddow has been appointed chief of the operations division of the Seattle district, Corps of Engineers, succeeding **Lt. Col. Robert E. Snetzer.** Col. Beddow has recently completed a course of post graduate work at the California Institute of Technology. Col. Snetzer has been transferred to Iowa State College where he will take a year's post graduate work leading to a master's degree in civil engineering.

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C. Kenneth Weidner, superintendent of the physical plant of the University of Oregon at Eugene, who was to have taken over the position of superintendent of parks for the city of Seattle, has rejected that position to join the staff of the Argonne National Laboratory, atomic research unit of the University of Chicago.

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Brig. Gen. Lewis A. Pick, division engineer for the Missouri River division, Corps of Engineers, was re-elected chairman of the Missouri Basin Inter-Agency Committee at the June meeting of the committee held at Fort Peck dam near Glasgow, Mont.

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James H. Dunn is new city engineer of Redondo Beach, Calif., filling the position left vacant by the resignation of **Fritz Zapf** on March 1. Dunn served in the engineering corps of the Navy during the war as a Lieutenant and has recently been employed as senior civil engineer with the City of Alameda.

AVERY A. BATSON, appointed acting head of Region VII of the Bureau of Reclamation, with headquarters at Denver, has been made the permanent Director. He has been in the employ of the Reclamation Bureau since 1934.

Billy Bickle is president of the newly organized B. B. C. Construction Co., Burns Lake, B. C., with **Jack Brown** as secretary and **Mark Connelley,** director. The company, incorporated with authorized capitalization of $20,000, will contract excavating, road building, logging and heavy construction work of all kinds.

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W. J. Cloyes, formerly sanitary engineer for Lane County, Ore., took over the post of city manager for Springfield, Ore., on July 1. A graduate of Oregon State College in civil engineering, Cloyes has spent most of his career in the county health departments of Washington, Klamath, and Lane Counties. He will be the first city manager in Springfield, that form of government having been adopted at the last elections.

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Arnold L. Henny, engineer with the Portland district, Corps of Engineers, has been appointed a member of the Oregon Board of Engineering Examiners. Henny will be a representative of the civil engineers on the board, succeeding **Ben E. Torpen** of the North Pacific Division, Corps of Engineers. **John W. Cunningham,** consulting engineer of Portland, has been reappointed to the board, also representing the civil engineers.

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W. E. Campbell, formerly a civil engineer at New Castle, Ind., is now engineer for the Imperial Irrigation District, Imperial, Calif., and is designing irrigation structures.

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Clarence W. Todd has been appointed assistant manager for the Seattle chapter of the Associated General Contractors, succeeding **Frank M. O'Brien.** Todd has recently been a member of the statistical division staff of the Federal Public Housing Authority.

Thomas G. Waring, formerly in the operations section of the Portland district, Corps of Engineers, has been appointed acting resident engineer for Lookout Point dam to be constructed on the Middle Fork of the Willamette River near Lowell, Ore. One of the units of the Willamette Valley flood control project, Lookout dam has previously been referred to as Meridian dam.

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Wilfred L. Karrer, Boise, Ida., formerly chief of the branch of design and construction for the Bureau of Reclamation's Pacific Northwest headquarters, was recently appointed as construction engineer in charge of the rehabilitation of the Lewiston Orchards Project for the Bureau. Reconstruction of this badly deteriorated project is expected to provide a dependable irrigation water supply for 3,430 ac. of existing land, 348 ac. of new land, and a domestic supply for 4,000 persons. At the same time, **R. J. Newell,** regional director, announced that **Howard Q. Clark** of the Boise Regional Office would go to Lewiston to serve as chief clerk on the new construction.

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Five engineers appointed to the Montana State Board of Registration for Civil Engineers and Land Surveyors include **D. D. Waldorf,** Bozeman; **Richard J. Hale,** Missoula; **A. E. Adami,** Butte; **Eldon R. Dodge,** Bozeman; and **John H. Morrison,** Helena. The board will administer the engineering registration act passed during the last legislative session.

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Arthur Ridgway, consulting engineer for the Denver & Rio Grande Western Railroad, was recently honored by the University of Kansas, which awarded him a degree for distinguished work in engineering. Ridgway, a native of Denver, Colo., received the award in Lawrence, Kansas, where he was first tendered it three years ago.

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Chief engineer of the J. H. Pomeroy & Company's construction of a steel plant at Pittsburg, Calif., is **Fred W. Crocker.**

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A new construction general contracting firm, Luney Bros. and Hamilton, Ltd., was recently incorporated in Victoria, B. C., with **Walter Luney** and **William J. Hamilton** as shareholders in the concern. The new corporation will take over the operations of Luney Bros., Victoria.

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Lt. Lorne Taylor of the Seattle office of the U. S. Coast and Geodetic Survey is in charge of the annual aerial mapping program of the Alaskan coast. Photographing is being done this summer from a specially fitted Flying Fortress with a U. S. Coast Guard crew. To be included in this year's mapping is the area from Prince William Sound to Point Barrow.

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Thomas A. Clark, who has been associated with the Bureau of Reclamation since 1917, was recently named construction engineer for the Riverton Project in central Wyoming, according to **Kenneth F. Vernon,** director of Region 6. Clark will be in charge of preconstruction and construction

SUPERVISING THE JOBS

work on the Riverton Reclamation Project and will work under the administrative supervision of **D. L. Carmody,** project engineer. Prior to his recent appointment, Clark was construction engineer of the Gila Unit of the Yuma, Ariz., project from 1943 until the present.

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Frank G. Knight, assistant secretary of the Associated Equipment Dealers for the past three and one-half years, was appointed to succeed **Carol F. Winchester** as executive secretary, following the latter's resignation, it was announced by President **William A. Danner** following a board of directors meeting. Decision was also made at that time to move the executive offices to Chicago from Washington, D. C.

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H. D. Dawson, city engineer at Nelson, B. C., has been appointed municipal engineer for Saanich, Vancouver Island. Dawson has practiced for 19 years as a mining and civil engineer and British Columbia land surveyor.

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C. E. Carter, consulting engineer of Portland, has been retained by the Coos Bay-North Bend water board, to survey potential water resources capable of meeting all future needs of the two Oregon coast cities.

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Verne Swanson, formerly cost engineer with the Utah Construction Co., is now associated with the Air Craft Conversion Co. at Kingman, Ariz., where he is employed as paymaster.

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Iver C. Nelson is resident engineer on the Yakima River diking project for the Seattle District, Corps of Engineers.

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Clyde Grainger, Seattle architect, was re-elected chairman of the city planning commission for Seattle.

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Jack E. Hollis, formerly with the U. S. Bureau of Reclamation, was recently named city engineer for Tulare, Calif. He is also consulting engineer for the city of Reedley.

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O. L. Brown has been appointed city engineer for Kalispell, Mont., and **Glen W. Thompson** has been appointed superintendent of streets.

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John T. R. McCorkle, manager of the Idaho branch of the Associated General Contractors, has been appointed as a member of the city planning board for Boise, Idaho.

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Paul Richardson has been appointed secretary-manager of the Mason Contractors' Association of Seattle, and will be in charge of the association's newly opened office in the Arctic Building.

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W. M. "Jack" Bartlett, planning engineer for the Oregon postwar planning and development commission, has been appointed director of the Oregon state aeronautics board succeeding **Leo Devaney,** who recently resigned the post.

O. W. Lane is supervising the job for S. J. Groves & Sons Co., who have a contract for excavation, culverts, and surfacing of the Ulm-Great Falls Highway, Gore Hill section, Cascade Co., Mont. **Cliff Thompson** is resident engineer for the construction, with **D. A. McKinnon** as project manager and **James T. Eagen, Ernest Larson,** and **Dick Naughton** as grade foremen. **C. A. Thompson** is office manager and **Paul Meysenbourg** master mechanic for the $225,355 contract.

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Ed Hawk is supervising construction of 3.4 mi. of Washington secondary state highway No. 3 in Asotin County for the C. E. O'Neal Co. of Ellensburg, Wash. Members of Hawk's staff include **Bill Simonson,** night foreman; **Frank Konsack,** drill foreman; **Paul Munson,** grade foreman; and **Bud Loving,** shift boss. For the Washington state highway department **N. F. McKay** is resident engineer and **J. E. Leiper** is field engineer on the job. Completion of the job will provide an improved highway connection between eastern Oregon and Washington.

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Ollie F. Edsall is general superintendent for the J. C. Boespflug Co., who are constructing two new hospital buildings and additions at Missoula, Mont. **Bob Treat** is carpenter foreman for the job, with **Phil Treat** as general foreman, **Claris C. Porter** as steel foreman, and **John Rice,** concrete foreman. Office manager for the job, to be completed in June, 1949, is **E. D. Spackman.**

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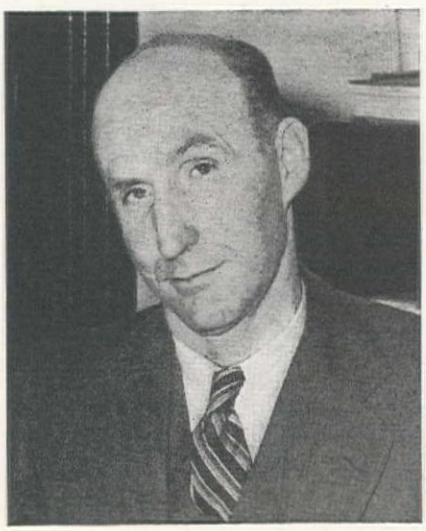
T. Matt Hally, formerly director of highways for the State of Idaho, is supervising Tony Marrazzo's job of highway construction on 8.5 mi. of grading, surfacing and oiling at New Meadows, Idaho. Master mechanic on the $432,000 job is **Ross Miller,** with **Robert Plastino** as office manager and **H. R. Gifford** as head crusherman.

T. MATT HALLY



Roger Neal is superintendent with **Chas. Haight** as his assistant on the $600,000 addition to the U. S. Rubber Co. plant on Telegraph Road in Los Angeles. Haddock Engineers, Ltd., are the contractors on the job, with **Mike Querado** as concrete foreman, **Robert Powell** as grade foreman. Other key men include **Don Cameron, Lee Clayton, Jr.,** and **Henry Coleman.**

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Superintendent of construction for Stone & Webster on their P. G. & E. power plant job at Bakersfield, Calif., is **R. E. McGrew,** with **W. E. Harper** as his assistant. **E. L. Field** is electrical superintendent on the job, with **W. E. Finely** as mechanical superintendent and **W. E. Noble** as carpenter superintendent. **F. C. Nugent** is general foreman and **A. R. Stuckey** resident engineer on the construction, with **Thorn Dickinson** as office engineer, and **L. K. McNeil** as chief field engineer. Others on the job include **J. E. Connors,** chief field accountant, **C. H. Brisian,** purchasing agent; **R. S. McMillan,** chief timekeeper; and **V. C. Igou,** chief material man.

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H. B. McWaters is acting as both project manager and general superintendent on the J. A. Terteling & Sons, Inc., project of 6.6 mi. of road construction near Cascade, Ida. **George Cornforth,** of the Bureau of Reclamation is resident engineer on the $912,670 job, with **Walter Wisdom** as job engineer. **Mark C. Child** is office manager, **Clay Laughlin,** master mechanic; and **L. F. Porter,** assistant superintendent. Foremen on the job include: **Van D. Jones,** pipe; **Sidney J. Bartlett,** carpenter; **Helgard Olson,** powder; **George Steward** and **Forrest Tennant,** tractor operator; **Don H. Cupp,** excavation; and **John Campbell,** truck.

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P. C. (Phil) Royer is general superintendent on an earth fill dam near Moses Lake, Wash., being built by Lytle-Amis-Green for the Bureau of Reclamation. **L. B. Ackerman** is resident engineer, with **B. D. McMillan, Ed Davis,** and **Herb Keithley** as shift superintendents, and **Glenn E. Voegelein** as project engineer. Other key personnel on the job include: **Frank M. Case,** office manager; **G. M. Orten,** equipment superintendent; **Roy Ginnrich,** drilling superintendent; **Neal Bostick,** shovel superintendent; **O. F. Zweifel,** bookkeeper; **A. A. Schuttenhelm,** accountant; **J. E. Thornton,** head timekeeper, and **A. T. Church,** executive assistant. Completion is anticipated for the summer of 1950.

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J. H. Ratcliffe is general superintendent for the Utah Construction Co. on their job of building a power house extension at the Kerr Hydroelectric Project, Polson, Mont. **H. H. Cochrane** is resident engineer for the Montana Power Co., with **W. R. Newmann** as plant superintendent, and **F. M. Zumwalt** as project engineer. **James T. Powell** is general foreman, **George Vinson** is steel foreman, **Nick J. Mark** rigging foreman, and **Julian E. Dujardin,** carpenter foreman.

J. L. Wright is grade foreman on the construction, **Leonard E. Ridnour** is master mechanic, with **H. A. Brackett** as timekeeper and **Lester A. Perry** as office manager. Job is expected to be completed by September of 1948.

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Les Smith is supervising construction of an access road to the Hungry Horse Dam project in Montana for S. Birch & Sons Construction Co., McLaughlin, Inc., and F & S Contracting Co. **Paul Jones** is resident engineer on the job, with **Harry Lee** and **Erick Thorsen** as rock foremen and **H. J. Anderson** as office manager.

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Art Nelson is supervising the Mel-Mar Construction Co.'s construction of refinery additions for the Texas Co. at Long Beach, Calif. General pipe foreman for the Los Angeles contractors is **J. J. Sadler,** with **George Davis** as welder foreman, **Harold Blair** as pipe foreman, and **Al Rich** as carpenter foreman. **John Berg** is job engineer, with **Earl Hampton** as inspector for the Texas Co.

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Roy Hollern is the Union Construction Co.'s general superintendent on a highway construction job between Belton and Nyok, Mont., on U. S. Highway No. 2. The project is under the personal supervision of **H. H. Tomlinson,** company president, with **Jack Merz** as drilling superintendent, **Clarence Handy** as grade foreman, **Fay Ramsey** as master mechanic, and **Walden Jensen** as bookkeeper. Construction is expected to be completed by November.

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Martin Johnson is superintendent for T. E. Connolly, Inc., San Francisco, on their construction of an unlined water transmission tunnel nearly 2½ mi. long near Jackson, Calif. **Joe Halverstadt** and **Pete Sewell** are tunnel walkers, with **Louis Carpenter** as carpenter foreman. **J. B. McCutcheon, Chas. Walls,** and **Blacky Evenson** are shifters and **Norman McCann** is master mechanic at the Stockton yard while **C. J. Swanson** is master mechanic on the job. **R. J. Colgate** is purchasing agent, **H. J. Tracy** chief timekeeper, and **Harry Hammer** labor foreman.

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Roy Johnson, construction superintendent for Morrison-Knudsen Co., Boise, Idaho, is in charge of the right-of-way clearing project for 38 mi. of Bonneville transmission line between Entiat, Wash., on the Columbia River in Chelan County, and Berne, near Stevens Pass. Completion of the $489,247 job is expected by early fall.

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H. Bergendahl is project manager for the Dudley Construction Co., Great Falls, Mont., on their job of erecting a 70 ft. by 380 ft. steel and reinforced concrete warehouse at the Hungry Horse damsite, Mont. **Elmer Ackerman** is general foreman on the $93,000 construction, with **F. E. "Bullets" Willits** as steel foreman, and **Merle Powell** as carpenter foreman.

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Ralph "Jim" Overmeyer is superintending construction of a 66-bed wing of a 2 and 4 story reinforced steel, concrete and brick hospital at Edgecliff, Wash., for Walter G. Meyers. **Alfred Sylvander** is carpenter foreman on the job, with **John Frey** as labor foreman, and **Tom Collins** and **"Shorty" Lee** as general layout men. **T. H. Hartsock** is foreman for Arnold H. Jeffers, who has the sub-contract for plumbing and heating, while **M. A. McCort** is steel foreman for the Sparling Steel Co., also subcontractors.

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John Connelley is superintendent for Barrett & Hilp, San Francisco, who have a $1,750,000 contract calling for construction of a factory and office building on the Bayshore Highway, near South San Francisco. **Joe Olson** is field superintendent on the job, with **John Barrett** as office engineer, and **Mr. Laws** in charge of field inspection. **Geo. V. McKeever** is general superintendent on all Barrett and Hilp jobs.

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Andrew Johnson is supervising construction of a bridge on Highway 97 near Yakima, Wash., for Rumsey and Co. **Jack Peck** is resident engineer for the $214,848 project, with **J. W. Rumsey, Jr.,** as project manager, **Wally Scansen** as office manager, and **Robert Geary** as inspector. Key foremen on the job include: **Fred Holmes** and **Henry Cramer,** carpenter foremen; **Frank Wilkinson,** pile driver foreman; **Lloyd Miller,** labor foreman; and **Ray Shingshang,** steel foreman. **Barney Ragon** and **Carl Lindall** are shovel operators, and **Roy Peterson** is a hoist operator on the project, expected to be completed in August.

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Andrew Ekre is general superintendent for Sather & Sons on their job of highway construction at Coeur DAlene, Ida. **Harry Burke** is resident engineer, with **Arthur Sather** as project manager. Foremen on the job include **Allen Anderson,** paving, and **Carl Moerike,** grade, with **F. W. Hole** as timekeeper.

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James Jones is supervising the construction of two buildings on the Washington State College campus at Pullman, Wash., for Henry George & Son. **Don Huey** is assistant to the superintendent, with **H. M. Dunham** as inspector. Foremen on the job include: **Percy Dent,** carpenter; **Kenneth Webster,** iron; **Jerry Jelsing,** carpenter; **John Ruppert,** labor.

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J. P. Daley is superintendent for the Utah Valley Steel Erectors on their job of constructing a steel-concrete building at Provo, Utah. Daley was structural foreman on the Bay Bridge when it was built in San Francisco, and during the later erection period on that structure was injured in a fall from the bridge.

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General superintendent for the F & S Contractors, Butte, Mont., on their highway construction on the Eastshore Flathead of Lake Polson, Mont., is **Lou Mohr,** with **L. W. Brown** as resident engineer. **John Cameron** is general foreman for the $500,000 contract of 7.6 mi. grading and surfacing, with **John MacDonald** and **Hal Bolton** as grade foremen. **Roscoe Nickerson** is office manager for the project, which probably will be finished by the end of September.

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Walter R. Davidson is general superintendent for the Gus J. Bouten Construction Co. on their construction of hospital additions and alterations at Spokane, Wash. **Paul Carnine** is job engineer on the construction, with **Andy C. Olson** as assistant superintendent and **Gus J. Bouten** as project manager. Other important men on the job, expected to be completed by January, 1949, are: **Martin Neilsen,** carpenter foreman; **William Perry,** carpenter foreman; **S. J. Stenersen,** labor foreman; and **Matt Krall, Archie Brown,** and **Harry M. Roblee.**

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N. D. Hale is general superintendent for the Mountain States Construction Co., who are rebuilding 10 mi. of fence at the Pocatello Army Air Base, Pocatello, Ida. Foreman for the job is **T. E. Liddal,** with **Les Bailife** as resident engineer.

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Jack Erwin is foreman on the Esperanza St. crossing of the Santa Ana Freeway in Los Angeles, Calif., which is being constructed by J. E. Haddock, Ltd., Pasadena. General superintendent is **George Wiggers,** with **George Mashon** superintendent on all bridges. Bridge engineers for the project are **M. R. Mendivil** and **Charles Blackburn.**

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General superintendent for Stanley-Ehlen, Boise, Ida., is **Al Bortles,** who is supervising highway construction calling for 1 mi. grading, curbs and surfacing at Ontario, Ore. Other important men on the job include **G. E. Terwilliger,** concrete foreman; **Allen B. Stanley, Jr.,** plant foreman, and **Jim Rogers,** grade foreman.

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Charles Lee is project manager for the Mountain States Construction Co., who are oiling the play grounds of the Pocatello, Ida., schools. **James A. Higgens** is resident engineer, **Scot Christenson,** foreman, and **N. D. Hale,** general superintendent.

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Edward F. Raunig is supervising the construction of a 69,000-volt transmission line from Fort Benton to Chester, Mont. The line is being constructed for the Montana Power Co. by the Lewis Construction Co. of Billings, Mont. **C. I. Huntsberger** is field engineer in charge of the project for the Montana Power Co.

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L. H. Barnhart and **T. L. Wheeler** are superintending construction of a railroad yard extension in Pocatello, Ida., for their own company, Barnhart & Wheeler Construction Co. **Melvin Bower** and **Fred Marley** are foremen on the job, started May 1st.

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A. K. "Kenny" Eskestrand is supervising the Nettleton & Baldwin construction of a 4-story and basement T-shaped building of reinforced concrete for the Washington State College campus. Project manager for the $1,927,000 job is **A. H. Rodes** with **Dave Eskestrand** as assistant superintendent and **Louise Lee** as office manager. Labor foreman is **W. E. Bouley** and steel foreman **M. J. Arsboe.**

* * *

Joe Ivy is general superintendent on the Utah Construction Co.'s job of building the Electra tunnel for the P. G. & E. 11 mi. east of Jackson, Calif. Project manager for the job, started in February, is **Fred G. Arp,** with **George Thatcher** as resident engineer. **Frank Norton** is assistant superintendent, with **Paul N. Thrig** as master mechanic and **Mike Tinnison** as shop fore-

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man. Other key men include **Tom M. Ayers**, engineer; **L. M. Smith**, office manager; **S. S. Kenyon**, paymaster; **S. K. Fraser**, chief electrician; and **John Phillips**, assistant electrician.

* * *

Richard Powell is in charge of construction for Bambart & Wheeler Construction Co. in their job of graveling the highway between Bliss and Wendell, Ida. **H. B. Sternberg** is district engineer on the project.

* * *

J. Arthur Hedin is Chas. H. Pew's general superintendent on construction of a reinforced concrete and block creamery building at Ronan, Mont. **S. S. Sallee** is carpenter foreman for the job.

* * *

Lyman Manson is supervising construction of reinforced concrete bridges between Baker and Tendry, Ida. for the Arrington Construction Co. **H. F. Ferguson** is resident engineer on the job.

* * *

L. S. Jensen is supervising his own job of excavating, cement work, and housemoving at Missoula, Mont. **Ralph Jensen** is his foreman for the job.

* * *

Wesley T. Smith is Wm. Belger's superintendent on construction of a building for the Tractor Equipment Co. in Vernon, Calif. **Al R. Schaber** is foreman on the job.

* * *

Carl Jacobson is supervising the job for Fisher Contracting Co., Phoenix, Ariz., on their $988,700 contract for additions to the sewage treatment plant at Phoenix, Ariz.

* * *

Keith Hardin is job superintendent for the Rushlight Auto Sprinkler Co., on their installation of 2 mi. of reservoir pipe lines and pumps on the Washington State College campus at Pullman, Wash.

* * *

G. A. Gaultland is in charge of furnishing, delivering, and installing the condenser circular water pipe on the M. F. Kemper Construction Co.'s $573,550 job for the Harbor steam plant at Los Angeles, Calif.

* * *

J. Ryerson is supervising construction of a 5-story feed mill at Tacoma for the Jones-Hettelsater Construction Co. of Kansas City. The plant is being built for the Washington Cooperative Farmers' Association.

* * *

William "Bill" McNeil is supervising a job of earthmoving in Boise, Ida. and vicinity for Bastida-McNeil Co., Inc. **John C. Bastida** is project manager.

* * *

Robert F. Anderson is job superindent for the Zimmer Construction Co. on their construction of the new Daylight Market Building at 110th and Vermont, Los Angeles, Calif.

* * *

Carl D. Wilson is foreman for A. L. Kolpnick, Spokane, Wash., painting contractor.

UNIT BID SUMMARY

Tunnel . . .

