WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED
WESTERN HIGHWAYS BUILDER

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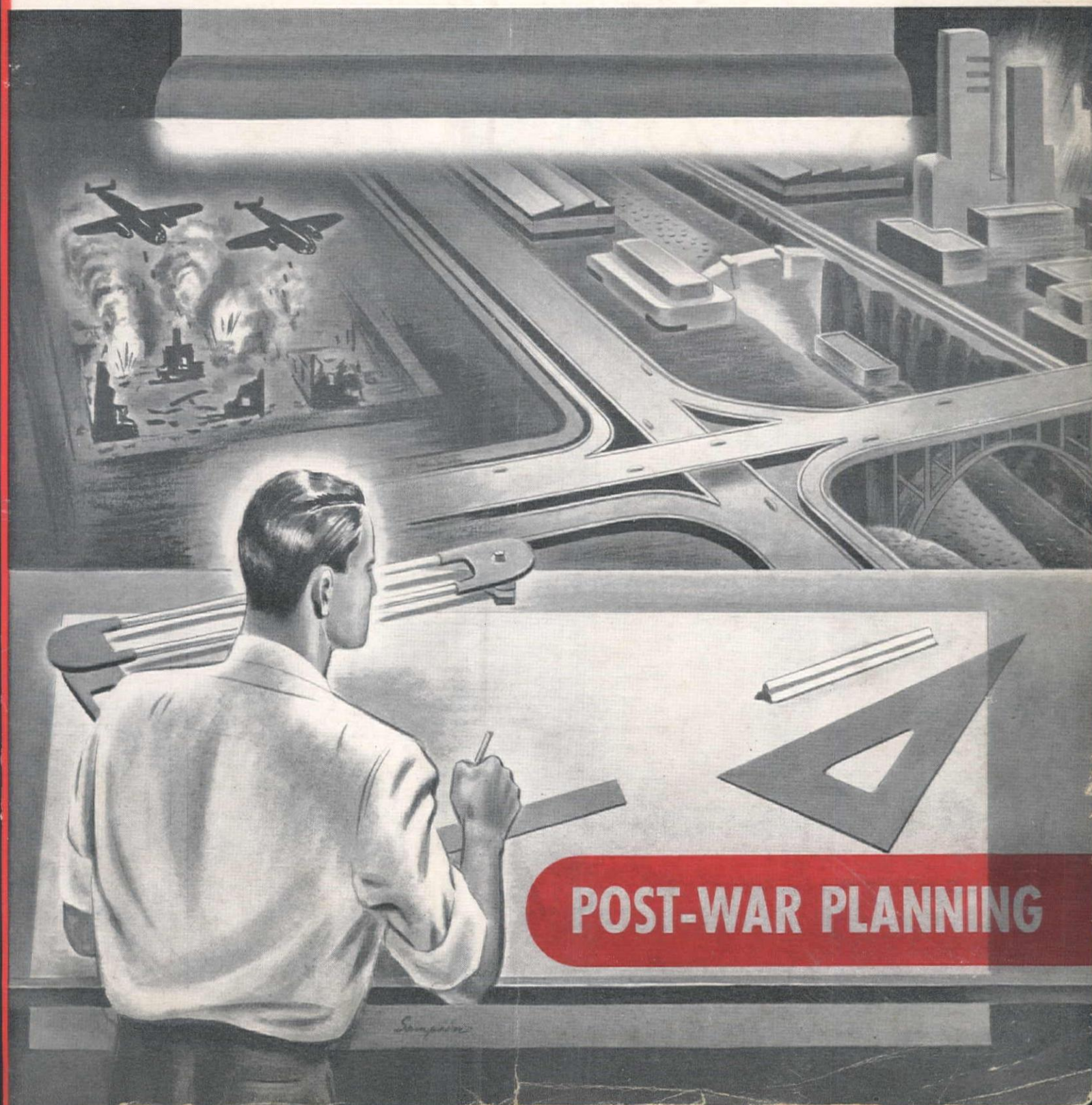


POST-WAR PLANNING

SHASTA DAM, 460-ft. cableway head tower. Millions of feet of wire rope as well as thousands of open gears and chain drives are successfully safeguarded against wear, weather, rust and corrosion with *Texaco Crater*.

TO PROLONG ROPE LIFE

MAKERS STRESS LUBRICATION

Photo courtesy U. S. Bureau of Reclamation

WIRE ROPE manufacturers without exception, stress lubrication as the No. 1 war measure to lengthen rope life, save steel, maintain vital construction schedules. Everywhere, wire rope users are following this advice, and prolonging rope life with *Texaco Crater*.

Texaco Crater penetrates to the very core of wire rope, sealing each wire in a tough, viscous film that reduces internal friction and wear, keeps out moisture, prevents corrosion, makes ropes last longer.

The outstanding performance that has made Texaco preferred in the fields listed in the panel has made it preferred on important construction jobs throughout the country.

These Texaco users enjoy many benefits that can also be yours. A Texaco Lubrication Engineer will gladly cooperate . . . just phone the nearest of more than 2300 Texaco distributing points in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York, N. Y.

THEY PREFER TEXACO

★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brrand.

★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

★ More locomotives and cars in the U. S. are lubricated with Texaco than with any other brand.

★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.

CRATER BOOKLET yours for the asking. 32 pages telling and showing what Crater does and how easy it is to use to protect wire rope, gears and chains.

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

TUNE IN FRED ALLEN EVERY SUNDAY NIGHT—CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

Who buys NORTHWESTS?

HAVE you ever checked over the Northwest owners in your territory? Have you ever checked over the names of Northwest owners in the country? Take a look at the picture some time and wonder why it is that big successful names, big jobs and Northwests go together. Wonder too why such concerns as Morrison-Knudsen that can have any machine they think will solve their problem, continually buy Northwests, *year after year.*

There is the real argument for your looking into