Utah—Wasatch County—Bur. of Reclam.—Tunnel

The Utah Construction Co. of Salt Lake City submitted the low bid of $2,539,250 to the Bureau of Reclamation at Provo, for the construction of the Duchesne Tunnel, station 5+10 to station 199+48. The work is located approximately 24 miles east of Heber. Time allowed for completion is 750 days. Unit bids are as follows:

(1) Utah Construction Co. ..... $2,539,250 (2) Arundel Corp. and L. E. Dixon Co... $2,684,710

		(1)	(2)
140	cu. yd. excav., common, in open cut	5.00	3.00
840	cu. yd. excav., rock, in open cut	5.00	6.00
77,000	cu. yd. excav., all classes, in tunnel	28.80	32.50
945,000	lbs. furn. and install perm. steel-rib tunnel supports	.20	.10
500	M.B.M. furn. and erect perm. timbering in tunnel	240.00	150.00
1,000	lin. ft. drill grout holes not more than 10 ft. deep	1.50	2.00
500	lbs. place grout pipes and connections	.50	.50
2,000	cu. ft. pressure grouting	3.00	2.50

Colorado—Larimer County—Bur. of Reclam.—Tunnels & Canal

Tunnel Constructors, Denver, submitted the low bid of $1,838,352 on two schedules for the excavation and lining with concrete of Tunnels Nos. 2, 3, 4 and 5, Horsetooth feeder canal, Colorado-Big Thompson project, to the Bureau of Reclamation at Denver. The total for Schedule No. 1 is $725,043 and for Schedule No. 2 is $1,113,309. Time allowed for completion is 600 days. The work is located from 8 miles west to 8 miles northwest of Loveland. The following unit bids were submitted:

(1) Tunnel Constructors $1,838,352
(2) Morrison-Knudsen Co., Inc. 2,542,967
(3) S. S. & M. B. Magoffin $2,561,451
(4) Lowdermilk Bros. 3,450,827

SCHEDULE No. 1		(1)	(2)	(3)	(4)
4,850	cu. yd. excav., common, for open cut	.50	2.00	2.10	10.00
4,850	cu. yd. excav., rock, for open cut	3.50	2.00	2.10	10.00
27,900	cu. yd. excav., all classes, in tunnel	14.00	18.75	19.90	28.00
150	cu. yd. excav., common, for tunnel-outlet drain	3.00	7.50	3.00	5.00
150	cu. yd. excav., rock, for tunnel-outlet drain	6.00	7.50	5.00	5.00
300	cu. yd. backfill in tunnel-outlet drain	4.50	3.75	1.00	3.00
50	cu. yd. backfill at portal struct. and transitions	4.50	3.75	2.00	7.50
25	cu. yd. compacting backfill	5.00	3.75	4.00	2.50
509,000	lb. furn. and install perm. steel tunnel supports	.12	.138	.12	.16
180	M.B.M. furn. and erect perm. timbering in tunnel	150.00	133.00	200.00	300.00
3,000	lin. ft. construct 6-in. diam. tunnel drain	3.00	4.40	3.50	4.50
300	lin. ft. furn. and lay 6-in. diam. sewer pipe with cemented joints	3.00	.70	3.00	3.00
3	ea. furn. and install tunnel sump-drain connection	75.00	220.00	60.00	500.00
7,385	cu. yd. conc. in tunnel lining	20.75	33.50	30.90	37.00
173	cu. yd. conc. in portal struct. and transitions	50.00	60.00	62.50	225.00
11,000	bbl. furn. and handle cement	4.00	5.70	6.00	8.20
20,000	lb. furn. and place reinf. bars	.12	.14	.14	.12
1,000	lin. ft. drill feeler and pilot holes ahead of tunnel excav	1.00	1.90	1.50	.50
500	lin. ft. drill grout holes not more than 10 ft. deep	1.50	1.90	1.50	2.00
500	lb. furn. and place grout pipe and connections	2.50	1.60	1.00	1.00
1,000	cu. ft. pressure grouting	2.50	2.50	3.50	7.00
	SCHEDULE No. 2				
21,000	cu. yd. excav, common, for open cut	.30	2.00	1.10	6.25
7,000	cu. yd. excav., rock, for open cut	1.50	2.00	1.10	6.25
44,400	cu. yd. excav., all classes, in tunnel	14.00	18.75	19.90	23.00
50	cu. yd. excav., common, for tunnel-outlet drain	2.00	7.50	3.00	7.00
50	cu. yd. excav., rock, for tunnel-outlet drain	6.00	7.50	5.00	7.00
100	cu. yd. backfill in tunnel-outlet drain	2.00	3.75	1.00	3.00
50	cu. yd. backfill at portal struct. and transition	4.00	3.75	2.00	4.00
25	cu. yd. compacting backfill	5.00	3.75	4.00	5.00
799,000	lb. furn. and install perm. steel tunnel supports	.12	.138	.12	.16
280	M.B.M. furn. and erect perm. timbering in tunnel	150.00	133.00	200.00	300.00
4,500	lin. ft. const. 6-in. diam. tunnel drain	3.00	4.40	3.50	4.50
100	lin. ft. furn. and lay 6-in. diam. sewer pipe with cemented joints	3.00	.70	3.00	5.00
1	ea. furn. and install tunnel sump-drain connection	75.00	220.00	60.00	500.00
11,660	cu. yd. conc. in tunnel lining	20.75	33.50	30.90	34.50
73	cu. yd. conc. in portal struct. and transitions	50.00	60.00	70.00	225.00
17,600	bbl. furn. and handle cement	4.00	5.70	6.00	8.20
8,200	lb. furn. and place reinf. bars	.12	.14	.14	.25
1,000	lin. ft. drill feeler and pilot holes ahead of tunnel excav	.75	1.90	1.50	.50
500	lin. ft. drill grout holes not more than 10 ft. deep	1.50	1.90	1.50	2.00
500	lb. furn. and place grout pipe and connections	2.50	1.60	1.00	1.00
1,000	cu. ft. pressure grouting	2.50	2.50	3.50	7.00

Highway and Street . . .

Oregon—Washington County—State—Grade and Pave

Porter W. Yett of Portland submitted the low bid of $724,752 to the Oregon State Highway Commission, Salem, for 2.5 mi. of grading and paving; also construction of two overcrossing structures on the Barnes Road-Multnomah County Line Section of Sunset Highway. The following unit bids were submitted:

(1) Porter W. Yett ..... $724,752 (2) Osberg Construction Co. & Don L. Cooney, Inc. $775,528
(3) E. C. Hall Co. $776,430

I. CEDAR HILLS OVERCROSSING STRUCTURE		(1)	(2)	(3)
Lump sum,	shoring, cribbing etc.	$5,000	$5,000	$12,000
525	cu. yd. excav. for bridge struct.	5.00	2.50	6.00
50	cu. yd. excav. below elev. shown	10.00	5.00	10.00
880	cu. yd. Cl. "A" conc. in bridge struct.	56.00	57.00	60.00
158,000	lb. metal reinf.	.10	.085	.09
	II. CANYON ROAD OVERCROSSING STRUCTURE			
Lump sum,	shoring, cribbing, etc.	$6,000	$6,500	$15,000
710	cu. yd. excav. for bridge struct.	5.00	2.50	6.00
60	cu. yd. excav. below elev. shown	10.00	5.00	10.00

(Continued on next page)

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For DEVINCENZI BROS. & CO.

SAN FRANCISCO, CALIF.

IS 2-YD. LORAIN-820

Devincenzi Bros. & Co., San Francisco, have just added Lorain No. 3 . . . a new 2-yd. Lorain-820 shovel . . . to their growing equipment fleet. Here it is shown turning out profitable performance on a San Francisco residential excavation job. Whether it's a major big yardage contract or a short stretch of murderous rock digging, the Lorain-820 is the consistent choice of experienced contractors. If your jobs call for big league shovel-crane performance from start to finish, you'll want all the facts about the Lorain-820. Your Thew-Lorain Distributor listed below has them ready and waiting for you. Look ahead—stay ahead—with Lorains. Write or call today!

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SANFORD TRACTOR & EQUIPMENT CO., Reno, Nevada

CENTRAL MACHINERY CO., Great Falls and Havre, Montana

MOUNTAIN TRACTOR CO., Missoula and Kalispell, Montana

TRACTOR & EQUIPMENT CO., Sidney, Montana

MILES CITY TRACTOR & EQUIPMENT CO., Miles City, Montana

P. L. CROOKS & CO., INC., Portland 10, Oregon

LEE REDMAN EQUIPMENT COMPANY, 610 S. 19th Street, Phoenix, Arizona

WORTHAM MACHINERY CO., Cheyenne, Wyoming; Billings, Montana

Branches: Sheridan, Greybull, Casper, and Rock Springs, Wyoming

6,500 lin. ft. furn. treated piling	1.50	.75	1.20
175 ea. drive piles	60.00	50.00	40.00
1,060 cu. yd. Cl. "A" conc. in bridge struct.	56.00	55.00	54.00
176,000 lb. metal reinf.	.10	.085	.09
460 lin. ft. metal handrail	10.00	10.00	9.00
III. GRADING AND PAVING			
Lump sum, clearing and grubbing	$7,000	$10,000	$5,000
5,000 sq. yd. removal of pavement	.50	.75	.75
2,400 cu. yd. struct. excav., unclass.	4.00	3.00	2.50
200 cu. yd. trench excav., unclass.	2.00	3.00	2.50
72,000 cu. yd. gen. excav., loc. "A", unclass.	.32	.35	.35
80,000 cu. yd. gen. excav., loc. "B", unclass.	.86	1.10	.90
450,000 cu. yd. sta. short overhaul	.015	.02	.02
5,000 cu. yd. sta. long overhaul	.50	.60	.50
9,800 lin. ft. rounding cutbanks	.12	.20	.20
2.52 mi. finish roadbed and slopes	650.00	$1,500	600.00
10,000 cu. yd. excav. and place topsoil	1.00	1.00	1.00
2,000 yd. mi. truck haul on topsoil	.25	.25	.20
1,800 lin. ft. 8-in. corr. metal drain pipe, coated	1.40	2.50	1.50
380 lin. ft. 18-in. corr. metal pipe	2.75	3.50	3.00
50 lin. ft. 24-in. corr. metal pipe	4.00	5.00	5.00
60 lin. ft. 48-in. corr. metal pipe	10.00	15.00	10.00
1,300 lin. ft. 12-in. conc. pipe	1.35	1.75	1.50
500 lin. ft. 18-in. conc. pipe	2.75	3.50	2.50
900 lin. ft. 24-in. conc. pipe	4.20	6.00	3.50
300 lin. ft. salvaging culvert pipe	1.50	1.00	2.00
2 ea. Type "A" manholes	300.00	300.00	250.00
20 ea. conc. catch basins	60.00	75.00	65.00
24 ea. conc. inlets	60.00	75.00	60.00
740 cu. yd. conc. curbs	45.00	40.00	45.00
500 cu. yd. conc. median strips and islands	45.00	40.00	40.00
360 lin. ft. spring bracket guard rail with wood posts	2.50	2.20	4.00
35 cu. yd. Class "A" conc. in pole foundations	60.00	60.00	40.00
Lump sum, lighting standards in place	$8,751	$9,500	$12,745
4,400 lin. ft. 1-in. elect. conduit	.50	.55	.75
2,100 lin. ft. 1½-in. elect. conduit	.62	.68	1.05
4,000 lin. ft. 8-gauge, 6,000-volt single cond.	.20	.22	.28
2,700 lin. ft. 8-gauge, 600-volt twin cond.	.25	.30	.38
7,600 lin. ft. 8-gauge, 6,000-volt twin cond.	.35	.40	.52
Lump sum, time switch	56.00	60.00	80.00
32 ea. Type "A" transformer	36.00	40.00	37.00
5 ea. Type "B" transformer	65.00	72.00	77.75
1 ea. Type "C" transformer	175.00	200.00	248.50
13 ea. Type "D" transformer	140.00	155.00	98.75
4 ea. Type "A" luminaires	38.50	42.00	24.12
40 ea. Type "B" luminaires	43.00	47.00	61.00
8 ea. Type "C" luminaires	42.50	47.00	59.60
4 ea. Type "D" luminaires	45.50	50.00	45.45
Lump sum, constr. recesses for traffic control markers	500.00	300.00	500.00
29,000 cu. yd. 2-in. - 0-in. rock in subbase	2.20	2.75	2.80
12,000 cu. yd. 4-in. - 2-in. rock in base	2.20	2.75	2.65
14,000 cu. yd. ¾-in. - 0-in. rock in base and shoulders	2.50	2.75	2.80
1,350 M. gal. sprinkling	3.00	3.00	2.00
28,500 ton Class "B" asph. conc.	6.00	6.20	6.10
2.52 mi. preparation of base	300.00	600.00	500.00
1,000 cu. yd. ¾-in. - 0-in. rock in binder course	3.00	4.00	5.00
170 ton furn. and place RC-3 asph. in binder course	30.00	40.00	40.00
206 ton furn. and place RT-4 tar in binder course	.....	.....	.....

Washington—Chelan County—State—Surf.

McAtee & Heathe, Spokane, received a $208,203 contract for 8.4 miles of highway construction on Primary State Highway No. 15, between Summit and Gaynor. The Department of Highways at Olympia made the award. The two largest single items are for Class "C" Wearing Course in Place and Class "F" Leveling Course in Place, at $77,632 and $59,627 respectively. Unit bids were as follows:

(1) McAtee & Heathe $208,203
(2) J. D. Shotwell 217,463
(3) Associated Sand & Gravel Co. $237,823

	(1)	(2)	(3)
15 cu. yd. structure excav.	3.00	4.50	4.00
8.5 mi. finishing roadway	400.00	400.00	300.00
21,290 cu. yds. ballast in place	1.60	2.10	2.20
5,670 cu. yd. cr. stone surf. top course in place on rdwy.	2.00	3.30	3.00
1,000 cu. yd. cr. stone filler in place, incl. haul	.75	3.30	3.00
1,800 M. gal. water	2.00	3.00	3.25
2,870 cu. yd. cr. stone surf. top course in stockpile	1.75	3.30	2.25
5.8 mi. preparation of untreated roadway	100.00	150.00	300.00
75 ton bit. cement MC-2 prime coat in place	35.00	36.25	33.00
725 cu. yd. placing cr. cover stone from stockpile	2.20	1.75	2.00
9,410 ton Class "C" wearing course in place	8.25	7.60	8.75
7,015 ton Class "F" leveling course in place	8.50	7.10	8.75
LIGHT BITUMINOUS SURFACE TREATMENT METHOD "A" (SHOULDERS)			
120 ton bituminous cement MC-2 in place	35.00	33.25	33.00
1,145 cu. yd. placing crushed cover stone from stockpile	2.20	1.75	2.25
MISCELLANEOUS ITEMS			
48 lin. ft. galv. iron water pipe 2-in. diam. in place	1.00	2.00	1.00
45 lin. ft. place conc. or VC culv. pipe 12-in. diam. in place	2.00	3.00	2.00

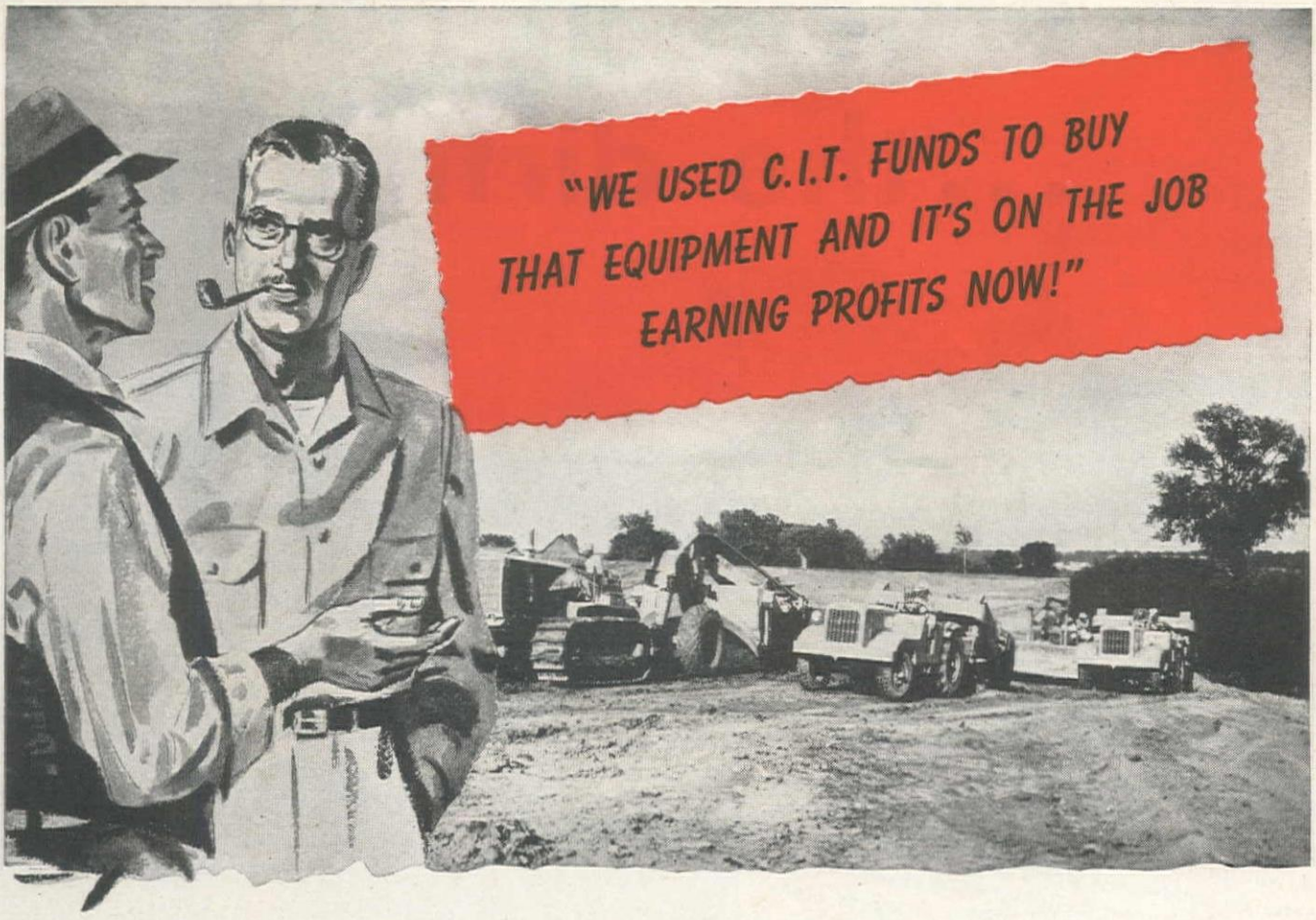
Nevada—Elko County—State—Grade and Surf.

Silver State Construction Co., Fallon, submitted the low bid of $662,872 to the Department of Highways, Carson City for 16 miles of highway construction on Route No. 1, Section B, C, and D-2, from ¾ mile east of the North Fork Bridge to Deeth. The following submitted unit bids:

(1) Silver State Construction Co. $662,872
(2) W. W. Clyde & Co. 665,057
(3) Dodge Construction, Inc. 666,666
(4) Fredericksen & Kasler 711,734
(5) Westbrook & Pope $738,735
(6) Isbell Construction Co. 748,768
(7) Geo. Pollock Co. and D. Gerald Bing 797,792

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Force Account, special detours	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500
300 hr. 95 h.p. tractor with carryall	10.00	9.00	10.00	12.00	9.00	10.00	11.00
400 hr. motor grader with scarifier	6.00	6.00	7.00	8.00	7.00	7.00	7.50
150 hr. 4 cu. yd. dump truck	3.00	3.00	4.00	5.00	5.00	4.00	4.00
200 hr. ½ ton pickup	2.00	2.00	2.50	3.00	4.00	2.50	3.00
51,386 ton selected matl. surface	.45	.40	.45	.55	.50	.65	.60
879 ton liquid asph. Type SC-2 or SC-3	23.00	24.00	22.50	24.00	25.00	24.00	25.00
13.37 mi. roadmix detours	400.00	500.00	500.00	440.00	600.00	500.00	800.00
Lump sum, signs	$1,000	$1,000	994.63	$1,500	$1,000	$2,000	$1,000
11,003 lin. ft. remove fence	.05	.05	.05	.05	.05	.05	.07
68 cu. yd. remove concrete	5.00	10.00	10.00	5.00	4.00	10.00	10.00

(Continued on page 122)



CONTRACTORS who use C.I.T. funds to buy construction equipment find that they can readily acquire *all* the machinery they need without tying up their working funds. As a result, they handle more work per day, earn larger profits and, at the same time, conserve their funds for payrolls, taxes, supplies and other operating needs. For example:

A contractor was running behind schedule on a road building job due to the frequent breakdown of obsolete equipment. New equipment was needed quickly and the profits to be earned by completing his contract on time fully justified the purchase. However, to pay all-cash would impair his working funds and additional capital was needed to complete the purchase.

C.I.T. agreed to advance 75% of the purchase price with repayments spread over two years. The new equipment immediately started to pay for itself; lost time was made up and, instead of a probable loss, the job was completed on schedule at a profit. The contractor acquired income-producing equipment that assured continued profits, plus improved facilities for handling future work.

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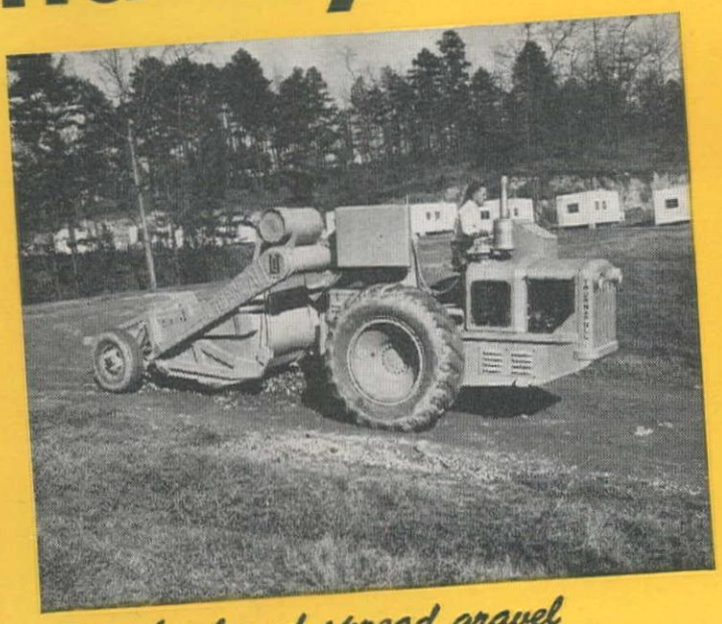

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Rig strips, loads, hauls and spreads from roadside pits. One man handles entire operation. Ideal for graveling farm yards, shoulders, access roads, detours, patching roads, filling mudholes, shortening curves.

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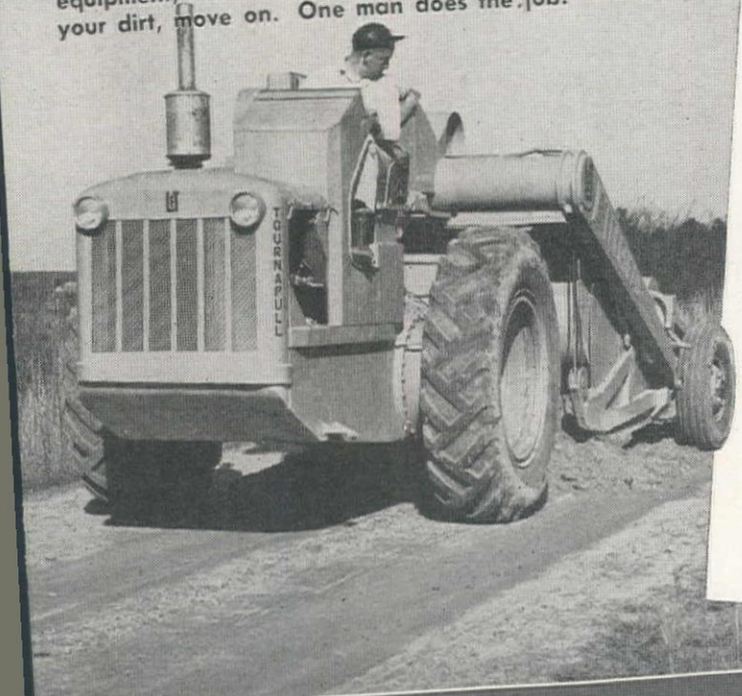
A versatile utility dirtmover around mines, quarries, sand and gravel plants, clay pits. Strips light overburden, cleans up in pit, clears slides, gravels roads, handles drainage. Will haul where trucks stall.

Road maintenance

Makes quick repairs anywhere in county anytime. 20 miles is less than an hour away, no time lost loading equipment, no trailer needed. Hop on and go, move your dirt, move on. One man does the job.



Leveling farm land

Fits the small job, a useful auxiliary tool on big land-leveling projects. Makes money on the scattered jobs, good rig for stock pond excavations. Can grade and gravel farm roads, build dirt dams, dig, bring in and spread black dirt, or spread top soil on peat land.

LETOURNEAU PEORIA, ILLINOIS — HIGH-SPEED UTILITY **TOURNAPULLS**

1,318	lin. ft. remove culv. pipe	1.00	1.00	1.50	1.00	.50	1.50	.60
100	ea. remove headwalls	10.00	10.00	7.50	11.00	1.00	10.00	8.00
1	ea. remove wood culv.	100.00	100.00	25.00	100.00	100.00	50.00	50.00
576,118	cu. yd. roadway excav.	.20	.185	.21	.21	.27	.20	.275
731	cu. yd. drain excav.	.40	.50	.50	.40	.60	1.00	1.50
571	sta. V-type ditches	4.00	5.00	5.00	4.00	2.50	5.00	4.00
21,397	cu. yd. borrow	.20	.21	.22	.20	.27	.20	.25
692	sta. slope rounding	4.00	5.00	5.00	3.50	6.00	12.00	7.00
2,057,441	yd. sta. overhaul	.115	.012	.015	.015	.01	.015	.01
70,773	yd. mi. overhaul	.15	.12	.15	.15	.12	.15	.20
1,587	cu. yd. struct. excav.	1.50	1.50	1.50	1.50	1.20	1.50	1.50
3,440	cu. yd. backfill	.75	1.00	1.00	1.25	1.20	1.50	2.00
Lump sum,	force account, roadside cleanup	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
32,327	M. gal. water	1.00	1.25	1.00	1.20	1.25	1.20	2.00
1,379	hr. power roller	6.00	5.00	5.00	7.00	7.00	5.00	6.00
36,670	ft. hr. tamping roller	.50	.50	.50	.67	.60	.50	.60
161,920	ton Type 1 gravel base	.35	.40	.36	.40	.36	.40	.45
75,388	ton Type 2 gravel base, 1 in.	.65	.57	.60	.70	.80	.75	.70
611	ton liquid asph. Type MC-1	25.00	27.00	25.00	28.00	26.00	27.00	30.00
106	ton liquid asph. Type MC-2	25.00	27.00	24.00	27.00	25.00	26.00	33.00
187	ton liquid asph. Type SC-5 or SC-6	25.00	27.00	24.00	25.00	25.00	28.00	30.00
1,443	ton screenings	3.00	3.00	3.50	3.00	3.00	5.00	4.00
1,524	ton liquid asph. Type SC-2 or SC-3	23.00	24.00	22.50	24.00	22.00	24.25	25.00
31.46	mi. roadmix shoulders	250.00	300.00	300.00	285.00	300.00	300.00	300.00
1,658	ton liquid asph. Type SC-5	23.00	24.00	22.50	24.50	21.00	24.00	25.00
27,633	ton Class F-2 plantmix bitum. surf.	2.20	2.00	2.00	2.00	2.00	2.00	1.75
576	cu. yd. Class A conc.	45.00	45.00	50.00	50.00	60.00	50.00	55.00
66,620	lb. reinf. steel	.12	.095	.10	.09	.12	.11	.10
78	lin. ft. 18-in. corr. metal pipe (dipped)	2.50	2.50	3.00	3.20	2.50	3.00	2.50
1,878	lin. ft. 24-in. corr. metal pipe (dipped)	3.75	3.75	4.00	4.50	3.50	4.25	3.50
298	lin. ft. 30-in. corr. metal pipe (dipped)	4.50	4.80	5.00	5.50	4.50	5.25	5.00
406	lin. ft. 36-in. corr. metal pipe (dipped)	7.00	7.20	7.50	8.30	7.00	7.50	7.00
306	lin. ft. 48-in. corr. metal pipe (dipped)	9.50	10.00	10.00	11.20	11.00	10.00	10.00
308	lin. ft. 30-in. x 17-in. corr. metal arch pipe (dipped)	4.00	3.70	4.00	4.90	4.00	5.00	4.00
108	lin. ft. 37-in. x 21-in. corr. metal arch pipe (dipped)	5.00	4.70	5.00	6.10	5.00	5.75	5.00
52	lin. ft. 44-in. x 25-in. corr. metal arch pipe (dipped)	7.50	7.00	7.50	9.20	7.00	8.00	8.00
50	lin ft. relay culv. pipe	1.00	1.50	1.50	1.30	.60	1.50	.60
700	lin. ft. beam type metal guard rail	4.00	2.00	2.25	3.30	2.50	4.00	3.00
128	ea. culvert markers	4.00	5.00	6.00	5.00	5.00	5.00	7.00
16	ea. guide posts	4.00	5.00	5.00	5.00	5.00	5.00	7.00
155,023	lin. ft. construct fence	.15	.20	.15	.155	.17	.20	.20
11,003	lin. ft. reconstruct fence	.10	.10	.15	.10	.12	.15	.10
3	ea. 16-ft. metal gates	50.00	40.00	50.00	70.00	35.00	25.00	60.00
109	ea. monuments	4.00	6.00	6.00	5.00	5.00	5.00	6.00
3	ea. 26-ft. std. cattle guard (metal)	$1,500	550.00	$1,250	900.00	$1,600	$1,500	$2,500
16,940	lin. ft. paved ditches	.20	.60	.25	.40	.15	1.50	.25
Lump sum,	remove and reconst. cattle guard	500.00	300.00	$1,250	600.00	$1,600	$1,500	$3,000
1,720	lin. ft. remove and reset guard rail	2.50	1.50	1.68	1.70	2.00	3.00	1.50

Wyoming—Carbon County—State—Surf. and Seal Coat

Inland Construction Co. of Omaha, Nebr., submitted the only bid and was awarded a $303,862 contract by the State Highway Commission, Cheyenne, for 15.3 miles of grading, draining, base course surfacing oil treatment by the road mix method, stone chips seal coat and miscellaneous work on the Baggs-Creston road. Unit bid follows:

(1) Inland Construction Co. ..... $303,862 (2) Engineer's Estimate $265,628

		(1)	(2)
225,000	cu. yd. excavation	.30	.27
56,000	cu. yd. selected material surf. Type 1	.43	.30
38,000	cu. yd. sta. overhaul	.015	.015
64,000	cu. yd. mi. haul	.15	.18
4,000	M. gal. watering (emb.)	2.80	3.00
700	hr. sheepsfoot roller operation	12.00	18.00
250	hr. pneumatic tired roller oper. (sel. mat.)	5.00	4.50
500	hr. mixing equipment operating	7.00	6.00
Lump sum,	provide and maint. mixing equipment	500.00	500.00
70	cu. yd. structure excav.	2.10	2.00
160	cu. yd. excav. for pipe culverts	1.75	2.00
50	cu. yd. Class 1 riprap	11.00	8.00
50	cu. yd. grouted riprap	17.00	15.00
160	hr. mechanical tamping	6.00	5.00
26	lin. ft. 18-in. C.M.P.	3.92	3.50
374	lin. ft. 24-in. C.M.P.	6.60	5.00
80	lin. ft. 30-in. C.M.P.	7.60	6.50
744	lin. ft. 36-in. C.M.P.	11.00	8.00
29.1	cu. yd. Class A concrete	65.00	45.00
870	lb. reinf. steel	.20	.12
31,290	lb. struct. steel	.15	.15
35,500	ton sand-gravel surf.	.58	.30
15,000	ton oil treated and gravel surf.	.54	.30
13,500	cu. yd. salvaged surf. material	1.06	1.20
1,850	ton stone chips	4.10	5.00
191,000	ton mi. haul of surf. matl.	.14	.10
360	ton filler	.70	.30
555	ton base treatment MC-0	35.50	27.00
355	ton seal coat RC-4	35.00	27.00
975	ton M.C. liquid asph. dist. MC-3	28.00	27.00
236,000	sq. yd. processing roadway	.055	.06
1,000	M. gal. watering (base)	4.00	3.00
300	hr. roller operation	5.50	4.50
60	ea. r/w markers	12.00	10.00

Washington—King County—State—Grade and Surf.

Western Asphalt Co., of Seattle was awarded a $321,684 contract by the Department of Highways, Olympia for 6.3 miles of grading, light bituminous surface treatment, asphaltic concrete paving and miscellaneous items, on Primary State Highway No. 1, from the junction of Secondary State Highway No. 5-A to Riverton Hill. Unit bids were as follows:

(1) Western Asphalt Co., Seattle ..... $321,684 (2) Peter Kiewit Sons Co., Seattle $399,764

		(1)	(2)
Lump sum,	clearing and grubbing	$3,500	$3,500
4,650	cu. yd. common excav. incl. haul	1.10	1.50
130	cu. yd. common trench excav. incl. haul	1.25	3.00
1,600	cu. yd. excav. of unsuit. mat. incl. haul	1.25	1.50
2,980	cu. yd. sp. rdwy. borrow incl. haul	1.50	1.50
23,112	lin. ft. reconst. rdwy. ditches	.20	.40
63,140	sq. yd. shoulder and median strip sub-grade prep.	.15	.20
1,230	cu. yd. structure excav.	1.50	3.00

(Continued on next page)

332.9 stas. (100-ft.) finishing roadway	12.00	10.00
154 cu. yd. gravel backfill in place	4.00	6.50
16,025 cu. yd. cr. stone surf. base crse. in place	2.65	3.40
160 M. gal. water	2.50	3.00
LIGHT BITUMINOUS SURFACE TREATMENT METHOD A		
60,240 sq. yd. prep., const., and finish	.05	.05
164.0 tons bit. cement MC-2 in place	30.00	40.00
1,420 cu. yd. furn. and place. crushed cover stone	3.00	5.00
TYPE I-1 ASPHALTIC CONCRETE PAVEMENT		
10,950 tons Class C wearing course in place	5.85	7.00
5,800 tons Class E base course in place	5.85	8.00
17,516 tons Class F leveling course in place	5.85	7.00
SPECIAL MEDIAN STRIP TREATMENT		
9.0 tons bituminous cement RC-5 in place	50.00	70.00
138 tons furnish and place sp. coarse screenings	20.00	25.00
MISCELLANEOUS ITEMS		
6.5 cu. yd. conc. Class A in place	65.00	100.00
750 lbs. steel reinforcing bars in place	.10	.12
5,127 lin. ft. beam gd. rail Type 1, Des. 5 (rail and hdwr. furn. comp. in place)	1.50	1.80
1 only sp. double conc. catch basin (castings furn. comp. in place)	100.00	50.00
30 only sp. conc. catch basins (cast iron grate and frame furn. comp. in pl.)	80.00	40.00
15 only cast iron monu. cases (C. of Seattle Stan. comp. in place)	35.00	16.00
340 lin. ft. concrete curb and gutter in place	1.60	2.50
1,825 lin. ft. reflecting curb Type A in place	1.60	2.50
655 lin. ft. reflecting curb Type C in place	1.90	3.50
191 only, concrete traffic buttons in place	1.60	3.50
92 only, adjust. exist. conc. catch basins to grade	20.00	25.00
1 only, adjusting existing brick manhole to grade	20.00	25.00
20 only, remov. exist. catch basins cast iron gr. and fr.	5.00	5.00
30 only, remov. exist. conc. catch basins	20.00	5.00
2 only, remov. exisct. conc. pipe headers	20.00	20.00
5,111 lin. ft. remov. exist. gd. rl.	.35	.40
200 lin. ft. remov. exist. conc. gutter lip	.20	.20
400 sq. yd. break. exist. conc. pavement	1.50	1.00
1,188 lin. ft. relaying pl. conc. culv. pipe 12-in. diam.	1.25	1.15
3,210 lin. ft. pl. conc. or V.C. drain pipe, 4-in. diam., in place	.90	.80
663 lin. ft. pl. conc. or V.C. culv. pipe, 12-in. diam., in place	1.75	2.00
63 lin. ft. stan. reinf. conc. culv. pipe, 18-in. diam., in place	2.75	4.00
57 lin. ft. stan. reinf. conc. culv. pipe, 24-in. diam., in place	3.50	5.50

Bridge and Grade . . .

Washington—Cowlitz County—State—Overcrossing

J. J. Badraun, Seattle, with the low bid of $146,539 was awarded the contract by the Department of Highways at Olympia for the construction of the Columbia and Cowlitz Railway Company over crossing on Primary State Highway No. 1, Rocky Point to Ostrander. Time for completion is 300 calendar days. The following unit bids were submitted:

(1) J. J. Badraun $146,539
(2) M. P. Munter Co. 149,778
(3) MacRae Bros. 153,295
(4) Lockyear & White, Inc. $160,079
(5) M. P. Butler 169,037

	(1)	(2)	(3)	(4)	(5)
20 cu. yd. struct. excav.	3.00	3.00	6.00	10.00	2.50
2 cu. yd. hand placed riprap	15.00	20.00	15.00	20.00	10.00
96 lin. ft. bit. coat. corr. metal pipe, Type 2, 16 ga. 8-in. diam., in place	2.00	2.40	3.00	2.00	2.30
BRIDGE					
1,120 cu. yd. struct. excav.	6.00	3.00	9.50	6.00	17.00
286 cu. yd. conc. Class "A" in place	50.00	50.00	70.00	66.00	56.00
440 cu. yd. conc. Class "B" in place	50.00	50.00	55.00	66.00	56.00
403 lin. ft. reinf. conc. br. rail. in place	7.50	6.50	8.00	7.00	6.50
116,000 lbs. steel reinf. bars in place	.09	.09	.088	.09	.09
413,000 lbs. struct. steel in place	.135	.145	.125	.13	.133
15,000 lbs. cast steel in place	.50	.50	.40	.60	.55
8 only, br. drains comp. in place	60.00	60.00	70.00	65.00	50.00
6,480 lin. ft. furnish. steel piling at site	3.00	3.55	3.20	3.50	3.70
108 only, driving steel piles in place	50.00	45.00	43.00	45.00	67.00
40 only, pile splices in place	30.00	25.00	25.00	25.00	30.00

Irrigation . . .

Utah—Salt Lake County—Bur. of Reclam.—Pipe Line & Structs.

The United Concrete Pipe Corporation, Baldwin Park, Calif., was awarded a $1,620,884 contract by the Bureau of Reclamation, Provo, for the laying of a 7.5 mile-long link of the Salt Lake Aqueduct under Schedule No. 2. The same firm also submitted the low bid of $2,221,742 under Schedule No. 1 for the construction of the 5.5 mile link of the aqueduct from the Upper Falls in Provo Canyon to the Deer Creek Dam. The bid, however, was judged too high. The work on Schedule 2 is located between the entrance to Little Cottonwood Canyon and Sam Park Reservoir, near 33rd South St., Salt Lake City. 700 days are allowed for completion. Unit bids follow:

	Schedule No. 1	Schedule No. 2	Total
(1) United Concrete Pipe Corp.	$2,221,742	$1,620,884	$3,842,626
(2) Carl B. Warren	2,260,171	1,700,084	3,960,255
(3) Utah Construction Co.	.....	1,666,977	1,666,977
(4) Artukovich Bros.	.....	1,835,653	1,835,653

SCHEDULE No. 1
Station 0+30.5 to Station 296+49.1

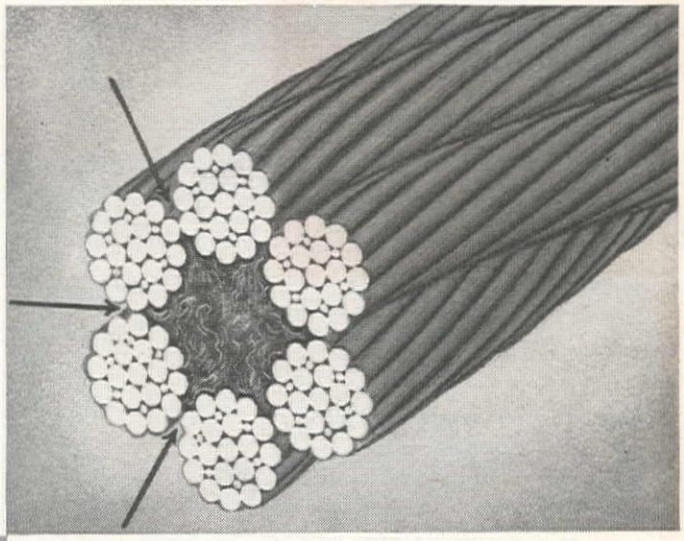
	(1)	(2)
73,400 cu. yd. benching, common, for pipe-line const.	.40	.58
205,900 cu. yd. benching, rock, for pipe-line const.	1.00	1.55
4,000 cu. yd. excav., common, for river channel change	.60	.57
1,300 cu. yd. excav., rock, for river channel change	2.00	3.98
71,200 cu. yd. excav., common, for pipe trench	1.70	1.56
31,200 cu. yd. excav., rock, for pipe trench	2.50	5.65
12,000 cu. yd. excav., common, for structs.	2.00	3.91
5,500 cu. yd. excav., rock, for structs.	5.00	5.50
7,200 cu. yd. excav., all classes, in tunnels	30.00	34.75
500 cu. yd. compacted embankments	1.00	3.75
40,000 sta. cu. yd. overhaul	.10	.02
103,700 cu. yd. backfill	.25	1.12
3 cu. yd. furn. and place pea-gravel backfill	10.00	10.00
15,400 cu. yd. compacting backfill	3.00	2.00
100 sq. yd. dry-rock paving	25.00	4.00

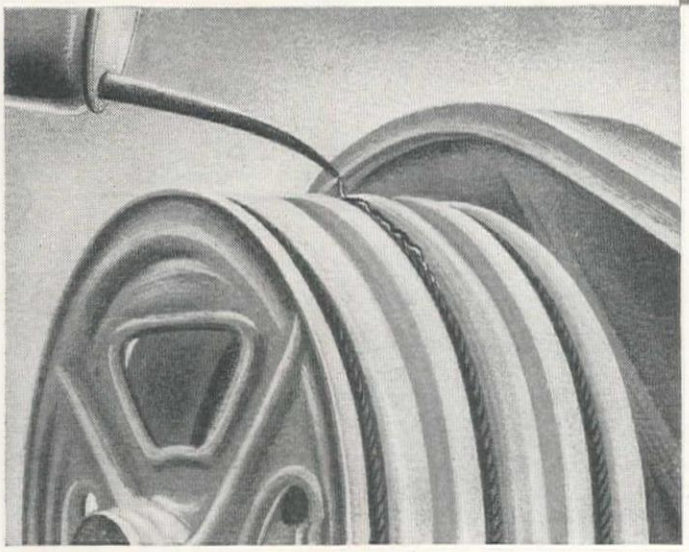
(Continued on next page)

Regular lubrication slows wire rope wear

A Columbia wear-saving tip

Wire rope is a machine with many moving parts...and it needs lubrication just like any other piece of machinery. Columbia's American TIGER BRAND Wire Rope is engineered from high-tensile U·S·S steel. Wires and strands are carefully lubricated during fabrication to reduce friction within the rope and give longer wear. Time and exposure, of course, may deplete the original lubricant and it's a good idea to restore it periodically. In this way you can get top service from top quality equipment.





Excellay Preformed construction gives TIGER BRAND resistance to bending fatigue and wear... assures distribution of the load to each wire and strand. Stock up now...see for yourself why "The Big Demand is for TIGER BRAND."

One easy way to lubricate is to drip a good lubricant onto the rope at a bending point where wires and strands open slightly and the oil can penetrate deeper. You can also apply it with brush or waste. Naturally, it's best to clean the rope first. Choice of lubricant depends on the type of rope, field conditions and the like. For more information, write your Columbia Steel office.

Excellay Preformed

Don't get caught with your lines down! Keep an extra line on hand and be sure it's TIGER BRAND

COLUMBIA STEEL COMPANY
San Francisco • Los Angeles • Portland
Seattle • Salt Lake City

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York

Tennessee Coal, Iron and Railroad Company, Birmingham
Southern Distributors

United States Steel Export Company, New York

UNITED STATES STEEL

500	cu. yd. riprap	8.00	3.66
Lump sum,	removing and replacing riprap	400.00	$2,000
65,000	lb. furn. and install perm. steel tunnel supports	.12	.19
28	M.B.M. furn. and erect. perm. timbering in tunnels	170.00	150.00
10,000	lb. furn. and install plate-steel tunnel-liner plates	.30	.19
30	cu. yd. washed gravel or spalls outside tunnel-liner plates	10.00	10.00
2,200	lin. ft. const. 6-in. diam. tunnel drains	2.00	3.00
450	lin. ft. laying 6-in. diam. sewer pipe with cemented joints	1.00	1.50
200	lin. ft. drilling grout holes not more than 10 ft. deep	3.00	1.42
100	lb. placing grout pipe and connections	1.00	.70
400	cu. ft. pressure grouting	3.00	2.15
1,300	cu. yd. conc. in structs.	90.00	65.00
2,000	cu. yd. conc. in tunnel lining	60.00	50.00
1,830	cu. yd. conc. in foundation for concrete pipe	30.00	25.00
24,840	bbl. furn. and handling cement	4.50	4.77
250,600	lb. place reinf. bars in structs.	.04	.05
150	sq. ft. place elastic filler material in joints	1.00	.28
540	lin. ft. placing rubber water stops in joints	1.00	2.20
175	sq. yd. dampproofing walls	1.00	1.42
155	sq. ft. furn. and place insulation and roofing	1.00	2.85
200	lin. ft. furn. and install embedded elect. conduit, 1¼-in. and less in diam.	1.00	1.00
250	lin. ft. furn. and install buried conduit, 2 in. in diam.	1.50	.80
25	lb. furn. and install conduit boxes, junction boxes, and cabinets	2.00	2.50
25	lb. furn. and install embedded ground wires	1.00	3.90
3,300	lb. furn. and place metal thimbles in pre-cast conc. pipe	.40	1.00
100	lin. ft. lay 24-in. diam. corr.-metal pipe	2.00	1.42
100	lin. ft. lay 30-in. diam. corr.-metal pipe	3.00	2.15
2,300	lb. install frame and guides for the fixed-wheel gate	.20	.28
2,500	lb. install fixed-wheel gate	.20	.15
1,200	lb. install fixed-wheel gate hoist	.20	.15
7,500	lb. install trashrack metalwork	.10	.15
8,000	lb. install standard metal pipes	.10	.15
Lump sum,	furn. and install controlhouse metalwork		
40,000	lb. install miscl. metalwork	.10	.17
110	sects. transport and place pipe sections now in storage	60.00	115.00
12,560	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol A-50	39.19	27.37
1,460	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol A-75	39.61	28.80
40	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol A-100	40.45	30.10
4,880	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol B-50	40.00	29.15
560	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol B-75	40.75	30.45
40	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol B-100	41.60	31.75
4,300	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbols C-50 and D-50	41.35	31.05
640	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbols C-75 and D-75	41.97	32.24
40	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbols C-100 and D-100	42.72	33.52

SCHEDULE No. 2

Station 1764+66.7 to Station 1875+50, Station 1907+00 to Station 1992+10, and Station 2012+40 to Station 2201+74.5, and Blow-off at Station 1743+90, and Wasteway at Station 1746+65.

		(1)	(2)	(3)	(4)
165,500	cu. yd. benching, common, for pipe-line const.	.30	.42	.38	.15
47,600	cu. yd. benching, rock, for pipe-line const.	.80	2.07	1.15	1.00
155,000	cu. yd. excav., common, for pipe trench	.38	.62	.49	1.00
11,900	cu. yd. excav., rock, for pipe trench	2.50	5.33	1.67	5.35
8,900	cu. yd. excav., common, for structs.	2.00	1.28	1.15	3.50
1,000	cu. yd. excav., rock, for structs.	5.00	6.00	3.34	11.00
6,300	cu. yd. compacted embankment	.60	1.28	.57	1.50
20,000	sta. cu. yd. overhaul	.10	.02	.03	.05
119,800	cu. yd. backfill	.25	.39	.40	.60
14,000	cu. yd. compacting backfill	2.50	2.00	2.90	5.00
175	sq. yd. dry-rock paving	25.00	4.00	5.75	10.00
665	cu. yd. riprap	8.00	3.45	3.15	5.00
900	cu. yd. concrete in structures	50.00	60.00	76.00	50.00
650	cu. yd. concrete in foundation for concrete pipe	15.00	25.00	23.00	20.00
30,950	bbl. furn. and handle cement	4.00	4.60	4.30	4.00
121,000	lb. place reinf. bars in structs.	.04	.05	.07	.07
25	sq. ft. place elastic filler material in joints	1.00	.28	2.90	1.00
415	lin. ft. place rubber water stops in joints	1.00	2.20	1.50	.50
70	sq. yd. dampproofing walls	1.00	1.42	1.73	.90
60	cu. yd. remove existing conc. paving in San Park Reservoir	5.00	5.15	16.10	10.00
1,700	lin. ft. furn. and lay 4-in. diam. conc. pipe	1.00	2.10	1.15	.50
90	lin. ft. furn. and lay 24-in. diam. conc. pipe	5.00	8.40	6.90	3.00
740	lin. ft. furn. and lay 42-in. diam. conc. pipe	12.00	21.00	13.80	12.00
8,500	lb. furn. and place metal thimbles in precast-conc. pipe	.40	1.00	.57	.55
1,610	lb. install flap gate	.20	.15	.14	.25
66,600	lb. install standard metal pipes	.10	.15	.25	.15
34,100	lb. install miscl. metalwork	.10	.20	.29	.15
5,680	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol A-50	28.62	24.00	25.70	27.00
2,920	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol A-75	29.05	25.34	27.00	28.50
5,540	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol A-100	29.88	26.56	28.40	29.50
1,680	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol A-125	30.81	27.73	29.55	31.00
1,900	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol A-150	31.98	29.81	31.45	32.50
80	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol A-165	32.70	30.50	32.45	34.00
8,560	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol B-50	29.42	25.67	27.45	29.00
2,160	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol B-75	30.18	26.88	28.60	30.00
1,720	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol B-100	31.02	28.08	29.90	31.00
1,420	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol B-125	31.69	28.97	30.80	32.00
2,900	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol B-150	32.57	30.35	32.35	33.00
60	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbol B-165	33.20	31.18	33.55	34.00
2,200	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbols C-50 and D-50	30.77	27.46	30.35	32.50
300	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbols C-75 and D-75	31.40	28.55	30.45	33.00
160	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbols C-100 and D-100	32.15	29.77	31.70	34.00
100	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbols C-125 and D-125	32.91	30.63	32.55	35.00
160	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbols C-150 and D-150	34.04	32.33	34.60	36.00
40	lin. ft. mfg. and lay 69-in. diam. precast-conc. pipe, symbols C-165 and D-165	34.42	32.84	34.95	36.50

California—Alameda and Contra Costa Counties—Bur. of Reclam.—Canal, Plant

Stolte, Inc., United Concrete Pipe Corp., Ralph A. Bell, & Duncanson Harrelson Co., Oakland, were awarded a $5,888,695 contract by the Bureau of Reclamation at Antioch for the construction of the Delta-Mendota intake canal, Tracy pumping plant and discharge lines, Central Valley Project. About 9 miles northwest of Tracy, 960 days for completion. The following unit bids were submitted:

(1) Stolte, Inc., United Concrete Pipe Corp., Ralph A. Bell, Duncanson Harrelson $5,888,695
(2) Guy F. Atkinson Co., W. E. Kier Construction Co., Bressi & Bevanda, A. Teichert & Son, Inc. 6,139,222
(3) George Pollock Co., Macco Corp., M. & K. Corp. 6,977,744
(4) Morrison-Knudsen Co., Inc., M. H. Hasler, Peter Kiewit Sons Co. 7,395,104

(Continued on next page)

SCHEDULE No. 1	(1)	(2)	(3)	(4)
Lump sum, removing existing piling	$3,040	$2,000	$1,000	836.00
Lump sum, unwatering foundations for railroad and highway culvert	$20,000	$60,000	$75,000	$59,000
Lump sum, unwatering foundations for pumping plant site	$81,000	$100,000	$100,000	$100,000
3,817,000 cu. yd. excav. for canal	.25	.315	.36	.32
72,300 cu. yd. excav. for canal structs.	.55	.65	1.25	1.65
450,000 cu. yd. excav. for pumping-plant struct.	.55	.75	1.25	1.40
62,000 cu. yd. excav. for pump discharge pipes	.55	.75	.66	.58
200,000 cu. yd. backfill	.30	.40	.26	.40
68,000 cu. yd. compacting backfill for structs.	2.20	2.75	2.00	3.00
30,500 cu. yd. compacting backfill for steel discharge lines	3.00	4.00	2.00	3.60
2,550 cu. yd. riprap	10.00	10.00	14.50	11.00
850 cu. yd. screened-gravel bedding for riprap	7.00	5.50	6.60	6.80
730 cu. yd. screened-gravel blanket	6.00	4.75	5.30	6.80
3,000 cu. yd. gravel surfacing	5.00	4.00	6.60	4.50
23,000 lin. ft. furn. treated-timber piles, up to 45 ft.	.90	1.00	1.21	1.15
87,100 lin. ft. furn. untreated-timber piles, up to 45 ft.	.40	.50	.53	.51
18,000 lin. ft. furn. untreated-timber piles, 50 ft. to 65 ft.	.46	.55	.63	.53
86,500 lin. ft. furnishing steel H piles	2.10	1.90	2.37	2.10
105,000 lin. ft. driv. vert. treated-timber and untreated-timber piles	1.20	.55	.62	1.43
10,000 lin. ft. driving batter untreated-timber piles	1.20	.65	.79	1.58
67,000 lin. ft. driving vertical steel H piles	1.10	.85	1.03	2.20
12,000 lin. ft. driving batter steel H piles	1.10	1.00	1.20	2.30
70,000 bbl. furn. and handling cement	4.00	2.80	3.00	3.00
1,225,000 lb. furn. reinf. bars, 1 in. dia. and larger	.06	.045	.066	.047
677,000 lb. furn. reinf. bars, ⅝ in. dia. to ⅞ in. dia.	.06	.046	.066	.047
82,000 lb. furn. reinf. bars, ½ in. dia.	.07	.048	.07	.047
3,615,000 lb. placing reinf. bars, 1 in. dia.	.035	.03	.05	.047
2,530,000 lb. placing reinf. bars, ⅝ in. dia. to ⅞ in. dia.	.035	.035	.05	.047
465,000 lb. placing reinf. bars, ½ in. dia.	.04	.04	.05	.047
900 cu. yd. conc. in paving and cover slabs	30.00	19.50	30.00	22.00
4,000 cu. yd. conc. in r.r. and hwy. culvert and in inlet-trans. struct.	40.00	42.00	40.00	51.00
17,000 cu. yd. first-stage conc. in pumping-plant substruct.	32.00	26.00	25.00	32.00
9,000 cu. yd. first-stage conc. in pumping-plant superstruct.	50.00	50.00	50.00	54.00
6,300 cu. yd. second-stage conc. in pumping-plant struct.	25.00	14.00	20.00	24.00
150 cu. yd. conc. in blockouts	60.00	60.00	130.00	100.00
15,000 cu. yd. conc. in discharge-pipe struct.	20.00	22.00	21.00	24.00
25,000 lin. ft. paint reinf. bars	.10	.30	.26	.27
5,700 lin. ft. constructing control joints	1.00	3.30	5.25	2.25
20,000 sq. ft. furn. and place corkboard joint filler	.40	.60	.66	1.40
550 sq. ft. furn. and place ½-in. dehydrated-cork joint filler	1.00	2.70	.66	1.30
270 sq. ft. furn. and place 1-in. dehydrated-cork joint filler	2.00	3.30	1.30	1.60
6,000 lin. ft. furn. and place metal seals	3.00	2.25	2.60	1.15
80 lin. ft. placing rubber water stops	2.00	2.70	2.60	2.00
750 lin. ft. constr. asphalt seals	.30	8.00	1.30	11.50
4,500 intersection insulating reinf. bars and elect. metal conduit	.30	.35	.66	.32
35 recess finishing lighting recesses	15.00	8.00	33.00	7.00
22,000 sq. ft. furn. and place membrane waterproofing	.20	.50	.40	.57
2,000 sq. yd. furn. and apply mastic waterproofing	1.70	3.00	1.45	1.15
100 sq. yd. furn. and apply dampproofing	1.20	2.70	.66	1.00
480,000 sq. ft. paint int. surf. of pump discharge pipes and surge tanks	.20	.35	.40	.57
325,000 sq. ft. paint exp. ext. surf. of pump dischg. pipes & surge tks.	.20	.20	.18	.18
450,000 lb. install butterfly valves	.05	.04	.046	.05
68,000 lb. install bulkhead gate guides and latches	.04	.12	.046	.07
84,000 lb. install bulkhead gates	.04	.07	.046	.05
505,000 lb. install cranes	.04	.07	.046	.06
97,000 lb. install crane-runway, trashrake gantry, and transfer car track rails in conc.	.04	.08	.13	.08
70 lin. ft. install crane rail on timber ties	15.00	7.00	13.00	20.00
190,000 lb. install trashracks	.04	.08	.26	.08
35,500 lb. install miscel. equip.	.10	.30	.26	.23
50,000 lb. install metal tubing, and brass, steel, wrought-iron and cast-iron pipe, fitt'gs & valves, less than 6 in. nominal dia.	.30	.50	.40	.17
139,000 lb. install metal tubing, and brass, steel, wrought-iron and cast-iron pipe fittgs., & valves, 6 in. & greater, nominal dia.	.25	.16	.42	.17
1,000 lb. install metal inserts	.25	.70	1.30	.57
48,000 lb. install metal railings	.12	.40	.42	.20
50,000 lb. install draft-tube pier noses	.05	.15	.20	.08
6,000 lb. install embedded metal frames for openings in floors, walls, and decks	.15	.40	.40	.17
7,000 lb. install oil storage tanks	.25	.20	.20	.08
3,700 sq. ft. install metal accordion doors	.60	2.00	4.00	1.00
1,200 sq. ft. install metal swinging doors	.60	2.00	4.00	2.00
40 sq. ft. install metal fire door	1.00	2.70	4.00	2.50
1,600 sq. ft. furn. and install metal-sash windows	4.00	2.70	2.00	4.80
1,600 lb. install metal louvers	.20	1.00	.66	.45
700 sq. ft. install metal toilet partitions	.60	1.00	.66	1.15
10,000 lb. install miscl. metalwork	.15	.50	.40	.34
5,000 lb. install plumbing fixtures and appurt. hardware	.25	.40	.24	.80
16,000 lin. ft. furn. and install embedded elect. metal conduit, 1¼ in. or less in diam.	1.00	1.35	1.00	1.80
9,200 lin. ft. furn. and install embedded metal conduit, larger than 1¼ in. and not larger than 3 in. in diam.	2.00	2.00	3.00	6.25
200 lin. ft. furn. and install embedded elect. nonmetalic conduit	1.00	2.50	1.00	1.40
6,500 lb. furn. and install grounding matl.	2.00	1.50	1.00	2.25
3,300 lin. ft. furn. and const. guard-rails	4.00	2.50	4.00	3.00
2,200 ton transpt. matls. for the Govt. or its agts., other than the contractor, betw. the railhead and the pumping plant site	10.00	8.00	6.50	6.65
SCHEDULE No. 2				
142,000 cu. yd. excav. for structs.	.40	.35	.40	.50
81,000 cu. yd. backfill	.20	.40	.26	.40
1,800 cu. yd. compacting backfill for structs.	5.00	4.00	4.00	4.00
300 sq. yd. trim foundations for conc. in lateral lining	1.50	4.00	1.30	1.70
28,000 bbl. furn. and handle cement	4.00	2.80	3.00	3.00
896,000 lb. furn. reinf. bars, 1 in. diam.	.06	.045	.066	.047
467,000 lb. furn. reinf. bars, ⅝ in. diam. to ⅞ in. diam.	.06	.046	.066	.047
20,000 lb. furn. reinf bars, ½ in. diam.	.07	.048	.07	.047
2,985,000 lb. place reinf. bars, 1 in. diam.	.03	.03	.053	.047
1,556,000 lb. place reinf. bars, ⅝ in. diam. to ⅞ in. diam.	.03	.035	.053	.047
66,000 lb. place reinf. bars, ½ in. diam.	.04	.04	.053	.047
100 cu. yd. conc. in paving slabs	30.00	22.50	30.00	34.00
18,300 cu. yd. conc. in discharge conduits and outlet structs.	30.00	29.50	30.50	32.00
25 cu. yd. conc. in lateral lining	60.00	60.00	46.00	85.00
340 sq. ft. furn. and place ½ in. dehydrated-cork joint filler	2.00	2.50	1.30	1.40
22,000 lb. furn. and place metal water stops	.25	.50	1.30	.48
475 sq. ft. furn. and place roofing	.20	1.00	.60	.20
7,000 lb. install siphon-breaker valves	.10	.20	.26	.23
20 sq. ft. install metal swinging doors	1.00	4.00	5.30	2.60
500 lb. install miscl. metalwork	.20	.75	1.30	.45
100 lin. ft. furn. and install embedded elect. metal conduit, 1¼ in. diam.	1.00	1.50	1.00	1.80
100 lin. ft. furn. and install embedded elect. metal conduit, larger than 1¼ in. and not larger than 3 in. in diam.	5.00	2.50	3.00	6.25
50 lb. furn. and install grounding matl.	2.00	2.00	1.00	2.50

(Continued on next page)

Colorado—Larimer County—Bur. of Reclam.—Earthfill

David O. Gordon and Bressi & Bevanda Constructors, Inc., of Denver, submitted the low bid of $1,375,479 to the Bureau of Reclamation at Denver for the construction of the Olympus Dam; the earthwork, structures and surfacing for State Hwy. No. 66 between station 1016-00 and station 1039-10; and the earthwork and structures for Fish Creek road between station 1016-38 and station 1033-50; Colorado-Big Thompson project. The work is situated on the Big Thompson River about 1.5 mi. east of Estes Park. Unit bids follow:

	Schedule I	Schedule II	Total
(1) David O. Gordon and Bressi & Bevanda Constructors, Inc.	$1,335,157	$40,322	$1,375,479
(2) Peter Kiewit Sons Co., & Morrison-Knudsen Co., Inc.	1,557,280	37,043	1,594,323

SCHEDULE No. I			(1)	(2)
Lump sum,		Diversion and care of river during construction and unwatering foundations	$40,000	$55,000
29,000	cu. yd.	excav., stripping borrow pits	1.00	.60
29,000	cu. yd.	excav., common, for embankment foundation	.42	1.50
6,000	cu. yd.	excav., rock, for embankment foundation	1.00	1.50
17,000	cu. yd.	excav., common, for concrete dam foundation	.42	3.00
18,000	cu. yd.	excav., rock, for concrete dam foundation	5.00	3.00
200,000	cu. yd.	excav., impervious matl., in borrow pits and transpt. to dam embankment	.45	.50
50,000	cu. yd.	excav., semi-pervious matl., in borrow pits, sep., transpt. to dam embank.	.85	1.10
12,000	cu. yd.	excav., rock, in borrow pits and transpt. to dam embankment	1.50	2.00
530	cu. yd.	excav., all classes, for footing of embankment cut-off wall	20.00	8.00
5,000	cu. yd.	excav., common, for canal siphon	.35	3.00
15,000	cu. yd.	excav., rock, for canal siphon	2.00	3.00
20	cu. yd.	excav., in drift for log-boom anchor	50.00	15.00
10,500	cu. yd.	backfill	.50	.80
550	cu. yd.	compacting backfill	4.00	4.50
350	cu. yd.	one-course road surfacing	5.00	1.80
225,000	cu. yd.	earth-fill in embankment	.25	.25
1,700	cu. yd.	tamping earth fill	4.00	3.50
46,000	cu. yd.	rock-and-cobble fills in dam embankment and back of spillway walls	.35	.20
8,100	cu. yd.	riprap on upstream slope of embankment	.75	4.50
200	lin. ft.	core drilling NX holes not more than 35 feet deep	5.00	6.00
5,600	lin. ft.	drilling grout holes in stage betw. depth of 0 ft. and 35 ft.	3.00	2.70
2,400	lin. ft.	drilling grout holes in stage betw. depth of 35 ft. and 60 ft.	4.00	2.70
400	lin. ft.	drilling grout holes in stage betw. depth of 60 ft. and 100 ft.	5.00	2.70
1,200	lin. ft.	drilling grout holes with percussion drills	1.00	2.30
6,500	cu. ft.	pressure grouting	2.00	3.30
3,500	cu. ft.	pressure grouting with packers	2.50	3.70
14,000	lb.	furn. and pl. metal pipe and fittings for foundation grouting and drainage	.40	.50
1,000	lin. ft.	drilling drainage holes in stage betw. depth of 0 ft. and 25 ft.	4.00	6.00
800	lin. ft.	drilling drainage holes in stage betw. depth of 25 ft. and 50 ft.	5.00	6.00
1,200	lin. ft.	furn. 8-in. diam. sewer pipe and const. drains with uncemented joints	1.50	2.00
830	lin. ft.	furn. 12-in. split sewer pipe and const. drains with cemented joints	2.50	1.50
120	lin. ft.	furn. 24-in. split sewer pipe and const. drains with cemented joints	4.00	4.50
30	sq. yd.	grouted paving gutters	10.00	6.50
66	lin. ft.	furn. and lay 24-in. diam. corr. metal pipe	4.00	5.00
26,500	bbl.	furn. and handling cement	4.00	4.40
15,000	cu. yd.	concrete in dam	18.50	20.00
1,800	cu. yd.	concrete in spillway apron	21.00	20.00
900	cu. yd.	concrete in spillway training walls	27.00	40.00
725	cu. yd.	concrete in spillway bridge piers	33.00	40.00
11	cu. yd.	concrete in spillway bridge	65.00	100.00
61	cu. yd.	concrete in trashrack structures	70.00	90.00
330	cu. yd.	concrete in canal intake structure	45.00	65.00
470	cu. yd.	concrete in footing of embankment cut-off wall	22.00	30.00
270	cu. yd.	concrete in embankment cut-off wall, except footing	33.00	70.00
710	cu. yd.	concrete in sidewalks, curbs, and parapets	60.00	90.00
1,450	cu. yd.	concrete in canal siphon	50.00	45.00
15	cu. yd.	concrete in drift for log-boom anchor	100.00	45.00
5	cu. yd.	concrete in roadway structures	70.00	90.00
40	cu. yd.	porous concrete	50.00	20.00
22		recess finishing lighting recesses	5.00	10.00
1,000,000	lb.	furn. reinforcement bars	.07	.07
1,000,000	lb.	placing reinforcement bars	.04	.04
50	sq. yd.	dampproofing	1.00	1.50
1,500	lin. ft.	furn. and pl. metal sealing strips	2.00	1.50
3,400	lb.	install metal tubing and fittings and grouting contraction joints	.40	1.50
260	lin. ft.	furn. and pl. metal grout groove covers	1.00	1.00
7,800	lb.	furn. and pl. metal water stops	.40	.60
90	sq. ft.	furn. and pl. joint filler	1.00	1.00
17,000	lb.	erect struc. steel in spillway bridge	.08	.08
108,000	lb.	install radial gates	.07	.10
40,000	lb.	install radial-gate hoists	.07	.10
10,500	lb.	install fixed-wheel gate frames and guides	.25	.15
11,200	lb.	install fixed-wheel gates	.07	.10
5,000	lb.	install fixed-wheel gate hoists	.07	.10
4,700	lb.	install slide gates and hoists	.07	.10
900	lb.	install pump	.20	.40
70,000	lb.	install fish-screen metalwork	.05	.05
2,500	lb.	install metal stairways	.30	.20
7,300	lb.	install pipe and fittings	.25	.20
4,000	lb.	install miscellaneous metalwork	.35	.20
5,000	lb.	install handrailing	.50	.20
370	lin. ft.	furn. and install metal-plate guard fence	4.00	2.50
Lump sum,		furn. and install log boom	$10,000	$11,000
Lump sum,		furn. and install metal doors and window	$1,250	800.00
1,850	lin. ft.	furn. and install electrical conduit 1¼ in. or less in diam.	1.00	1.50
2,200	lin. ft.	furn. and install electrical conduit 1½ in. or more in diam.	2.00	2.00
600	lb.	furn. and install electrical ground wires and ground rods	2.00	2.00

SCHEDULE No. II				
600	cu. yd.	excav., all classes, for roadway	2.50	1.50
13,000	cu. yd.	excav., common, in borrow pits for roadway	.50	.80
67,000	sta. cu. yd.	overhaul for roadway	.02	.02
100	cu. yd.	excav., common, for roadway structures	3.00	3.00
10	cu. yd.	excav., rock, for roadway structures	10.00	10.00
50	cu. yd.	backfill about roadway structures	1.00	1.50
50	cu. yd.	compacting backfill about roadway structures	4.00	5.00
10	sq. yd.	dry-rock paving for roadway structures	10.00	10.00
158	lin. ft.	furn. and lay 24-in. diam. corr. metal pipe	4.00	5.00
8	bbl.	furn. and handling cement	5.00	4.40
5	cu. yd.	conc. in roadway structures	100.00	90.00
500	lin. ft.	removing and reerecting metal-plate guard fence	2.00	2.50
Lump sum,		removing and resetting right-of-way fence	$1,000	$1,500
4,100	lin. ft.	furn. and install metal-plate guard fence	4.00	2.50
1,310	ton	crusher-run base	3.00	1.80
7	ton	furn. and apply liquid-asphalt prime coat	40.00	100.00
630	ton	gravel for oil-treated gravel surfacing	6.00	4.00
35	ton	furn. and apply liquid asph. for oil-treated gravel surf.	40.00	55.00
7	ton	furn. and apply liquid asphalt for seal coat	40.00	100.00
55	ton	stone chips for seal coat	10.00	10.00
22	sta.	of 100 ft. finishing roadway of highway	20.00	25.00

(Continued on next page)


PACIFIC
SUPER STEEL
PREFORMED
WIRE ROPE
PACIFIC WIRE ROPE COMPANY
LOS ANGELES 21, CALIF., U.S.A. BRANCHES:
SAN FRANCISCO HOUSTON PORTLAND

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 $75,000 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 . . .

McGough Bros., St. Paul, Minn., received a $3,395,000 contract from the Veterans' Administration, Washington, D. C., for the construction of the 150 bed veterans' hospital at Minot in Ward Co., North Dakota.

David G. Gordon and **Bressi & Bevanda Constructors, Inc.**, Denver, Colo., submitted the low bid and were awarded a $1,375,479 contract by the Bureau of Reclamation at Denver under two schedules for the construction of the Olympus Dam in Larimer Co., Colo. The price for Schedule 1 was $1,335,157 and for Schedule 2 was $40,322. 850 days allowed for completion.

Valley Construction Co., Seattle Wash., was awarded a $1,011,530 contract by the Seattle Board of Public Works to complete the Cedar River pipeline replacement project. The removal and installation of 27,120 ft. of pipe will be involved. 42-in. pipe will be removed from August St. to the Beacon Hill reservoir, Seattle, and will be replaced with 66-in. welded steel pipe. Work is expected to begin in September.

McNeil Construction Co., Los Angeles, Calif., will build the $1,000,000 reinf. conc. and steel frame 11-story office bldg. The bldg. will have a 50-ft. deep semi-subterranean garage and conc. slab roof parking area. The structure is to be erected on the northeast corner of Wilshire Blvd. and Burlington Ave., Los Angeles, for the Guarantee Insurance Co., also of Los Angeles.

Tunnel Constructors, Denver, Colo. (composed of **David G. Gordon**, Denver; **John Austin**, Denver, and **Martin Wunderlich**, Jefferson City, Mo.) were awarded a contract by the Bureau of Reclamation, Denver, at $725,043 for Schedule 1, and $1,113,309 for Schedule 2, for the excavation and concrete lining of tunnels No. 2, 3, 4 and 5, Horsetooth feeder canal, Colorado-Big Thompson Project, betw. 8 mi. west and northwest of Loveland, Colo.

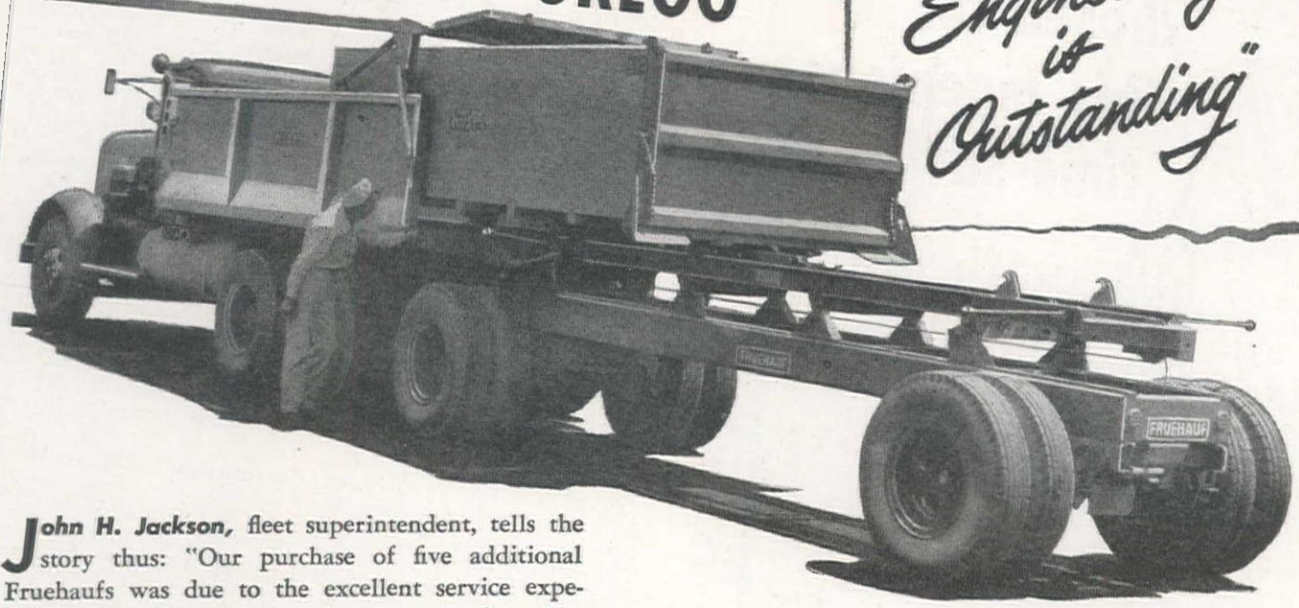
United Concrete Pipe Corp. of Baldwin Park, Calif., will construct the 7.5 mi. addition to the Salt Lake Aqueduct, Provo River project, Utah, for which the $1,620,884 contract was let by the Bureau of Reclamation at Provo. The 7.5 mi. long line of the aqueduct is in addition to the 28 mi. already constructed. The aqueduct now ends at a point immediately west of the entrance to Little Cottonwood Canyon. The new work will carry on from that point to the Sam Park Reservoir at the edge of Salt Lake City. The same firm also submitted the low bid of $2,221,742 for the construction of the 5.5 mi. link from the Upper Falls in Provo Canyon to the Deer Creek dam. The bid was rejected as being too high.

Charles L. Harney of San Francisco, Calif., was awarded a $987,108 contract by the City and County Public Utilities Commission, San Francisco, for the construction of P.C.C. pavement, crushed rock pavement with asph. conc. surfacing, scarifying and recompacting existing crushed rock surf. and constructing seal coat on it, constructing a portion of an electric conduit system, drainage structures, altering present drainage system, and appurtenant work at the San Francisco Airport in San Mateo Co., Calif.

General-Shea-Pacific has been awarded a $2,300,000 contract to

ANOTHER 5 FRUEHAUFS FOR JOHN D. GREGG

"Their Engineering is Outstanding"



John H. Jackson, fleet superintendent, tells the story thus: "Our purchase of five additional Fruehaufs was due to the excellent service experienced with the seventeen already in our fleet. The engineering of Fruehauf Trailers is outstanding. It provides well-balanced Trailers, easy to handle with maximum payload."

John D. Gregg is one of the largest wholesale suppliers of rock, sand and gravel in Southern California. Of many years' experience in furnishing aggregates for highways, dams, other public works and buildings, he knows the vital importance of Trailer hauling. All of the twenty-two dump Trailers he owns are Fruehaufs. That should mean something to you.

Our engineers work closely with Gregg. We design to meet his operating conditions. Every factor is analyzed. The finished product is right for his job. And such knowledge and skill are available to all buyers of Fruehauf Trailers.

In addition to Dumpers, Fruehauf builds other models especially for constructors. Included are: Low-bed Carryalls and Machinery Trailers with capacities up to 100 tons. Also, Tilt-deck Trailers for hauling caterpillars, bulldozers, etc. Call your nearest Branch for all details.

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TRAILERS HAVE ROLL-OFF BODIES

Gregg Trailers are equipped with roll-off bodies. The Trailer requires no hoist. After the truck has been dumped, a power-driven cable rolls the loaded body off the Trailer into the truck body. The Trailer chassis then is disconnected and the Trailer's load is dumped by the truck's hoist. This method saves a heavy investment in hoists and subsequent maintenance costs.

FRUEHAUF TRAILERS "ENGINEERED TRANSPORTATION"

PLAIN HORSE SENSE
YOU CAN PULL FAR MORE THAN YOU CAN CARRY!

construct 52 mi. of standard gauge railroad for Kaiser Company, Inc., Oakland, in Riverside County, Calif., which will connect Kaiser Steel's new Eagle Mountain iron ore mine with the Southern Pacific main line near the Salton Sea. Milepost 0.0 of the new railroad is located southeast of Mecca, Calif., near Salton station on the main line of the So. Pac. Milepost 50 is at Eagle Mt. Mine, approx. 15 mi. northwest of Desert Center on land forming part of the Joshua Tree Natl. Monument. The remaining two mi. of track will consist of spur line. Work should be completed by April 30, 1948.

American Pipe & Construction Co., South Gate, Calif., was awarded a $1,074,973 contract by the County Water Authority at San Diego for construction of a concrete pipe line and appurtenances. It is an extension of the San Jacinto-San Vicente Aqueduct. The work was divided into three schedules: (1) at $389,404 includes all work from the San Jacinto-San Vicente aqueduct to north side of San Diego river valley; (2) at $47,945 all work from end of Schedule 1 to south side of San Diego river valley and constr. of Lakeside Control Station; (3) at $637,624 includes all work from end of Schedule 2 to the Sweetwater reservoir, all in San Diego County, Calif.

Highway and Street . . .

Arizona

COCONINO CO.—**Bowen & McLaughlin,** Box 4037, Phoenix—$159,424 for 2.3 mi. grade, drain, base and surf. of Ashfork-Flagstaff Hwy. near Bellemont—by State Highway Department, Phoenix. 7-25

GREENLEE CO.—**Orr & Orr Construction Co.,** 302 W. Monte Vista Rd., Phoenix—$373,235 for 2.8 mi. grade, drain, base and surf. of Clifton-Morenci Hwy., betw Clifton and Morenci—by State Highway Department, Phoenix. 7-25

NAVAJO CO.—**Bowen & McLaughlin,** Box 4037, Phoenix—$187,654 for 15.5 mi. grade, drain and base, Winslow-Long Valley Hwy., 10 mi. southwest of Winslow—by State Highway Department, Phoenix. 7-25

California

CALAVERAS CO.—**Louis Biasotti & Son,** 49 W. Clay St., Stockton—$155,083 for 8.9 mi. grade, and surf. betw. State Hwy. 65 at San Andreas and Mountain Ranch—by Division of Highways, Sacramento. 7-16

FRESNO CO.—**Guy F. Atkinson Co.,** Box 259, Long Beach—$1,341,822 for 1.2 mi. grade, pave and grade separation structs., betw. Fresno city limits and San Benito Ave. at Broadway, Fresno—by Division of Highways, Sacramento. 7-11

LOS ANGELES CO.—**J. E. Haddock, Ltd.,** 3538 E. Foothill Blvd., Pasadena—$247,143 for 1.3 mi. resurf. and widening Arroyo Seco Parkway, betw. Bernard St. and Ave. 22, Los Angeles—by Division of Highways, Sacramento. 7-28

RIVERSIDE CO.—**Peter Kiewit Sons' Co.,** 345 Kieways Ave., Arcadia—$105,203 for 5.3 mi. grade and surf. of Jurupa Ave., betw. Mira Loma and Sunnyslope—by Division of Highways, Sacramento. 7-18

SACRAMENTO CO.—**McGillivray Construction Co.,** Box 873, Sacramento—$106,379 for surf. of Marconi Ave., betw. Howe

Ave. and Fair Oaks Blvd., Sacramento—by Division of Highways, Sacramento. 7-11

SAN FRANCISCO CO.—**Charles L. Harney,** 575 Berry St., San Francisco—$298,618 to improve Geary St. and Geary Blvd., betw. Broderick St. and Masonic Ave.; and Masonic Ave., betw. O'Farrell St. and Geary Blvd., San Francisco—by City and County Commission, San Francisco. 7-18

SAN MATEO CO.—**Edward Keeble,** Rt. 4, Box 361, Tully Rd., San Jose—$235,857 for grade and surf. on Canada Rd., betw. Woodside and Ralston Ave., San Mateo—by Division of Highways, Sacramento. 7-11

SAN MATEO CO.—**L. C. Smith,** First & Railroad Aves., San Mateo—$138,460 to remove trees, grade, pave, etc., various sts. in San Mateo—by City Council, San Mateo. 7-10

TULARE CO.—**F. Gunner Gramatky,** 272 Annandale Rd., Pasadena—$175,412 for approx. 8 mi. widen and surf. betw. Woodville and Poplar—by Division of Highways, Sacramento. 7-29

VENTURA CO.—**Frank T. Hickey, Inc.,** 1645 Allesandro St., Los Angeles—$148,105 for 6.5 mi. plant mix surf. and grade on Pleasant Valley Rd. and Wood Rd., betw. Ventura Co. RR. and Ventura Blvd.—by Division of Highways, Sacramento. 7-3

Colorado

BACA CO.—**Colorado Constructors, Inc.,** Denver—$112,126 for 6 mi. gravel surf. of State Hwy. 100, betw. Springfield and Walsh—by State Highway Department, Denver. 7-18

CROWLEY AND KIOWA COS.—**Colorado Constructors, Inc.,** Denver—$181,055 for 3.7 mi. oiling of State Hwy. 96, betw. Sugar City and Haswell—by State Highway Department, Denver. 7-11

JACKSON CO.—**Peter Kiewit Sons' Co.,** Omaha National Bank Bldg., Omaha, Neb.—$144,352 for 3 mi. grade and surf. on State Hwy. 14, betw. Muddy Pass and Walden—by State Highway Department, Denver. 7-11

RIO BLANCO CO.—**Gardner & Erskine,** Glenwood Springs—$205,746 for 2.1 mi. gravel surf. of State Hwy. 64, betw. Stinking Creek and Rangely—by State Highway Department, Denver. 7-18

Montana

FLATHEAD CO.—**F. R. Hewitt Co.,** E. 5916 Baldwin Ave., Spokane, Wash.—$632,428 for earthwk. and structs. for relocation of forest serv. road, Hungry Horse Reservoir, near Kalispell—by Bureau of Reclamation, Hungry Horse Government Camp. 7-11

Nevada

WHITE PINE CO.—**Dodge Construction Co., Inc.,** Fallon—$179,473 for 16.9 mi. of hwy. construction from junction of U. S. Hwy. 6 to Nevada-Utah state line—by Department of Highways, Carson City. 7-3

New Mexico

CATRON CO.—**Bowen & McLaughlin,** Box 4037, Phoenix, Ariz.—$117,315 for 9.8 mi. grade, drain, base and surf. on U. S. Hwy. 60, betw. Quemado and Datil—by State Highway Department, Santa Fe. 7-18

GRANT CO.—**Bowen & McLaughlin,** Box 4037, Phoenix, Ariz.—$142,411 for 5.8 mi. grade, base and bitum. surf. of State Hwy. 25, betw. Pinos Altos and Silver City—by State Highway Department, Santa Fe. 7-18

SAN JUAN CO.—**Skousen Construction Co.,** Springer Bldg., Albuquerque—$195,155 for 14.3 mi. grade, drain, level course, base and surf. of State Hwy. 17, betw. La Plata and Farmington—by State Highway Department, Santa Fe. 7-18

Oregon

KLAMATH CO.—**Rogers Construction Co.,** Rt. 15, Box 562, Portland—$769,233 for 2.9 mi. grade and 38.9 mi. surf. and oil, East Diamond Lake Junction-Lobert Section of The Dalles-California Hwy.—by State Highway Commission, Salem. 7-22

WHEELER CO.—**J. R. Taggart & Co., Inc.,** Brogan—$151,972 for 3.8 mi. grade and 7 mi. surf. and oil, Butte Creek-Kinzua

Section of Kinzua County Rd.—by State Highway Commission, Salem. 7-22

Texas

BEXAR CO.—**H. B. Zachry Co.,** Box 2570, San Antonio—$327,551 for grade, structs. and pave.—by State Highway Department, Austin. 7-16

GUADALUPE CO.—**Dean Word Co.,** Box 330, New Braunfels—$286,079 for 7.9 mi. grade, struct., base and surf.—by State Highway Department, Austin. 7-16

HARDIN CO.—**John F. Buckner & Sons,** Box 76, Cleburne—$328,843 for 6.5 mi. grade and surf.—by State Highway Department, Austin. 7-16

REEVES CO.—**Brown & Root, Inc.,** Box 3, Houston—$259,-992 for street improvements, Pecos—by City Council, Pecos. 7-14

Washington

CLALLAM CO.—**Peter Kiewit Sons' Co.,** Omaha National Bank Bldg., Omaha, Neb.—$124,368 for 7.4 mi. grade and surf. of P. State Hwy. 9, Elwha River Bridge to Port Angeles—by Department of Highways, Olympia. 7-11

GRAYS HARBOR CO.—**Pacific Sand & Gravel Co.,** Centralia—$152,788 for 1.3 mi. grade, surf., and pave., P. State Hwy. 13, Curtis St. and West Blvd., Aberdeen—by Department of Highways, Olympia. 7-11

KING CO.—**Northwest Construction Co.,** 3950 6th NW., Seattle—$205,330 for paving Edgemont Pl., Seattle—by City Council, Seattle. 7-16

Bridge & Grade Separation...

Arizona

MARICOPA CO. — **Arizona Sand & Rock Co.,** Box 596, Phoenix—$169,696 for conc. bridge over Grand Canal and conc. bridge over Arizona Canal and 4 mi. roadway from Camelback

Rd., north to Dunlop Ave. and Cave Creek Rd.—by State Highway Department, Phoenix. 7-23

MOHAVE CO.—**H. L. Royden,** Box 3707, Phoenix—$178,493 for 7-span continuous steel girder bridge over Santa Maria River, approx. 40 mi. northwest of Wickenburg—by State Highway Department, Phoenix. 7-3

PINAL CO.—**H. J. Hagen,** Globe—$212,381 for piers, abutments and approach spans of bridge over Pinto Creek, approx. 11 mi. northeast of Superior—by State Highway Department, Phoenix. 7-25

California

ALAMEDA CO.—**Granite Construction Co.,** Box 900, Watsonville—$164,753 for bridges, culverts and roadway, Hopyard Rd., Pleasanton—by County Commission, Oakland. 7-25

ALAMEDA CO.—**Lew Jones Construction Co.,** 965 Terra Bella Ave., San Jose—$156,215 for reinf. conc. and struct. steel overcrossing, Eastshore Freeway at 29th Ave., Oakland—by Division of Highways, Sacramento. 7-3

GLENN CO.—**H. Earl Parker, Inc.,** 12th & F Sts., Marysville—$121, 951 for 8.5 mi. grade and surf. and reinf. conc. slab span bridge across Willow Creek, betw. Willows and Athena—by Division of Highways, Sacramento. 7-28

HUMBOLDT CO.—**R. W. Byers,** Box 67, Redding—$150,000 for bridge across Grouse Creek and road work—by Pacific Gas & Electric Co., San Francisco. 7-11

MENDOCINO CO.—**J. H. Pomeroy & Son,** 333 Montgomery St., San Francisco—$459,532 for superstruct. for bridge across Noyo River, approx. 1 mi. south of Fort Bragg—by Division of Highways, Sacramento. 7-3

SAN MATEO CO.—**J. H. Pomeroy & Son,** 333 Montgomery St., San Francisco—$640,207 for superstruct. for two overhead crossings over So. Pacific main line and belt line tracks in South San Francisco—by Division of Highways, Sacramento. 7-3

TULARE CO.—**Trewhitt, Shields & Fisher,** 926 Parallel Ave., Fresno—$123,296 for reinf. conc. slab bridge across Tule River, approx. 3.5 mi. west of Porterville—by Division of Highways, Sacramento. 7-28

New Mexico

CATRON CO.—**Bowen & McLaughlin,** Box 4037, Phoenix, Ariz.—$184,820 for 11 mi. grade, drain structs., surf., seal coat and 5 conc. box culverts on U. S. Hwy. 60, betw. Quemado and Pie Town—by State Highway Department, Santa Fe. 7-18

McKINLEY CO.—**Bowen & McLaughlin,** Box 4037, Phoenix, Ariz.—$253,159 for 5.9 mi. grade, drain, base, surf. and one conc. bridge on State Hwy. 32, betw. Gallup and Zuni—by State Highway Department, Santa Fe. 7-18

Texas

BEXAR CO.—**Dean Word Co.,** Box 330, New Braunfels—$226,048 for two bridges over Salado and Rosillo Creeks—by State Highway Department, Austin. 7-16

STEPHENS CO. — **Harry Newton,** Graham — $158,262 for bridge on U. S. Hwy. 180—by State Highway Department, Austin. 7-1

TAYLOR CO.—**Diamond Engineering Co.,** Box 4037, Dallas—$192,693 to widen bridges and resurf. approaches, Sweetwater to Co. line—by State Highway Department, Austin. 7-1

Washington

PIERCE CO.—**Manson Construction & Engineering Co.,** 821 Alaskan Way, Seattle—$1,049,273 for three railroad and two hwy. bridges over Puyallup River, Tacoma—by Corps of Engineers, Seattle. 7-3

STEVENS CO.—**Midland Structural Steel Co.,** 1300 S. 54th Ave., Cicero, Ill.—$518,500 for steel superstruct. for Columbia River bridge at Northport — by Department of Highways, Olympia. 7-28

Airport . . .

California

ORANGE CO.—**Cox Bros. Construction Co.,** Box 36, Stanton—$248,400 to repair and seal coat runways and taxiways, etc., Naval Air Station, Los Alamitos—by Bureau of Yards & Docks, Washington, D. C. 7-11

SAN MATEO CO.—**Charles L. Harney,** 575 Berry St., San Francisco—$987,108 for drainage and paving at San Francisco Airport—by City and County Public Utilities Commission, San Francisco. 7-18

Water Supply . . .

California

SAN DIEGO CO.—**American Pipe & Construction Co.,** 4635 Firestone Blvd., South Gate—$1,074,973 for La Mesa-Sweetwater Extension of San Jacinto-San Vicente Aqueduct — by County Water Authority, San Diego. 7-11

Utah

SALT LAKE CO.—**United Concrete Pipe Corp.,** Box 425, Baldwin Park, Calif. — $1,620,884 on Schedule 2, for pipeline, structs,. and wasteway, Salt Lake Aqueduct, Provo River Project—by Bureau of Reclamation, Provo. 7-2

Washington

KING CO.—**Valley Construction Co.,** 7708 Rainier Ave., Seattle —$1,011,530 to remove 42-in. pipe line from August St. north to Beacon Hill Reservoir and replace it with 66-in. welded steel pipe, Seattle—by Board of Public Works, Seattle. 7-18

Sewerage . . .

California

ALAMEDA CO.—**Johnson-Western Co.,** Box 416, Alameda—$73,445 for conc. or gunite-lined ditch and appurtenances, betw. San Leandro Creek and Edes Ave., Oakland—by City Council, Oakland. 7-22

LOS ANGELES CO.—**P. & J. Artukovich,** 13305 S. San Pedro St., Los Angeles—$227,442 for sections 2, 3, 4 and 5, of Arcadia-Sierra Madre trunk sewer—by County Sanitation District No. 15, Los Angeles. 7-18

LOS ANGELES CO.—**Papac & Artukovich,** 604 N. Montebello Blvd., Montebello—$119,907 for 5.6 mi. sewer installation in 161st St., etc., Los Angeles—by County Commission, Los Angeles. 7-3

LOS ANGELES CO.—**Bob Bosnyak,** 3014 W. Northern Ave., Los Angeles—$130,038 to install 7.1 mi. sewer lines in Elm Ave., Los Angeles—by City Council, Los Angeles. 7-11

LOS ANGELES CO.—**Steve P. Rados,** 2975 San Fernando Rd., Los Angeles—$268,967 for Unit 1, Section 4, of joint outfall "B" trunk sewer—by County Sanitation District No. 2, Los Angeles. 7-18

SAN DIEGO CO.—**M. H. Golden Construction Co.,** 3485 Noell St., San Diego—$133,300 for Switzer Canyon storm drain extension across municipal tidelands, San Diego—by City Council, San Diego. 7-11

SAN JOAQUIN CO. — **Hoagland-Findlay Engineering Co.,** 3254 Cherry Ave., Long Beach—$192,970 for sewage treatment

plant complete with connections to existing plant, Tracy—by City Council, Tracy. 7-17

Texas

TARRANT CO.—**Mid-West Contracting Co.**, 403 S. Haskell St., Dallas—$184,162 to install sanitary sewers, Fort Worth—by City Council, Fort Worth. 7-11

Washington

KING CO.—**G. S. Splaine**, Seattle—$222,338 to install sewers betw. 22nd and 34th Ave. W. and from W. Bertona St. to Commodore Way, Seattle—by City Council, Seattle. 7-3

Waterway . . .

California

LOS ANGELES CO. — **United Concrete Pipe Corp.** and **Ralph A. Bell**, Box 425, Baldwin Park—$217,615 for berthing facilities for inactive floating drydock, Terminal Island—by Bureau of Yards & Docks, Washington, D. C. 7-16

SAN FRANCISCO CO. — **Duncanson-Harrelson Co.**, DeYoung Bldg., San Francisco — $93,480 to reconstr. fender lines, Piers No. 30 and 32, San Francisco—by State Harbor Commission, San Francisco. 7-28

Dam . . .

Colorado

LARIMER CO. — **David G. Gordon** and **Bressi & Bevanda Constructors, Inc.**, 1900 31st St., Denver—$1,375,479 for Olympus dam, Colorado-Big Thompson project—by Bureau of Reclamation, Denver. 7-18

MESA CO. — **Schmidt Construction Co.**, Grand Junction — $225,000 estimated for comb. earth and rock fill Hogchute dam on Kannah Creek, approx. 35 mi. southeast of Grand Junction—by City Council, Grand Junction. 7-11

Texas

TOM GREEN CO. — **Hughes Construction Co.**, Weslaco—$573,732 for constr. of portion of embankment, San Angelo Dam and Reservoir, North Concho River, San Angelo—by Corps of Engineers, San Angelo. 7-1

Irrigation . . .

Oklahoma

JACKSON CO.—**Stigler Construction Co.**, **Stigler** and **Jack Durrett**, Keota—$349,416 for earthwk. and structs., Ozark laterals and Altus laterals and sublaterals—by Bureau of Reclamation, Denver, Colo. 7-23

Tunnel . . .

Colorado

LARIMER CO. — **Tunnel Constructors**, 1900 31st St., Denver—$1,838,352 for tunnels No. 2, 3, 4 and 5, Horsetooth feeder canal, Colorado-Big Thompson Project—by Bureau of Reclamation, Denver. 7-22

Power . . .

California

SHASTA CO.—**R. W. Byers,** Box 87, Redding—$450,000 for two transmission lines, betw. Corral Bottom and Redwood Creek and betw. Corral Bottom and Grouse Creek—by Pacific Gas & Electric Co., San Francisco. 7-31

Building . . .

Arizona

NAVAJO CO. — **Womack Construction Co.,** 1712 S. Central Ave., Phoenix—$133,600 for gymnasium and classroom bldg., high school grounds, Winslow—by High School District No. 1, Winslow. 7-25

PIMA CO. — **M. M. Sundt Construction Co.,** 400 S. Park Ave., Tucson—$215,173 to convert hospital bldgs. to apartments, Davis-Monthan Field, Tucson—by Corps of Engineers, Los Angeles, Calif. 7-22

California

ALAMEDA CO. — **W. Vernon Bernard,** 5815 Leona St., Oakland — $175,000 for reinf. conc. and frame church bldg., Oakland—by Seventh Day Adventist Church, Oakland. 7-15

ALAMEDA CO.—**M. & K. Corp.,** Financial Center Bldg., San Francisco—$337,500 for reinf. conc. and brick meat packing plant on Jackson St., betw. 2nd and 3rd Sts., Oakland—by John Morrell & Co., Oakland. 7-11

ALAMEDA CO.—**Stolte, Inc.,** 8451 San Leandro St., Oakland — $464,000 to remodel 3-story bank bldg., 456 Broadway, Oakland—by Anglo California National Bank, San Francisco. 7-22

ALAMEDA CO.—**W. C. Tait Co.,** 461 Market St., San Francisco—$235,000 for conc. hospital bldg. addition, 405 Grand Ave., Oakland—by Oakland Osteopathic Hospital for Associated Physicians Group, Oakland. 7-3

CONTRA COSTA CO. — **Elmer J. Freethy,** 1422 Kearney St., El Cerrito — $475,000 for steel and conc., 2-story office bldg., 2100 Macdonald Ave. block, Richmond — Pacific Telephone & Telegraph Co., San Francisco. 7-30

CONTRA COSTA CO.—**M. & K. Corp.,** Financial Center Bldg., San Francisco—$348,348 for apartment bldgs. at Camp Stoneman, near Pittsburg—by Corps of Engineers, San Francisco. 7-15

CONTRA COSTA CO.—**Moore & Roberts,** 693 Mission St., San Francisco—$300,000 for reinf. conc., 1,400 crypt mausoleum addition, St. Joseph's Cemetery, San Pablo—by Roman Catholic Archbishop, San Francisco. 7-29

FRESNO CO.—**Harris Construction Co.,** Box 109, Fresno—$600,000 for 33 duplex dwellings in section bounded by Shields, Moroa and Wishon Aves., and Fountain Way, Fresno—by Valley Enterprises, Inc., Fresno. 7-25

LOS ANGELES CO. — **V. O. Brunzell Co.,** Box 432, Gardena—$175,950 for reinf. conc., one-story men's ward, Norwalk State Hospital, Norwalk—by Division of Architecture, Sacramento. 7-7

LOS ANGELES CO.—**E. A. Kaiser Co.,** 8825 W. Olympic Blvd., Beverly Hills—$191,687 for 2-story reinf. conc. boys gymnasium bldg. at high school, Burbank—by Unified School District, Burbank. 7-25

LOS ANGELES CO.—**McNeil Construction Co.,** 5860 Avalon Blvd., Los Angeles—$1,000,000 for 11-story office bldg., Wilshire Blvd. and Burlington Ave., Los Angeles—by Guarantee Insurance Co., Los Angeles. 7-22

LOS ANGELES CO. — **Wm. Simpson Construction Co.,** 816 W. 5th St., Los Angeles—$500,000 for addition to telephone bldg., 600 E. Green St., Pasadena—by Pacific Telephone & Telegraph Co., Los Angeles. 7-2

LOS ANGELES CO.—**West & Douglas,** 2966 Allesandro St., Los Angeles—$157,887 for one-story, frame and stucco elementary school bldgs., Bella Vista area of Montebello—by Unified School District, Montebello. 7-25

SACRAMENTO CO.—**Daley Bros.,** Belmont — $250,000 for store bldg. at 3008 Broadway, Sacramento — by Western States Life Insurance Co., Sacramento. 7-31

SAN DIEGO CO.—**M. S. Barnhart,** 745 15th Ave., San Diego—$200,000 for first unit of Rockne Academy of Technical Arts on 80 acre site at end of Madison Ave., El Cajon, San Diego—by Roman Catholic Archbishop, San Diego. 7-25

SAN DIEGO CO.—**Haddock Engineers, Ltd.,** Box 479, Oceanside — $130,500 for alterations to officers' quarters, Camp Pendleton—by Navy Public Works Department, San Diego. 7-22

SAN FRANCISCO CO.—**Leo Epp**, 317 Broderick St., San Francisco — $297,577 for 9 apartment bldgs. and utilities at Fort Mason, San Francisco—by Corps of Engineers, San Francisco. 7-10

SAN FRANCISCO CO.—**M. & K. Corp.**, Financial Center Bldg., San Francisco—$200,000 to alter office bldg., southeast corner of Steiner and Pine Sts., San Francisco—by Pacific Telephone & Telegraph Co., San Francisco. 7-30

SAN FRANCISCO CO.—**Theo G. Meyer**, Quint and Custer Sts., San Francisco — $555,904 for 3-story, reinf. conc. lithographing plant, Harrison and Vassar Sts., San Francisco — by A. Carlisle & Co., San Francisco. 7-25

SAN JOAQUIN CO.—**Herbert Mayson**, 9315 Hooper Ave., Los Angeles—$434,266 for reinf. conc. and steel shop bldgs. No. 2, 3 and 5, college grounds N. Pacific Ave., Stockton — by Stockton Unified School District, Stockton. 7-29

SISKIYOU CO.—**B. & R. Construction Co.**, 268 Market St., San Francisco—$131,000 for elementary school bldg. addition, Mt. Shasta—by Elementary School District, Mt. Shasta. 7-22

SONOMA CO.—**M. & K. Corp.**, Financial Center Bldg., San Francisco—$499,321 for barracks, mess hall and utilities at Two Rocks Station—by Corps of Engineers, San Francisco. 7-15

YOLO CO.—**Stolte, Inc.**, 8451 San Leandro, Oakland—$100,000 for reinf. conc. farm implement salesroom bldg. and repair shop, Knights Landing Hwy., Woodland—by Ray D. Henderson Co., Woodland. 7-17

Idaho

NEZ PERCE CO.—**Brennan & Cahoon**, Box 507, Pocatello—$469,019 general contract for 3 one-story school bldgs., Lewiston—by City School Board, Lewiston. 7-14

Montana

CASCADE CO.—**James Leck Co.**, 211 S. 11th St., Minneapolis, Minn.—$125,000 for conc. tile story and one-half bus depot bldg., First Ave. and Fourth St., Great Falls — by Northland Greyhound Lines, Inc., Great Falls. 7-17

Nevada

WASHOE CO. — **John F. Kuenzli**, 380 Sage St., Reno—$154,600 for boiler house, heating plant and distribution system at State Hospital for Mental Diseases, near Reno—by State Planning Board, Carson City. 7-18

North Dakota

WARD CO.—**McGough Bros.**, 1954 University Ave., St. Paul, Minn.—$3,395,000 for reinf. conc. and brick hospital bldg., Minot — by Veterans' Administration, Washington, D. C. 7-7

Oregon

LANE CO.—**Waale-Camplan Co.**, 2100 S.E. Jefferson St., Portland—$172,371 for 11 apartment bldgs. at Lookout Point dam housing area near Lowell—by Corps of Engineers, Portland. 7-2

MULTNOMAH CO.—**E. S. Balgeman**, 2811 N.E. Holman, Portland—$100,000 for school bldg., Holman St., Portland—by Board of Directors, Concordia Academy, Portland. 7-17

WASHINGTON CO. — **Hord & Stuart,** Builders Exchange Bldg., Portland—$209,522 for 2-story, reinf. conc. and stucco school bldg. addition at Beaverton — by School District No. 10, Beaverton. 7-11

Texas

BEXAR CO.—**Robert E. McKee,** Box 2848, San Antonio—$520,832 for shops and service bldg., San Antonio—by San Antonio Transite Co., San Antonio. 7-15

DALLAS CO.—**H. L. Hill,** Dallas—$875,000 for 250 one-story dwellings on Lemon Ave., Dallas — by Community Builders, Inc., Dallas. 7-15

EL PASO CO.—**Ponsford Bros.,** 914 E. Missouri St., El Paso—$519,137 for permanent shell housing at Fort Bliss and Wm. Beaumont General Hospital — by Corps of Engineers, Albuquerque. 7-15

POTTER CO.—**Walter W. Wirtz,** Amarillo—$134,837 for naval reserve armory, Amarillo—by Bureau of Yards & Docks, Washington, D. C. 7-17

TARRANT CO.—**McCann Construction Co.,** E. Lancaster at Riverside Dr., Fort Worth—$752,702 for housing program at Tarrant Field, Fort Worth—by Corps of Engineers, Fort Worth. 7-1

Washington

JEFFERSON CO. — **Hendrickson Construction Co.,** Lloyd Bldg., Seattle—$207,200 for one-story, frame and brick veneer school bldg., Chimacum — by County School District No. 49, Chimacum. 7-10

KING CO.—**Lew Hykes Bldg. Co., Inc.,** 6960 Empire Way, Seattle—$1,000,000 for brick veneer and siding exteriors, 2-story, 110 units apartment bldgs., 8 block site bounded by E. 77th St., 39th Ave., NE 75th St. and NE 37th Ave., Seattle—by self. 7-10

KITSAP CO. — **Dan Solie,** Bremerton — $320,000 to modernize Elks temple, Fifth St. and Pacific Ave., Bremerton—by Trustees of Elks Lodge, Bremerton. 7-18

PIERCE CO.—**J. H. Olson,** Tacoma—$1,000,000 for four ward bldgs., Rainier State School, Buckley—by Department of Public Institutions, Olympia. 7-31

YAKIMA CO.—**Wm. Yeaman,** Yakima—$100,000 for one-story, frame warehouse and feed mill at Granger—by Centennial Flouring Mills Co., Seattle. 7-22

Wyoming

LARAMIE CO.—**Jake Weber,** Cheyenne—$349,197 for new central wing of hospital to extend south from the present entrance to 23rd St., Cheyenne—by Board of Trustees, Laramie County Memorial Hospital, Cheyenne. 7-1

Territories

ALASKA — **Warrack Construction Co.,** Securities Bldg., Seattle, Wash.—$170,500 for one-story frame bldg. with reinf. conc. foundations, 16-classroom school bldg., Anchorage—by Independent School District, Anchorage. 7-10

Canada

BRITISH COLUMBIA — **Bennett & White Construction Co., Ltd.,** 660 Howe St., Vancouver—$210,000 for 50-bed general hospital at Fernie—by Board of Directors, General Hospital, Fernie. 7-18

Miscellaneous . . .

California

LOS ANGELES CO. — **OFCCO Construction Co., Inc.,** 2650 Cherry Ave., Long Beach—$650,350 to unload, transport and erect three steam generating units complete and ready for operation at Wilmington—by Board of Commissioners, City Water and Power Department, Los Angeles. 7-21

LOS ANGELES CO.—**J. A. Thompson & Son,** Box 518, Inglewood—$279,931 to grade, pave, sidewalks, traffic strips, curbs, gutters, etc. on Van Nuys Blvd., Los Angeles—by City Council, Los Angeles. 7-11

NEVADA CO.—**A. D. Schader Co.** 144 Spear St. San Francisco—will constr. aprox. 7 mi. of railroad track from Truckee to Hobart Mills—by Fibreboard Products, Inc., San Francisco. 7-25

RIVERSIDE CO.—**Shea Co.,** 617 S. Olive St., Los Angeles, **General Construction Co.,** 3840 Iowa St., Seattle, Wash., and **Pacific Bridge Co.,** 333 Kearny St., San Francisco—$2,300,000 for 52 mi. of standard gauge railroad from Eagle Mt. iron mine to So. Pacific main line near Salton Sea—by Kaiser Engineers, Inc., Oakland. 7-15

SAN MATEO CO. — **Johnson-Western Co.,** Box 416, Alameda—$185,000 for first 1,000,000 cu. yd. and $.17 for each additional cu. yd. dredging and filling for salt beds adjacent to Port of Redwood City—by Leslie Salt Co., Newark. 7-11

TRADE WINDS

News of Men Who Sell to the Construction West

CALIFORNIA

Announcement of the appointment of **Harry A. Wright** as vice-president and general sales manager of PACIFIC RUBBER COMPANY, Oakland, was made recently by the board of directors. Wright, who left his post as domestic manager of tire sales with the Texas Company to assume his new duties, has been with the Texas Company for 13 years.

☆ ☆ ☆

Immediate reductions up to 14% in the price of its equipment was announced recently by the ESSICK MANUFACTURING CO., Los Angeles, largest manufacturer west of the Mississippi of tilting concrete mixers, plaster and mortar mixers, hoists, portable road rollers, and other items. The company's reduction comes at a time when business trends in the west have indicated a sharp drop in construction activity due to rising prices of building materials.

VANCE CRAWFORD, design engineer for the Industrial Division of the Apparatus Dept., General Electric Co., explains the new G-E Turbidimeter to GEORGE W. PRACY (center), Superintendent of Distribution of the San Francisco Water Dept., and NELSON A. ECKART (right), General Manager and Superintendent of the San Francisco Water Dept., when they visited the General Electric exhibit during the Convention of the American Waterworks Association in San Francisco.

The improved General Electric Turbidimeter, shown in San Francisco for the first time, is a device to electrically indicate the turbidity of water. It continuously records the cloudiness and admixure of air, algae, lime, solids, etc., in water —doing automatically that which is now being done by a staff of trained chemists and technicians.

☆ ☆ ☆

Two changes in the Pacific Coast Division of PITTSBURGH - DES MOINES STEEL Co., with headquarters at Santa Clara, were revealed recently with the announcement that **C. A. Fegtly** is the new manager and **F. W. De Klotz** sales manager for the division. Fegtly was chief bridge construction engineer for the Des Moines division of the company before the war, while De Klotz has served in the engineering design and cost department.

☆ ☆ ☆

Joseph B. Cary, vice-president and director of FOOD MACHINERY CORPORATION, San Jose, was elected executive vice-president of the corporation at a June board of directors meeting. **Ernest Hart**, formerly vice-president and sales manager of the Niagara Chemical Division, was made manager of the Niagara plant, and elected a vice-president of Food Machinery Corporation.

☆ ☆ ☆

After forty-four years of service with the UNITED STATES STEEL CORP., **A. B. "Gus" Nauert**, assistant division sales manager of the Southern Division of COLUMBIA STEEL CO., retired recently. Nauert started with the American Steel and Wire Co. in San Francisco as a clerk in 1903, later becoming a salesman for the United States Steel Products Co. In 1930 he transferred to the sales department of Columbia Steel.

☆ ☆ ☆

New and enlarged Eastern offices located at 30 Church St., New York City, have been acquired by the WESTERN

MACHINERY CO., according to **H. N. How,** president of the company. The new location will serve as Eastern headquarters for both the company and its division, the WESTERN-KNAPP ENGINEERING CO. The new offices are staffed with sales, engineering and design personnel. **Herman J. Daniels** is Eastern manager in charge of operations for the Western Machinery Co., while **H. F. Lynn** is manager of the Western-Knapp Engineering Co. Home offices are located at 760 Folsom St., San Francisco 7, Calif.

☆ ☆ ☆

A change in the corporate structure of PLANT RUBBER AND ASBESTOS WORKS, San Francisco, manufacturers of Plant "Precision Molded" 85% magnesia and High Temperature insulating materials, was announced recently. The company, which is wholly owned by the PARAFFINE COMPANIES, INC., will continue to operate without change of officers, policy, or organizational personnel, as the Plant Rubber and Asbestos Works, a Division of The Paraffine Companies, Inc.

☆ ☆ ☆

Harry L. Morrison, well-known Southwest businessman who has been connected with the AMERICAN MANGANESE STEEL PLANT, Los Angeles, for the past 22 years, is the recently appointed vice-president in charge of sales for the MURTAUGH ENGINEERING & EQUIPMENT CO., Glendale, according to announcement by **J. P. Murtaugh,** president. At the same time, appointment of **R. L. "Bob" Daniels** as company treasurer was made public. The company specializes in distribution of PMCo Shovel Dippers, Dragline Buckets, Clamshells, Pumps, and Haiss Loaders.

☆ ☆ ☆

The BASALT ROCK COMPANY, INC., Napa, Calif., is now manufacturing welded steel water well casing, including plain ends, collar ends and starter shoes. The Steel Products division of the concern is also manufacturing fusion welded steel pipe, asphalt dipped and wrapped pipe.

☆ ☆ ☆

T. Scott Clingan, formerly vice president in charge of steel plant operations for the BETHLEHEM PACIFIC COAST STEEL CORPORATION, died of a heart attack on July 28. Clingan, who retired as vice president January 1, was 72 years old. Including the early years of his career spent in Ohio steel mills, he had devoted 45 years of his life to the steel industry.

☆ ☆ ☆

Virgil E. Gray, general-manager of BAY CITIES EQUIPMENT INC., Oakland, Calif., recently succeeded **Stanley S. Moore** as company president, while **Al Mason, Jr.** was appointed secretary-treasurer in charge of sales promotion. Mason was formerly assistant manager of the Medford Branch of the Howard-Cooper Corp., International dealer for Oregon and western Washington. A $75,000 addition to the firm parts and service departments is being planned in the near future.

☆ ☆ ☆

Retirement of **Robert W. Martindale,** Pacific Coast sales manager, **William G.**

Savage, Western sales manager, and **Thomas Simons,** Southern sales manager, was announced recently by the UNITED STATES PIPE AND FOUNDRY COMPANY. **A. Raymond Hausmann,** formerly assistant Pacific Coast sales manager, is new sales manager for that area, with **P. King Farrington** as his assistant. **Carl N. Brown** becomes Western sales manager with **J. Leslie Hart** as assistant Western sales manager. **Thomas W. McCreery,** formerly assistant Southern sales manager, replaces Simons as district sales manager, with **Robert C. Lemert** as his assistant.

☆ ☆ ☆

Appointment of **A. E. Young** as district manager of the West coast territory, including California, was announced recently by **N. F. Adamson,** vice president in charge of sales and engineering for the TWIN DISC CLUTCH COMPANY, Racine, Wisc. Young had previously been in charge of the company's sales activity of the Northwest territory as handled through the company's branch offices in Seattle. **P. G. Tyrrell** was announced as assistant district manager in the territory served by the new Los Angeles office, while **P. W. Wahler** is assistant district manager in the territory served by the Seattle factory branch.

☆ ☆ ☆

D. B. Karlskind is new Pacific coast sales manager of the UNITED STATES RUBBER COMPANY's wire and cable department, according to **Howard H. Weber,** sales manager of the department. Karlskind, who has been with the company since 1945, was previously with RCA in an engineering capacity. His new headquarters will be at 300 Second St., San Francisco.

☆ ☆ ☆

CONSOLIDATED METALS CORPORATION, Los Angeles, was appointed distributor for Kaiser Corrugated Aluminum in Southern California and the adjacent area. **Jules Tanzman** is president of the company with **David C. Glass** treasurer and **Melvin D. Murray,** secretary. Kaiser aluminum is produced on the west coast.

☆ ☆ ☆

Appointment of **Ralph B. Pahlmeyer** as merchandising representative for Northern California for the PACIFIC RUBBER COMPANY, Oakland, Calif. was announced by **Harry A. Wright,** vice president and general sales manager. A veteran of the rubber industry, Pahlmeyer was associated with the B. F. Goodrich organization for eighteen years, and was manager of their Oakland Branch for the past eight years.

☆ ☆ ☆

PACIFIC NORTHWEST

SERVICE EQUIPMENT CO., 300 Aurora Ave., Seattle, has been appointed as distributor in the state of Washington for the UNIT CRANE & SHOVEL CO. of Milwaukee, Wis. Service Equipment Co. is headed by **William Martin.**

☆ ☆ ☆

Election of **Byrle H. Hunter,** Eugene, Ore., store manager, and **George J. Altstadt,** Portland store manager, to the positions of vice-presidents of INTERSTATE TRACTOR & EQUIPMENT CO., was recently announced by the board of directors. There will be no change in their duties, although, as officers of the company they will be in a position to influence general matters of policy. Other Inter-

state officers are **Collis Johnson,** president; **Norton Cowden,** vice-president; **Jesse Gard,** treasurer and assistant secretary, and **Carl Davidson,** secretary and assistant treasurer.

☆ ☆ ☆

BOW LAKE EQUIPMENT CO., INC., has been appointed as distributor in western Washington for Rex construction machinery manufactured by the CHAIN BELT CO. of Milwaukee, Wis. Bow Lake Equipment Co. is a newly organized firm which has just opened its headquarters near the Seattle-Tacoma airport on U. S. Highway 99 midway between Seattle and Tacoma.

☆ ☆ ☆

Paul Rhodes has assumed the duties of purchasing agent of the HYSTER COMPANY, manufacturers of lift and straddle trucks and tractor equipment, and will be located at their main office in Portland, Ore. Rhodes has been with the company since 1945, working in coordinating and expediting of materials in the Chicago office of Hyster. Previous to that time he worked in the Chicago office of the U. S. Engineers during the war.

☆ ☆ ☆

CAL.-ORE. MACHINERY CO., 944 S. Central Ave., Medford, Oregon, has been appointed to a Davey dealership, according to a recent announcement of the Davey Compressor Co., Kent, Ohio. The new dealer's territory includes the counties of Coos, Curry, Douglas, Harney, Jackson, Josephine, Klamath and Lake, in which it will handle the complete line of Davey portable compressors.

☆ ☆ ☆

STAR MACHINERY CO. of Seattle has been appointed as exclusive distributor for WORTHINGTON-RANSOME construction equipment in the state of Washington. The Worthington line includes compressors, rock drills and other air tools, and centrifugal pumps. The Ransome line includes pavers, concrete mixers and grouting equipment. **Jack Hatten** is manager of the construction equipment department for Star Machinery.

☆ ☆ ☆

New U. S. TIRE district manager of the Spokane, Wash., sales district, is **H. S. Gannaway,** it was announced by **W. D. Baldwin,** sales manager of the U. S. RUBBER CO.'s U. S. Tire division. He succeeds **L. E. Chalenor,** who is retiring after 25 years with the company.

☆ ☆ ☆

Truck and service departments of the INTERNATIONAL HARVESTER COMPANY's Seattle branch have instituted a night service and will remain open until 1 a. m. **J. H. Baker** is manager of the Seattle branch of International.

☆ ☆ ☆

A new type of brick mix cement is now available at the Seattle plant of PERMANENTE CEMENT CO. The mix, developed at Permanente's California laboratories, is expected to be used primarily in construction of industrial plants in the Northwest. It is being manufactured in the Diamond cement plant, recently leased by Permanente in Seattle.

INTERSTATE TRACTOR & EQUIPMENT CO., Portland, has awarded a contract to J. A. Schrag for construction of a new office at 2855 N.W. Front Ave.

☆ ☆ ☆

Personnel changes in the district offices of SKF INDUSTRIES, INC., as announced by **R. R. Zisette,** general sales manager of the ball and roller bearing firm, include appointment of **R. M. Parrish** to the sales staff of the Portland, Ore., district office.

☆ ☆ ☆

INTERMOUNTAIN

F. E. Reishus, formerly INTERNATIONAL HARVESTER CO. branch manager at Sioux Falls, S. Dak., has been transferred to Lincoln, Neb., to succeed **J. L. Henn,** who has retired. **E. R. Zimmerman,** formerly assistant manager at Sioux Falls, has been promoted to branch manager at that point.

☆ ☆ ☆

On July 1 the MITCHELL-KENNEDY MACHINERY CO., INC., took over the entire assets and liabilities of the MINE & SMELTER EQUIPMENT CO., Phoenix, Ariz. The incorporators of the new company are, **D. K. Mitchell,** who will be president and **Thomas W. Kennedy,** who will be vice-president. Mitchell has been sole owner of the former company since Jan. 1, 1947. The new firm will be exclusive state distributors for NOVO ENGINE CO., SAYLOR-BEALL MFG. CO., ACME WIRE & IRON WORKS, ILLINOIS POWDER MFG. CO., WESTERN PUMP CO. and GRUENDLER CRUSHER & PULVERIZER CO., and will also represent other companies on a nonexclusive basis.

☆ ☆ ☆

The TAPECOAT COMPANY, Evanston, Ill., recently announced appointment of **James E. Mavor** and **Gene McIntyre** as representatives for Tapecoat pipe joint protection material. Mavor will handle distribution of Tapecoat in the mid-continent field through his own representative, **F. P. Kelly,** covering Louisiana and East Texas, and **Bob Lingle** at Corpus Christi. McIntyre will cover California, Washington, Oregon, Nevada and Arizona.

☆ ☆ ☆

Lorel A. Stapley, Secty.-Treas. and Sales Manager of the O. S. STAPLEY CO., Phoenix, Ariz., died on July 20 in Phoenix and was buried on July 23 at Mesa, Ariz. He was 48 years of age and had been associated with the company since he was sixteen years old. O. S. Stapley Co. is now the largest hardware, farm implement and industrial equipment firm in Arizona.

☆ ☆ ☆

AMONG THE MANUFACTURERS

J. M. Davies, member of the CATERPILLAR TRACTOR CO. firm since 1925, was recently appointed associate director of research in administrative charge of the department, **C. G. A. Rosen,** director of research for the company announced recently. At the same time appointment of **R. C. Williams** as assistant director of research in charge of tractor and earthmoving projects was also made public. The present assistant directors of research, **L. A. Blanc, W. L. H. Doyle, C. R. Maxwell** and **C. R. Schad** have been assigned additional duties in step with the expanding post-war necessity for advanced and efficient machinery.

☆ ☆ ☆

New vice-president in charge of sales of the GALION IRON WORKS & MFG. CO., Galion, O., is **C. F. Boyd,** who was elected at the company's annual meeting. Other officers elected at that time were: **R. W. Gillispie,** chairman of the board; **R. E. Boyd,** president; **J. L. Connors,** vice-president and general manager; **J. S. Boyd,** vice-president; **A. S. Ritzhaupt,** secretary; **G. A. Ulmer,** assistant secretary; **I. S. Horowitz,** treasurer.

☆ ☆ ☆

James E. Poole, a five-year veteran in highway specialty sales at KEYSTONE ASPHALT PRODUCTS CO., a division of the AMERICAN-MARIETTA CO., recently moved up to the position of sales manager in the company's Paving Products Division. He continues as a close assistant to **T. R. Johnson,** general manager, in all the company's sales operations. New appointments to the rapidly expanding company include those of **Bryant W. Pocock, William C. Allen** and **Merle L. Cripe.** Pocock, long prominent as a chemist and author in metallurgical and products finishing fields, has been named to the new post

of research director, while Allen and Cripe have been appointed as service specialists for the company.

☆ ☆ ☆

Three new executive appointments announced recently by **Harry B. Higgins,** president of PITTSBURGH PLATE GLASS COMPANY, include those of **Paul R. Croll,** who has been named assistant to the vice-president in charge of the paint division; **Dr. William H. Lycan,** formerly director of paint division research with headquarters at Milwaukee, who has been appointed executive director of research in the company's Pittsburgh, Pa., headquarters; and **Dr. Howard L. Gerhart,** staff chemist at the Milwaukee research laboratory since 1937, who has been appointed director of research for the paint division in Milwaukee.

☆ ☆ ☆

In their annual report for 1946, the JOHNS-MANSVILLE CORP. listed consolidated net earnings for the year as $5,836,613, or $6.03 per share of common stock, as compared with $5,096,462 or $5.72 per share in 1945. The 1946 earnings were equivalent to 6.4 cents in the sales dollar. Dividends of $3.50 per share were paid on the common stock in 1946 as compared with $3.25 in 1945. **Lewis H. Brown,** chairman of the board, declared that sales volume set a new record for a full peacetime year, sales being $92,049,044, as compared with $85,993,676 in 1945. A new plan of organization for the company was approved by the board of directors in September "to provide unlimited opportunity for growth without the need for further basic changes and to offer greater profit opportunities in the future." Brown was appointed chairman of the board and chief executive officer. **R. W. Lea** was appointed president.

☆ ☆ ☆

Robert A. Olen, general manager of the FOUR WHEEL DRIVE AUTO COMPANY, Clintonville, Wis., was elected a member of the board of directors, to fill the vacancy caused by the death of **Charles Hagen.** Olen, who has been with the company since 1924, was named general manager by the board of directors in September, 1944. During the war he served on the Ordnance Integration Committee for heavy duty trucks, and aided in the planning of truck production programs.

☆ ☆ ☆

New executive vice-presidents of INTERNATIONAL HARVESTER COMPANY, appointed recently by the board of directors, are **Giles C. Hoyt** and **General Levin H. Campbell, Jr.,** it was announced by **John L. McCaffrey,** company president. Other changes in International's top management, announced at the same time, include: **William E. Worth,** formerly executive vice-president, who has retired after 27 years of service with the company; **Robert P. Messenger,** formerly vice-president in charge of the farm implement division, who becomes vice-president in charge of foreign operations, succeeding Hoyt; **Ralph C. Archer,** who moves up from vice-president in charge of the farm tractor division to vice-president in charge of the farm implement division; and **Michael J. Graham,** formerly assistant to the vice-president in charge of manufacturing, who has been appointed general manager of the farm tractor division and succeeds Archer as executive head of that division.

☆ ☆ ☆

Robert P. Nichols, who until recently has been sales supervisor in the export division of R. G. LeTOURNEAU, INC., has been named assistant domestic sales manager for the company. In his new capacity he will assist **S. D. Means,** LeTourneau's domestic sales manager.

☆ ☆ ☆

Howard Kenyon, formerly advertising manager of LAPLANT-CHOATE MANUFACTURING CO., INC., Cedar Rapids, Iowa, has joined the ANDREWS AGENCY of Milwaukee, Wis., as vice-president and account executive. In addition, he is a vice-president of the National Industrial Advertisers Association, past president of the Cincinnati Chapter, and treasurer of the Construction Equipment Advertisers group.

☆ ☆ ☆

William A. Roberts and **William C. Johnson** have been named executive vice-presidents, respectively, of the tractor and general machinery divisions of the ALLIS-CHALMERS MANUFACTURING CO., it was announced by **Walter Geist,** president. At the same time announcement was made of the appointment of **Marshal L. Noel** as vice-president and general sales

manager for the tractor division and **J. L. Singleton** as vice-president and director of sales for the general machinery division.

☆ ☆ ☆

Harrison J. Rogers, sales manager for ROGERS BROTHERS CORPORATION, Albion, Pa., has been elected to the additional posts of vice-president and general manager, according to announcement by **Louis Rogers,** company president. Other important appointments include that of **Leo Brennan** as controller and assistant secretary and **Paul Sheehan** as purchasing agent.

☆ ☆ ☆

James S. Benson, recently released from the Corps of Engineers, was recently elected to the board of directors of THE CHICAGO CONSTRUCTION EQUIPMENT CO., Chicago, Ill. Before serving with the army, where he was a Lt. Colonel, Benson was construction engineer for the War Department. Prior to that time, he had many years of experience in the construction of roads and streets, bridges and buildings, as well as several years in heavy construction business.

☆ ☆ ☆

Appointment of DRAVO - DOYLE COMPANY, Pittsburgh, as national distributors of the HERCULES Turn-O-Matic Cement Box has been announced by **Hursel Ekin,** sales manager of HERCULES STEEL PRODUCTS CORPORATION, Galion, O. The cement box is one of several Hercules products for the construction industry and is designed to deliver cement to the job in perfect condition.

☆ ☆ ☆

William T. Gossett, vice-president and general counsel of the FORD MOTOR COMPANY, was named a director of the company, succeeding **Herman L. Moekle** who resigned March 31. No director was elected to succeed the late **Henry Ford.** The directorate is composed of **Henry Ford II, Benson Ford, E. R. Breech, M. L. Bricker, J. R. Davis, B. J. Craig,** and Gossett.

☆ ☆ ☆

Announcement of the opening of a new Chicago sales office was made recently by **H. N. How,** president of the WESTERN MACHINERY COMPANY. **Robert Bailey** will be field engineer in charge of the new branch, opened in response to increased midwestern demand for metallurgical and industrial products of the company.

☆ ☆ ☆

J. J. Mellon, who has been associated with the ALLEN-BRADLEY CO., Milwaukee, Wis., for the past two years, has been appointed chief engineer for the company. He has been active in the development of industrial electric control equipment since 1923, and has held important engineering and executive positions with Westinghouse Electric Corp., and Clark Controller Co. He will take over duties formerly handled by **Gustav O. Wilms,** who has gone into semi-retirement.

☆ ☆ ☆

Fred H. Jusenius, for the past year general sales manager of DIAMOND IRON WORKS, INC., Minneapolis, Minn., was recently appointed director of the company and vice-president in charge of sales of both Diamond and the MAHR MANUFACTURING CO. division products. The Diamond Company manufactures rock and gravel crushing equipment, disintegraters for saw mills, pulp mills and packing houses, while the Mahr division specializes in industrial furnaces, heat-treating units and allied equipment.

☆ ☆ ☆

Robert C. Monnett, formerly North Central district representative for the GALION IRON WORKS & MFG. CO., Galion, O., is the newly appointed sales manager for the Eastern and Central divisions of the company. A graduate civil engineer, Monnett has been associated with the Ford Motor Co. and served with the Ohio Department of Highways in various engineering capacities before he joined Galion in 1945.

MONNETT

FINNEY

Promotion of **G. D. Finney** from assistant sales manager to sales manager of the GALION IRON WORKS & MFG. CO., Galion, O., Western and Southern divisions, was announced recently. Finney has been with the company since 1916, working first in the accounting department and later in the sales department. After service in the Army during World War I, Finney was appointed assistant branch manager at Kansas City. In 1939, after an absence of several years, he returned to Galion as assistant sales manager, which position he held until his recent promotion.

☆ ☆ ☆

Expansion of plant facilities to meet increased postwar demands for spherical roller bearings are being planned by SKF INDUSTRIES, INC. **William L. Batt,** company president, said production of this type of bearing will be increased eventually by 50 per cent as new facilities become available in the next year.

☆ ☆ ☆

John L. McCaffrey, president of the INTERNATIONAL HARVESTER CO., was elected a director of the SANTA FE RAILWAY at a recent board meeting. He has been a member of the board of directors of the International Harvester Co. since 1941 and president of the company since 1946.

A dividend of $1.50 per share was declared on Santa Fe common stock, payable September 2, 1947, to stockholders of record July 25, 1947, following the monthly meeting of the board of directors.

☆ ☆ ☆

Reginald Rockwell, general manager of the Paper Makers Chemical Department of HERCULES POWDER CO., Wilmington, Del., was elected a director of the company at the monthly meeting of the board of directors. Rockwell has been associated

with Hercules since 1922, when he joined the naval stores plant at Brunswick, Ga., as a draftsman. He became assistant general manager of the Paper Makers Chemical Department in 1944, and was appointed general manager of that division in 1946.

☆ ☆ ☆

The C. R. JAHN COMPANY, Chicago, Ill., manufacturers of heavy duty, low-bed trailers, recently announced opening of a new larger factory at Savanna, Ill. The new plant, located 135 miles west of Chicago, is

constructed of steel and cement and completely fireproof. It was designed exclusively for production-line methods of manufacturing heavy-duty trailers and increases production capacity 300 to 400 per cent. Executive and sales offices will be maintained at their present Chicago address.

☆ ☆ ☆

THE WARNER & SWASEY CO., Cleveland, O., were the recipients of one of the four Plaque Awards presented by the National Industrial Advertisers Association at its recent Milwaukee convention. The award for outstanding trade paper product advertising was awarded the company for its campaign on the Gradall, the versatile new earth-mover, which has been running in *Western Construction News*. Another plaque award was received by Warner & Swasey in the direct mail classification for its "Truth" booklet, reprinting W. & S. institutional ads which have been running in the business papers, featuring basic economic principles and problems.

☆ ☆ ☆

Henry M. Schmitt, O. B. Pyle, and **A. W. Roat** were all recently promoted to new posts with the BROWN INSTRUMENT CO., Philadelphia, Pa., according to recent announcement by **W. H. Steinkamp,** field sales manager for the company. Schmitt, who has been with the company for the past 22 years, has been named chemical industry manager of Brown, while Pyle, a company employee for the past 18 years, becomes his successor as industrial manager of the Philadelphia branch. Roat succeeds to the position of industrial manager of the St. Louis branch of the industrial division of Minneapolis-Honeywell Regulator Co., which was held in the past by **V. H. Hiermeier,** recently transferred to the Honeywell international division. At the same time Steinkamp announced that **I. K. Farley** has been placed in charge of the major petroleum accounts in the Philadelphia area and **Harry D. Ruch** will also work out of the industrial sales division at Philadelphia.

☆ ☆ ☆

Addition of **Ray W. Keeler,** prominent in the road machinery design field, to the engineering staff of the HUBER MANUFACTURING COMPANY, Marion, O., was announced recently. Prior to his recent appointment, Keeler was associated with the Galion company for 25 years in the design and development of road machinery.

☆ ☆ ☆

Brig. Gen. Hugh C. Minton, recently named production manager of the KOPPERS COMPANY, INC., has been appointed a vice-president of the company, it was announced by **Gen. Brehon Somervell,** president. Offices have been set up for him at company headquarters in Pittsburgh, Pa. The new vice-president and production manager directed the Army Service Forces production division during World War II. In that capacity he reported directly to General Somervell, who was commanding general of the Army Service Forces.

☆ ☆ ☆

L. C. Hart, who has been general sales manager of the JOHNS-MANVILLE CORPORATION's building products division and a vice-president of the company's sales corporation, has been advanced to a newly established executive office and appointed vice-president for relationships. **R. S. Hammond,** Atlanta district building products manager, has been named to Hart's former post and appointed a vice-president of Johns-Manville Sales Corporation.

☆ ☆ ☆

After 42 years of service with the GENERAL ELECTRIC CO., **T. A. Worcester,** assistant manager of the company's Central Station divisions, has retired, according to announcement by **D. M. Jones,** manager of the Central Station engineering divisions. At the same time, the appointments of **S. B. Crary** and **W. J. McLachlan** as assistant managers were announced.

☆ ☆ ☆

National officers elected to head the new FOREST PRODUCTS RESEARCH SOCIETY — designed to promote wood research, development, utilization and production — are headed by **Fred W. Gottschalk,** Chicago, Ill., as president. Gottschalk is technical director of the American

Lumber and Treating Co. Other officers elected at the organization meeting held at Madison, Wis., were: **George A. Garrett,** dean, school of Forestry, Yale University, vice-president; **William J. Baker,** technologist, U. S. Forest Products laboratory, secretary-treasurer; and **Bror L. Grondal,** professor of Forestry, University of Washington at Seattle, past organizational chairman.

Six regional board members, to serve terms ranging from one to three years, include **Edward G. Locke,** Portland, Ore., chemical engineer, U. S. Forest Service, for the Northwest; **James F. Hamilton,** technical service director, Perkins Glue Co., Philadelphia, Pa., Northeast; **Jack H. Tigelaar,** director of research and tests, Haskelite Mfg. Corp., Grand Rapids, Mich., North-Central; **Robert A. Cockrell,** associate professor of Forestry, University of California at Berkeley, Southwest; **Carl A. Rishell,** director of research, National Lumber Mfgrs. Assn., Washington, D. C., Southeast; and **Kenneth G. Chesley,** director of research, Crossett Lumber Co., Crossett, Ark., South-Central.

☆ ☆ ☆

Walter "Mike" Carlson is the newly appointed assistant sales manager of the Truck Body and Hoist Division of THE HEIL CO., Milwaukee, Wis. Carlson, who started with the company in 1940, served three years in the Army Air Forces, and returned to the body and hoist sales department in 1946.

☆ ☆ ☆

Jack C. Gay and **Vernon R. Teasley** recently were appointed to important positions in the HERCULES STEEL PRODUCTS CO., Galion, O. Gay will be sales engineer for the company, handling sales and distributor problems in territory east of the Mississippi, while Teasley has been named West Coast representative, according to the announcement made by **Hursel L. Ekin,** company sales manager.

☆ ☆ ☆

Preston M. Hall has accepted the position of technical executive of the RESISTANCE WELDER MANUFACTURERS' ASSOCIATION. Hall has long been actively interested in association work and in the advancement of the industry generally, and served as chief of the Resistance Welding Section, WPB, from 1942-1945.

☆ ☆ ☆

Annual sales of the CATERPILLAR TRACTOR CO. for 1946, although greater than in any pre-war year, were substantially lower than in 1945. Sales for 1946 amounted to $128,437,494, with a profit of $3.25 per share of common stock, as compared to 1945 sales of $230,599,818, with a profit of $3.46 per share. Strikes, reduction of the work week, and a two week plant shutdown for vacations were factors in the lowered production.

☆ ☆ ☆

C. L. Cummins, founder of the CUMMINS ENGINE COMPANY, Inc., Columbus, Ind., was chosen as chairman of the Board of Directors and **J. I. Miller** was elected president of the company, at the recent annual meeting of stockholders and directors. Cummins, who founded the firm in 1919 is recognized throughout industry as a pioneer in the development of the high-speed diesel engine. Miller came to the company in 1934 in the capacity of vice-president and general manager and has been with the company ever since, with the exception of a few years of military service during the last war.

Other officers elected by the board were: **V. E. McMullen,** executive vice-president; **R. E. Huthsteiner,** vice-president and general manager; **H. L. Knudsen,** vice-president of engineering; **Carl R. Fox,** vice-president and works manager; **D. C. Bottorff,** secretary and treasurer; **R. E. Lay,** assistant secretary and assistant treasurer, and **Edwin G. Crouch,** assistant secretary.

☆ ☆ ☆

V. L. Snow, well known in the construction equipment industry, has been named to head the newly organized Sales Development department of EUCLID ROAD MACHINERY CO., Cleveland, O. The new department will make field engineering studies for the improvement of current Euclid models and the development of new products. Snow has been with the company since 1935 and has been manager of industrial products since 1942 prior to his recent advancement.

☆ ☆ ☆

An expansion program which will add 33,000 sq. ft. of floor space to its factory facilities was recently announced by the Transmission division of the FULLER MANUFACTURING COMPANY, Kalamazoo, Mich. Productive use can be made of 17,000 sq. ft. of new space starting August 1, 1947, according to **E. L. Ludvigsen,** vice president and general manager. The remaining 16,000 sq. ft. will be available for production purposes the early part of next year.

☆ ☆ ☆

Four new district sales representatives have been appointed by the M-R-S MAN-

UFACTURING CO., Flora and Jackson, Miss., manufacturers of the Mississippi Wagon, according to announcement by **C. H. King,** vice-president in charge of sales. The new men are **Thomas Q. Hathorn, Hollis H. McBride, Charles Robert Morris,** and **Harper Hughes Spragins.** All four recently completed an intensive training course at the M-R-S factory and office and in the field, under the direction of **H. E. Brown,** sales manager, and are now in their assigned territories in various parts of the United States.

☆ ☆ ☆

New sales manager of the Alemite distribution division of STEWART-WARNER CORPORATION is **Gustave Treffeisen,** who succeeds **Charles I. Kraus.** Kraus becomes Alemite distributor at Minneapolis, Minn. Treiffeisen, an employee of Stewart-Warner for 26 years, has been assistant to Kraus for a year and a half.

☆ ☆ ☆

R. E. Morris has been named sales manager of the Pickup Dump division, NATIONAL TRUCK EQUIPMENT CO., Waukesha, Wisc., **E. O. Dale,** firm president has announced. Morris had been sales manager of the BAUGHMAN MANUFACTURING CO., spreader manufacturers at Jerseyville, Ill. In his new position he will direct the national sales and distribution of National Truck's new pickup dump unit.

☆ ☆ ☆

Robert C. Koehring is the newly appointed manager of the Portable Products division of the HERMAN NELSON CORPORATON, Moline, Ill., manufacturers of heating and ventilating products, it was announced by **Richard H. Nelson,** president. He will coordinate the activities of all departments of the company to further development and marketing of its line of Portable products.

☆ ☆ ☆

L. W. Coffin and **L. W. Whitton** are new vice presidents of the OTIS ELEVATOR COMPANY, according to announcement by **L. A. Petersen,** president. Coffin has been general service manager of the company for the past two years, while Whitton has been manager of operations since October. Both will continue in these posts.

☆ ☆ ☆

J. Paul Arens, 57, works manager for CECO STEEL PRODUCTS CORPORATION, Chicago, Ill., passed away on July 29. Well-known in the steel products field, Arens had been associated with the TRUSCON STEEL COMPANY for many years before coming to Ceco as works manager in 1937.

☆ ☆ ☆

Opening of offices and warehouses in Houston, Tex., was recently announced by the L. B. FOSTER COMPANY, distributor and warehouser of steel products. **Jerome B. Strauss** will manage the new branch, with offices in the Electric Building.

☆ ☆ ☆

J. V. McKee is new Southwestern district sales manager for the NEW HOLLAND MANUFACTURING CO., Mountville, Pa., it was announced by **Victor R. Despard,** general manager of the company. Before becoming affiliated with the firm, McKee was connected with the CLEVELAND PNEUMATIC TOOL COMPANY.

☆ ☆ ☆

W. I. Galliher is now executive sales manager of both the Columbia Chemical division of PITTSBURGH PLATE GLASS COMPANY and the SOUTHERN ALKALI CORPORATION, a Pittsburgh subsidiary, according to **E. T. Asplundh,** vice president in charge of the Columbia Chemical division. Associated with Columbia Chemical since 1931, Galliher, for twelve years was director of sales for the division's heavy industrial chemical products. He has served as Columbia's executive sales manager since January, 1943.

☆ ☆ ☆

C. A. Willson has been appointed research engineer of the Committee on Reinforced Concrete Research, AMERICAN IRON AND STEEL INSTITUTE, New York. He fills the vacancy created by the recent death of **Roy Zipprodt.** Willson served as structural engineer for the State Architect of Wisconsin for 19 years, followed by service with governmental agencies.

☆ ☆ ☆

At the annual meeting of the WATER AND SEWAGE WORKS MANUFACTURERS ASSOCIATION, INC., held at San Francisco, Calif., July 23, several member-companies were elected to the Board of Governors. These include: HYDRAULIC DEVELOPMENT CORPORATION; LINK-BELT COMPANY, NEPTUNE METER COMPANY, THE PERMUTIT COMPANY, and WALLACE & TIERNAN CO., INC. New officers of the association include: **Daniel J. Saunders,** president; **Willard F. Rockwell,**

vice president; **Edgar J. Buttenheim,** treasurer; and **Arthur T. Clark,** secretary-manager.

☆ ☆ ☆

J. G. Jordan, sales manager of SHELL OIL COMPANY, INC., was appointed vice president of marketing to succeed the retiring vice president, **L. G. McLaren,** it was announced yesterday by **S. Belither,** executive vice president and chairman of the board. Jordan will assume his new duties on September first, the date of McLaren's retirement. He has been with the Shell company since 1925, and has been sales manager of the San Francisco office since 1943.

☆ ☆ ☆

Carroll M. Baumgardner, executive vice president of the UNITED STATES RADIATOR CORPORATION, Detroit, Mich., announced today the appointment of **Hanley H. Smith** as branch manager for the corporation and its Pacific Steel Boiler division at Washington, D. C. Smith, formerly government representative for the corporation, succeeds **F. F. Burke,** resigned.

☆ ☆ ☆

Appointment of **Don E. Fricker** as assistant advertising manager was recently announced by THE HEIL CO., Milwaukee, Wisc. Fricker was in charge of advertising for the LE ROI COMPANY, Milwaukee, prior to his military service.

☆ ☆ ☆

C. Foster Brown, has been named general office manager for the CECO STEEL PRODUCTS CORPORATION, with headquarters at Ceco's general offices in Chicago, according to announcement by **Ned A. Ochiltree,** executive vice president. His duties will include the standardization of office methods and procedures in all company offices throughout the U. S.

☆ ☆ ☆

Three executive promotions in the Tire division of UNITED STATES RUBBER COMPANY were announced recently by **J. W. McGovern,** vice president and general manager of the division. They include: **Walter D. Baldwin,** appointed director of manufacturers' sales for the company's tire division with offices in Detroit; **J. Chester Ray,** who will succeed Baldwin as sales manager of the Tire division; and **Harry M. Ramsay,** who succeeds Ray as sales manager of the Fisk Tire division of the company.

☆ ☆ ☆

The Industrial department of DRAVO CORPORATION, Pittsburgh, Pa., recently opened a Chicago office to handle sales and service of Dravo Counterflo Direct Fired Heaters for commercial and industrial heating and Dravo Crane Cab Coolers for air conditioning crane cabs in steel mills, foundries and chemical plants. The office covers northern Illinois and the industrial districts of northwest Indiana. **T. W. Eshback** is in charge of the new office.

☆ ☆ ☆

Willis F. Harrington recently retired as a member of the executive committee and vice president of E. I. DU PONT DE NEMOURS & COMPANY, it was announced following a meeting of the board of directors. At the same time, **J. Warren Kinsman,** general manager of the company's Fabrics and Finishes department, and a member of the board, was made a vice president and designated as a member of the executive committee.

NEW EQUIPMENT

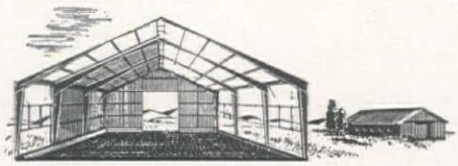
MORE COMPLETE information on any of the new products or equipment briefly described on these pages may be had by sending your request to the Advertising Manager, Western Construction News, 503 Market Street, San Francisco 5, California.

Prefabricated Steel Building

Manufacturer: Soulé Steel Co., San Francisco, Calif.

Equipment: Factory prefabricated, steel utility building.

Features claimed: Suitable for use as warehouses, machine shops, equipment storage, garages, and other industrial building needs, this mass-produced building is quick to erect, and has high uniform



head room. Corrugated APS plastic-covered Plasteel sheets are used as covering for roof, sidewalls and door leaves of the building. Plasteel is a combination of a special asphaltic plastic and pure mineral mica scientifically bonded to both sides of the steel sheeting, and is reported to withstand even the effects of sea spray. It is also claimed that no periodic or maintenance painting is needed.

Interior of the standard 40 x 100-ft. Soulé Steel utility building shows 4,000 sq. ft., unobstructed by interior columns. Sidewalls are 14 ft., with 21-ft. ridge height. Each sidewall is made up of 5 sections, two of which are solid and three containing 6 ft. 8⅞ in. wide by 4 ft. 1 in. high windows. Door is a horizontal two-leaf sliding type, 12 ft. wide by 14 ft. high. All parts are easily numbered for identifications, and quick and easy erection is facilitated. The utility building is shipped complete with framing, sidewalls, roof, anchor bolts, frame bolts, straw nails and hardware for doors and windows. The company does not supply concrete foundations or floors, or glass for windows.

Floodlight Trailer

Manufacturer: American Bantam Car Co., Butler, Pa.

Equipment: Bantam floodlight trailer.

Features claimed: A portable 3,000-watt light tower and generator rig mounted in ½-ton, all steel utility trailers, these units are especially designed to provide adequate lighting for night construction projects. The welded steel tower operates on a hinge fastened to the trailer canopy. On top of the tower are two 1,500-watt clear globes

HOUGH PAYLOADERS MOVE NEARLY 950 TONS OF MATERIAL EACH DAY

THE HOUGH PAYLOADER appearing in the picture is one of two owned by the George F. Strauss Cinder Block Company, Denver, Colo. Powered by International UD-9 Diesels, these payloaders are operated 24 hours a day. Five kinds of block are made at the plant, the ingredients of which are pea gravel, sand, common cinders, and volcanic ash. Within a 24-hour period the Strauss plant, covering 20 acres, produces 25,000 blocks which require nearly 950 tons of material. All moving to and from various stock piles is done entirely by the Payloaders.

in reflectors. The tower is 18 ft. high when erected and 9 ft. high folded. The lights are pivot-mounted and have adjustable beam and spread. The gross weight of the tower, generator and other equipment is 880 lb.

Utility Winch

Manufacturer: Chicago Pneumatic Tool Co., New York, N. Y.

Equipment: Small utility winch.

Features claimed: Loads up to a ton in weight and as far away as 1,100 ft., can be handled with ease and precision without the bouncing and jerking of loads which are characteristic of ordinary brake controlled winches. An exclusive feature is a combination cathead and drum arrangement by means of which the cathead can be operated independently of the cable drum so that a load can be held aloft by the cable and maneuvered by the cathead rope. The winches can be furnished with air, electric or gasoline power. Controls are limited to a clutch lever and a brake lever, with a safety lock for use in case of power failure. The speed of the drum is 125 ft. per min. at 80 psi. air pressure.

Cement Spreader

Manufacturer: T. L. Smith Co., Milwaukee, Wisc.

Equipment: Bulk cement spreader for soil-cement stabilized pavement.

Features claimed: Originally patented by B. H. Flynn, a Louisiana contractor, this machine will spread cement more uniformly and in less time than laborers can do it by hand. The present model includes such features as an electrically welded frame, an inclosed reversing transmission, prestretched endless belt, self-aligning bearings, and other refinements. It is said that more than a million square yards of soil-cement stabilized pavements have already been laid with this type of equipment, and it has spread the cement with an accuracy better than that required in the specifications.

Slide Rule

Manufacturer: Pickett & Eckel, Inc., Chicago, Ill.

Equipment: Deci log log slide rule.

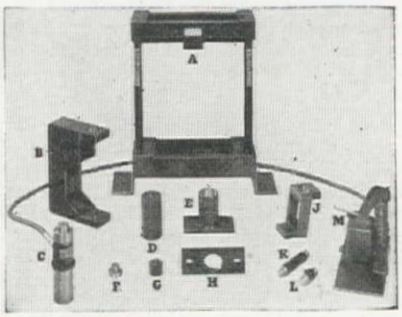
Features claimed: The new rule does several things not done by slide rules before: (a) it crosses or coordinates scales so that several readings can be made by each hairline setting; (b) expanded scale design makes possible much greater accuracy, it being possible to read to 5 figures; (c) readability and dimensional stability far greater than possible in any slide rule manufactured before. Scales read from one 10 billionth to 10 billion, and give decimal point location. A simple legend tells which scale to read when raising to powers.

Mobile Power Unit

Manufacturer: Munton Manufacturing Co., Franklin Park, Ill.

Equipment: Handy Mobil-Powr unit.

Features claimed: A foot actuated movable power unit developed to reduce time and labor required for maintenance, repair and production operations. It can be conveniently carried anywhere and is adaptable to numerous operations, such as lifting, spreading, clamping, holding and as a gear



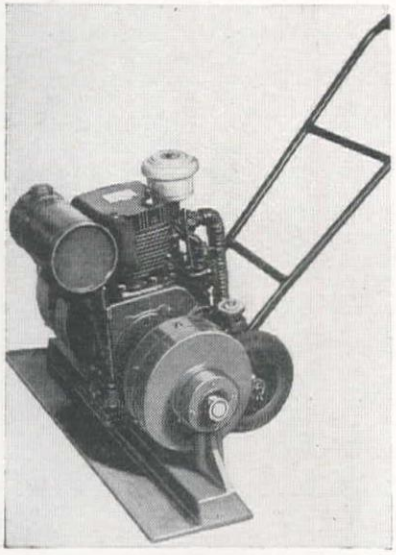
or wheel puller. It consists of a 7-ton hydraulic jack with 3-in. ram stroke, a foot-power pump mechanism and an 8-ft. hydraulic line with swivel coupling. Attachments are available to use for the various types of operations.

One-Man Impactor

Manufacturer: Chicago Precision Machine Co., Chicago, Ill.

Equipment: Tamper for hand operation.

Features claimed: A one-man unit that tamps asphalt, concrete, gravel, clay and other substances to maximum density while handling much like a lawn mower. The



trade name of the new machine is the "Wayer Impactor." It will travel as much as 32 ft. per min. while tamping and do a better job than a roller because it can be operated in gutters, around manholes, and in other tight places where a roller could not be used. It provides 2,200 lightning-like 1,500 lb. drives or impactions per min., but uses only 3 gal. of gasoline in a whole day. It is powered by a Wisconsin gas engine and has rubber mountings to minimize vibration. Two models are available, one weighing 200 lb., the other 387 lb.

Ford Spindle

Manufacturer: Johnson & Thomas Machine Works, Inc., Los Angeles, Calif.

Equipment: Spindle for Ford trucks.

Features claimed: Especially designed for Ford trucks, models 1938 to 1947, this front wheel spindle without brakes is built of reinforced construction and has been tested thoroughly both in the laboratory and on trucks. It is made of a special alloy steel specifying a tensile strength of 155,000 lb. The first use of this spindle was on heavy duty trucks of Consolidated Rock Products Co. of Los Angeles, which had experienced considerable difficulty with earlier designs of spindle. The equipment is now available for delivery.

Protective Sealing Substance

Manufacturer: Tamms Silica Co., Chicago, Ill.

Equipment: Agraseal, a protective sealing substance for porous masonry surfaces.

Features claimed: One coat of Agraseal is all that's needed, it is claimed, for exterior or interior coating of cinder blocks, light-weight aggregate or concrete blocks. Available in white, ivory cream, light buff, natural stone grey, sunny yellow and light green, it also does a complete waterproofing job with one application. Comes in powder form and mixes with water only. One gallon covers 50 sq. ft. for the first coat.

Improved Concrete Buggy

Manufacturer: Muller Machinery Co., Metuchen, N. J.

Equipment: Concrete buggy with "rocker" design.

Features claimed: The "rocker" design of the machine is claimed to make for easy dumping and eliminate all kick-back when the buggy is tipped over. Equipped with roller bearings, 2-ply or 4-ply pneumatic tires, and 10-spoke steel wheels, the buggy has a capacity of 6½ cu. ft. The unit is of the nesting type with full-welded seams and is equipped with a "towing eye."

Public Utility Compressor

Manufacturer: Le Roi Company, Milwaukee, Wis.

Equipment: New compressor for public utility service.

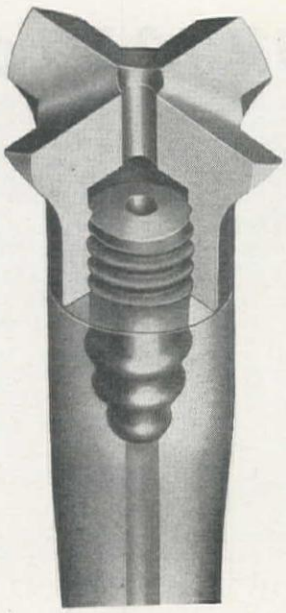
Features claimed: Known as the "105" utility, and specifically designed for either back of cab or on the platform of utility trucks, the unit is entirely self-contained and light in weight (1,700 lb.). Engine used is the Le Roi D226 featuring replaceable cylinder sleeves, precision bearings, overhead valves, pressure lubrication, and magneto ignition. Cylinder head and valves of the liquid cooled compressor are identical to those employed in Airmaster compressors.

Level and Angle Indicator

Manufacturer: R. D. Company, Flint, Mich.

Equipment: Anglevel, a combination level and angle indicator.

Features claimed: Vials are visible in any position, it is claimed, thus making the machine usable from all four surfaces. Numerals on dial facilitate finding the relation of angular surfaces to horizontal and vertical surfaces. Instant readings are given in both horizontal and vertical positions, as it is equipped with retainers into which vials (2 horizontal, 2 vertical) are placed. Retainer can be inserted, adjusted and positively locked into position in three minutes or less. Frame is heat-treated aluminum, 16 in. long, 3 in. wide, ¾ in. thick. Weight is approximately 1 lb., 8 oz.



Stud-Type Jackbit

Manufacturer: Ingersoll-Rand Co., Phillipsburg, N. J.

Equipment: New stud-type jackbit.

Features claimed: Carefully worked out wing curves that enable it to retain new bit proportions through many resharpenings is one of the features of this new model, designated the Jackstud. Resulting small gage loss permits using successive bits with reductions in diameter of 1/16 in. or less per change. Made of high-grade, carburized alloy steel, the Jackstud claims to be the strongest Jackbit attachment thus devised. It can be satisfactorily used with any drill steel, whether it is of the carbon or alloy type. Jackbit is the result of extensive shop and field research to develop an improved detachable bit and connection wherein the bit, rod and attachment medium would be designed and manufactured from materials best suited for the functions peculiar to each. One end of the Jackstud, cone-shaped and deeply furrowed, is driven while cold into the heated end of a drill rod. The driving operation can be readily performed with a drill steel sharpener.

Jaw Crusher

Manufacturer: Diamond Iron Works, Inc., Minneapolis, Minn.

Equipment: Larger size jaw crusher.

Features claimed: Of the overhead eccentric type, the 36 x 48 jaw crusher has a capacity range of 130 to 500 tons per hr. Equipped with cast reversible, manganese steel jaws and oversize roller bearings, the balanced flywheels are finished for either flat or V-belt drive. Grease lubrication, sealed against dirt and grit, is provided in

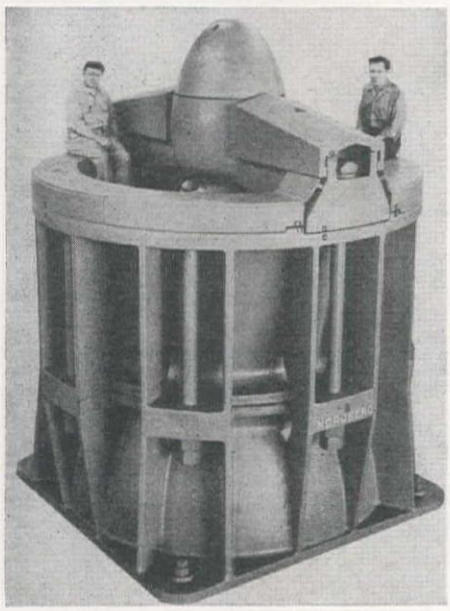
all Diamond design, with housings packed before shipment. Stationary and movable jaw lengths are 74¼ in. and 83¾ in. respectively. Shipping weight is 35,000 lb.

Crushing and Grinding

Manufacturer: Nordberg Manufacturing Co., Process Machinery Div., Milwaukee, Wis.

Equipment: Broad line of heavy primary crushing and grinding machinery.

Features claimed: For reduction of rock products, ores and non-metallic minerals for basic industries, Primary Jaw Crushers



are available in larger sizes from 30 in. x 42 in. up to 72 in. x 96 in.; Primary Gyratory Crushers run in sizes from 30 in. to 72 in.; and Grinding Mills from 6 ft. to 10 ft., 8 in. in diameter and up to 50 ft. in length. Other products in this division include rotary dryers, calciners, kilns and coolers.

Machinery Trailer

Manufacturer: Pointer-Willamette Co., Portland, Ore.

Equipment: Double drop light-weight machinery trailer.

Features claimed: More pay-load, reduced maintenance costs, tire wear, and operating expense are a few of the features claimed for the double drop machinery trailer which is fabricated from high tensile strength steels effecting a weight reduction of approximately 5,000 lb. Engineers claim that the high tensile steels used, rather than the usual mild steel beams, has also increased capacity of the R-W unit.

Improved Dumpcrete

Manufacturer: Dumpcrete Division, Maxon Construction Co., Inc., Dayton, O.

Equipment: Improved 2-yd. Dumpcrete.

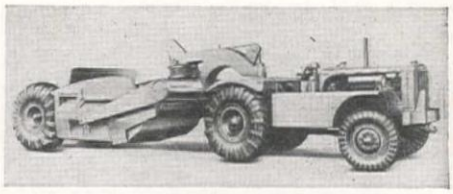
Features claimed: An increase in the discharge height to a point of over 5 ft. off the ground is one of the new features of this Dumpcrete. Addition of a swing-away chute which will go to either side if extra high discharge is wanted is another feature, as are the steel plate running boards to protect the body from dirt and to be used as a platform for operating the discharge controls. Another size Dumpcrete with a 3-cu. yd. rated concrete capacity and a water level capacity of 5 cu. yd. is now in production.

Tractor-Scraper Combination

Manufacturer: Caterpillar Tractor Co., Peoria, Ill.

Equipment: Combination of new tractor, scraper and cable control unit.

Features claimed: Designed for use as a unit, the "Caterpillar" Diesel DW10 wheel-type tractor, No. 10 scraper, and No. 21 cable control unit are matched in design and power. Power increase available in the DW10 tractor gives it a power output of 115 hp. at 1,800 rpm. Improved double plate, semi-metallic faced clutch, equipped with heavy springs to withstand shock and provide smoother operation, constant mesh transmission with helical gears in all but low and reverse with five forward speeds, and self-adjusting clutch brake, are a few of the features claimed. Scraper has



a heaped capacity (at 1.1 slope) of 11 cu. yd. The new rear-mounted, double-drum cable control is matched to the requirements of the tractor and scraper. Line pulls are ample to meet the most severe service requirements imposed by scraper operation. Drum has a 9-in. diameter, 5-in. length, 15-in. flange diameter and a capacity of 150 ft. of ½-in. cable. Each clutch has 12 facings with friction surface areas of 564 sq. in. Effective brake area is 111 sq. in.

Street Line Marker

Manufacturer: Newaygo Engineering Co., Newaygo, Mich.

Equipment: Improved line marker.

Features claimed: Designed to provide a speedy, efficient and economical means for marking street crossings, parking spaces, dividing lines, etc., the unit is simple and easy to handle, with no spray nozzles, pumps or hose to clog. Painting liquid is held at a fixed level in the reservoir in front of the paint tank by vacuum. Paint is then picked up by an idler wheel, which dips into it and spreads paint onto marking wheel. Made of cast iron, the marker wheel is approx. 4 in. wide. Unit can be taken apart for cleaning in five minutes.

Bulldozer Line

Manufacturer: Caterpillar Tractor Co., Peoria, Ill.

Equipment: Four sizes of hydraulic controlled bulldozers.

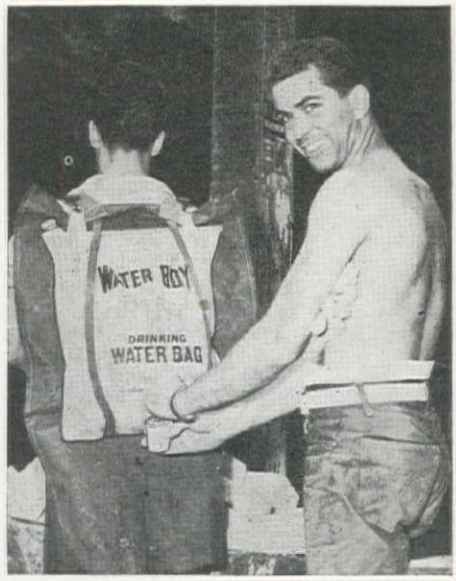
Features claimed: Designed exclusively for use with Caterpillar Diesel D8, D7, D6 and D4 track-type tractors, the new bulldozers combine the built-in ruggedness and working ability of the Caterpillar bulldozers and the advantages of a closed hydraulic system developed to a high state of efficiency through the use of improved materials, effective design and modern manufacturing processes. Features include a front mounted, positive action, balanced vane pump, integral with tank and operating valves; manually operated 3-position valve with "raise", "lower", and "hold" positions; rapid blade action; and many others.

The Water Boy

Manufacturer: H. Wenzel Tent & Duck Co., St. Louis, Mo.

Equipment: Large size canvas water bag.

Features claimed: Designed for carrying drinking water to men working on construction jobs, the drinking water bag has a complete shoulder harness and apron which straps to the back of a water carrier. The "Water Boy" is equipped with a sanitary chrome spigot at the bottom which can be used either as a faucet to fill cups, or can be turned up and used as a bubbling fountain. The bag holds 5 gal. of water.

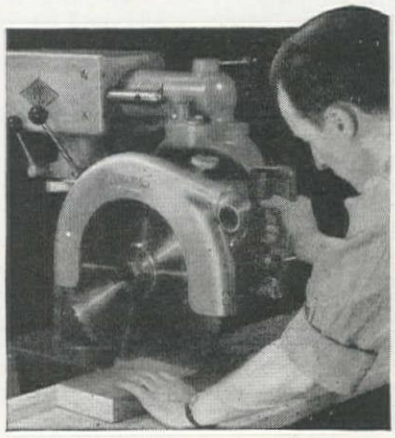


Radial Saw

Manufacturer: Construction Machinery Sales Co., Waterloo, Iowa.

Equipment: Radial saw.

Features claimed: The ball-bearing roller head which allows the blade to move smoothly and evenly into the work is the outstanding feature of the machine, it is claimed. The ram-type arm, moving through the roller head, frees the work table for the shifting of material, thus giving the operator a clean, unobstructed view of all layout marks. Changes in "set-ups" are quickly and easily made. It takes about three seconds to change from cutoff to rip. Controls for setting are within easy reach of the operator from the front of the machine.



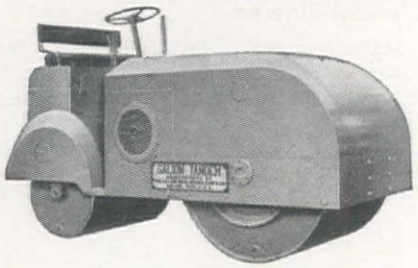
Tandem Roller

Manufacturer: Galion Iron Works and Mfg. Co., Galion, O.

Equipment: 3 to 5-ton tandem roller.

Features claimed: With the addition of this smaller tandem, Galion now manufactures four sizes of tandem rollers, all of

which have the "variable weight" feature originating with the company in 1935. The 3 to 5-ton model has a metal weight of 7,120 lb. with the ballasted weight being 10,520 lb. Fully ballasted, the compression under the main roll is listed as 170 lb. per



in. of roll width, and 85 lb. under the steering roll. All controls are within easy reach of the operator, and the machine is equipped with two speeds in each direction, controlled by two friction clutches.

Conveyoflo Meter

Manufacturer: Builders-Providence, Inc., Providence, R. I.

Equipment: New meter for continuous weighing of dry materials on conveyor belts.

Features claimed: Utilizing diaphragms instead of the usual knife-edge-beam principle for metering flow of dry materials by weight, bulky overhead framework is eliminated. The Conveyoflo Meter efficiently and accurately continuously weighs such materials as coal, gravel, stone, powdered chemicals, ore, stemmed tobacco leaf, fruit, wood chips and sewage sludge. Scales may be used to proportion and control, as well as weigh the feed of one or more dry materials such as cement, sand and gravel, ground rubber, etc.; and to control the flow of liquids in proportion to the flow of dry materials.

Shovel, etc.

Manufacturer: Marion Power Shovel Co., Marion, O.

Equipment: The 33-M, new ¾-cu. yd. machine.

Features claimed: With various front end combinations, the 33-M is a shovel, dragline, clamshell, crane and backhoe. Marion air control, a greatly simplified machinery deck with only two shafts across the deck, simple changeovers for front-end equipment, the use of 22 ball and roller bearings, and the use of only 12 gears in the entire machine are features claimed for the unit. Crawler pads and crawler rollers are forged, and the rollers are shielded from dirt. A maximum of 12 lb. pressure operates any air control lever. The new machine is the smallest model in the Marion line, other sizes ranging up to 40 cu. yd.

New Tournapull

Manufacturer: R. G. LeTourneau, Inc., Peoria, Ill.

Equipment: New big earthmoving Tournapull.

Features claimed: This Model B Tournapull, powered by a 225-hp. Diesel engine, is available for use with two sizes of Scrapers—the E-35 Carryall, with a 35-ton (26.1 yd. struck) capacity, or the 25-ton E-25 Carryall (16.5 yd. struck) capacity. The unit has 4 speeds forward, 2 in reverse and travels up to 15 mph. Tournapull and Scraper operations are now finger-tip controlled by means of buttons on Tournapull dashboard. Constant-mesh transmission, a newly designed torque proportioning Tournamatic differential automatically, positive power steering, and tapered bead tires are other features incorporated in this

new machine. Overall specifications are: length 37 ft., 6 in.; height 11 ft., 3 in.; width 11 ft., 7 in.; wheelbase 23 ft., 8½ in.; minimum turning radius 33 ft., and empty weight 20¼ tons.

Electric Chain Saw

Manufacturer: Homelite Corp., Port Chester, N. Y.

Equipment: New one-man electric chain saw.

Features claimed: Weighing only 27 lb., complete, the new chain saw can be handled by one man, for felling, limbing or bucking trees or for accurately cutting timbers up to 20 in. Elimination of weight, vibration, engine-heat and exhaust fumes greatly reduces operator fatigue. A Homelite High-Cycle generator driven by an integral gasoline engine furnishes electric power for the saw. Carryable 180-cycle generators are

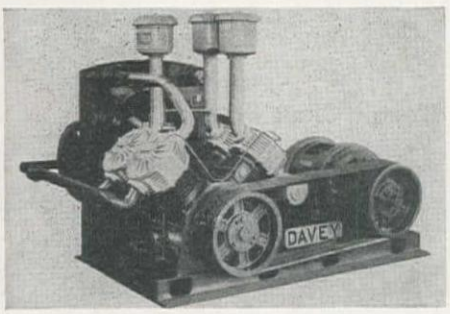
available in two sizes, the Model 24A-230/189 with a rated capacity of 2500 watts, which weighs 129 lb. complete with engine, and the Model 25A230/180 with a rated capacity of 5000 watts, weighing 171 lb. Either generator can be used to operate other types of high-cycle electric tools. The high-cycle motor driving the chain saw is a 2½ horsepower, 180-cycle 3-phase electric motor with a grounded connection.

Air-Cooled Compressors

Manufacturer: Davey Compressor Co., Kent, Ohio.

Equipment: Two-stage, air-cooled industrial air compressors.

Features claimed: Known as "Air Chief Industrials," the new machines, with c.f.m.



capacities of 60-105-160-210-315, feature permanent peak efficiency valves and the new Davey Equi-Balanced crankshaft. They are available in four types: (1) base compressors; (2) stationary units with base ready for installation of customer's electrical equipment; (3) departmental compressors powered by A.C. motors; (4) departmental compressors with D.C. motors.

Drag Scrapers

Manufacturer: Alloy Steel & Metals Co., Los Angeles, Calif.

Equipment: Pacific Drag Scrapers.

Features claimed: Outstanding feature of this new line of scrapers for haulage and transfer operations in mines, rock plants and quarries is that they are scientifically "balanced" so that entire weight of the scraper goes into the digging action. Digging action ceases when the scraper is loaded, relieving the scraper hoist of excessive power requirements. Self-sharpening corner cutters are incorporated in the new machines in place of the conventional horizontal blades, thus assuring a more effective digging action. Pacific Drag Scrapers are available in three models and six sizes. Model "A" in 26-in. and 30-in. sizes, Model "B" in 36-in. and 42-in. sizes, and Model "C" in 48-in. and 60-in. sizes.

Tab for Wire Markers

Manufacturer: Western Lithograph Co., Los Angeles, Calif.

Equipment: E-Z Tab, new feature for code wire markers.

Features claimed: With E-Z Tab, a new feature incorporated in E-Z-Code Wire Markers, a single Code Marker can be easily and quickly removed without disturbing any of the remaining markers on the card. In applying the markers the tab assists in three ways: the marker will not stick to the fingers; dirt and contamination is eliminated, assuring maximum adhesive contact; the E-Z-Tab provides 50 per cent more leverage than the fingers for binding the final end of the marker to the wire with no additional motions.

Cleaner-Blower

Manufacturer: Ideal Industries, Inc., Sycamore, Ill.

Equipment: Portable electric cleaner-blower.

Features claimed: Powered with a 1⅓-hp. motor, the Heavy Duty Cleaner blows air at a velocity of 25,500 ft. per min. Total

weight is 14½ lb. Medium Duty Cleaner with a 2/3-hp. motor, displaces air at 19,000 ft. per min. Weight is 9½ lb. With a powerful suction force, the machine cleans away dirt, dust and grime which accumulates on and around machinery and motors, generators and electrical apparatus. The Ideal may also be used as a sprayer for deodorants, insecticides, etc.

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 5, California.

CRANE FAMILY—**Wayne Crane Division** of American Steel Dredge Co., Inc., Fort Wayne, Ind., has published a 16-page, color booklet describing its line of crane uses. Action photographs show the crane at work as a trench hoe, as a shovel, as a dragline, and as a clamshell. Crane chassis construction is explained. Specifications of the various crane types are listed.

PROBLEM SOLVER — **Executone, Inc.**, New York, N. Y., has put out an 8-page booklet entitled "How To Solve Communication Problems," particularly valuable to the business men who must eliminate non-productive time and other wastes that eat into company profits. The problem solved by Executone, the special features, typical installation and advantages obtained through the use of Executone is explained in pictures and diagrams, as well as editorially.

UNDERGROUND PIPE INSULATION—**Ric-wiL Company** of Cleveland, Ohio, has recently published a four-page standard file-size folder giving specifications and descriptions of various basic types of tile and cast iron conduit for underground steam, return, hot water and oil lines. A practical aid to architects and engineers, the folder contains engineering data, showing trench dimensions and pipe locations recommended for each size and type of conduit. Tables also give the capacities of various conduit types and sizes for combinations of up to five pipes. Illustrations and cross-section drawings of RicwiL tile and cast iron conduit and their accessories are also included.

INSTALLING TIMBER CONNECTORS — **Timber Engineering Company**, Washington, D. C., has issued a new publication describing the installation of Teco timber connectors in light and heavy timber structures. The 12-page booklet has been prepared particularly for the use of builders and contractors and illustrates and explains the installation of split rings and shear plates for wide span roof trusses and other heavy structures; and toothed rings for light, built in place structures where power is not available.

ENGINES FOR HAULING — **The Buda Company** of Harvey, Ill., has just sent off the press a new 16-page, three color booklet which describes and illustrates four heavy-duty Diesel engines ranging in size from 180 to 300 hp., that are ideal for powering trucks, off-highway and haulage equipment. This bulletin gives construction features, details regarding combustion, installation and design, as well as many illustrations of actual installations of Buda engines being used in all types and kinds of haulage equipment.

CENTRIFUGAL PUMP — **The Peerless Pump Division** of the Food Machinery Corp. of Los Angeles, Calif., has recently introduced a single stage, end suction, vertically split case centrifugal pump designated as the Fluidyne which is being manufactured in two types, the Fluidyne type PE and the PB. Both pumps are capable of moving water and other liquids in capacities up to 1000 g.p.m. against heads up to 270 ft. A new bulletin illustrating and describing both type pumps and their applications has just been published.

SHOVEL-CRANE—**Link Belt Speeder Corp.**, Chicago, Ill., has just issued a catalog presenting a word-and-picture story of their ¾-yd., LS-Seventy Shovel-Cranes. The catalog is arranged and illustrated to show how each feature contributes to the working efficiency, the operating economy and long life of the machine. Clean, orderly arrangement of the machinery is apparent at first glance.

TRUCK BODY AND HOIST — **Kewanee Manufacturing Co.**, Kewanee, Ill., has put out a new bulletin illustrating and giving detailed information about its hydraulic hoists, steel truck Type A bodies, Type B bodies and special design bodies. Specification and inside dimension charts are given as well as some of the extra equipment that is available for trucks.

DIPPERS AND PARTS — **American Manganese Steel Division** of American Brake Shoe Co., Chicago Heights, Ill., has just published a 40-page bulletin "Power Shovel Dippers; Shovel and Dragline Parts." Complete, detailed descriptions are given of all Amsco Dippers. Cross-sectional drawings and X-ray photographs highlight the outstanding design features that assure fast, full loading, quick dumping, minimum power consumption, and maximum service life. The bulletin demonstrates in detail how manganese steel parts solve maintenance and breakdown prob-

lems for power shovel and dragline operators. A section is devoted to a comprehensive discussion of austenitic manganese steel and its unusual properties. Charts, photomicrographs and comparison tables are also shown.

BIOFILTRATION—**The Dorr Company,** New York, N. Y., has just sent off the press a new bulletin entitled "Small Scale Biofiltration." The three-color bulletin describes editorially and pictorially how a combination of the new Dorr Duo-Clarifier and the Dorrco Duo-Filter makes possible small scale biofiltration treatment in two stages, with only two units rather than the conventional four.

SMALL EARTHMOVER—**R. G. LeTourneau, Inc.,** Peoria, Ill., has prepared a big broadside illustrating and describing the new small Tournapull. This large folder opens to 23 in. by 33 in., explains in detail the many new design features built into the new self-loading D Tournapull. Large-size, job action photographs show how the earthmover can be used on small yardage projects for contractors, miners, loggers, railroads and industries. The inside spread gives complete specifications on the one-man-operated rig.

THE HOSPITAL ACT—**The Federal Security Agency** of the U. S. Public Health Service, Washington, D. C., has published a booklet entitled "The Hospital Act and Your Community." If you are interested in the hospital program, authorized last year by the Hospital Survey and Construction Act, this booklet will tell you in simple terms what the Act means to you, your community and your state. It should be especially valuable to any group or community that wants to build a hospital but is not conversant with securing Federal aid for construction.

FIRE-RESISTANT CANVAS — **Wm. E. Hooper and Sons Co.,** Philadelphia, Pa., has put out a 12-page, color booklet describing the many characteristics of Fire-Chief treated canvas, including resistance to fire, water, wear, weather and mildew. It also shows typical applications of the product in different climates, in many industries where canvas is used. An especially interesting section tells about the many field and laboratory tests which Fire-Chief canvas undergoes in a continuous research and development program.

METAL IN PETROLEUM — **Allegheny Ludlum Steel Corp.,** Chicago, Ill., has recently published a 36-page booklet dealing with the use of Allegheny steel in the production and processing of oil. This booklet covers specific applications, performance records pertaining to the use of stainless steel in the crude oil field; the synthetic rubber industry; the oil refining industry; in cycling and natural gas; in oil transportation and storage, and in the marketing of oil and oil products. The literature also includes information on corrosion resistance, physical properties, fabricating procedures and forms of Allegheny stainless steel available.

BULLDOZERS AND GRADERS — **The Caterpillar Tractor Co.** of Peoria, Ill., has published a 12-page booklet "Caterpillar Straight Blade Bulldozers" and two new folders describing the new Diesel No. 12 and No. 112 motor graders. The booklet records the structural and operational features of the bulldozer units which are designed exclusively for use with the Caterpillar Diesel D8, D7 and D6 track-type tractors and emphasizes and illustrates with cross-section views, blade tilting brace and sheave construction. Actual bulldozer applications and combinations of the bulldozers with scrapers, rippers, winch and crane are outlined. The folders stress construction and operational features of the motor graders, emphasizing power increases which make the Diesel No. 12 the most powerful machine in the motor grader field with 100 hp., and which give the Diesel No. 112 a power output of 70 hp. The folders are graphically illustrated and include brief specifications of the motor graders.

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2—**LaPlante-Choate hydraulic angledozers**, for Caterpillar D8 Tractors, new. Price $2100.00 each.

1—**Sterling Dump truck**, 8 c.y. body, 12-ton capacity, chain drive. Serial No. S15512. Rebuilt Cummins engine, 6—12:00 x 24 tires. Price $4500.

1—**LeTourneau Model J12 Scraper**, 10 c.y. capacity, Serial No. J2312J12. Price $2500.00.

2—**Euclid End-dump trucks**, Serial Nos. FD600 and FD601, 10 c.y. struck capacity, with Cummins Diesel engines. Price $8000.00 each.

1—**Ingersoll-Rand 315 cfm compressor**, steel wheel mounted. Serial No. 40T6278, with rebuilt Cummins engine. Price $5300.00.

1—**Hesselman engine**, Model WBFH, Serial No. 394871. Price $1200.00.

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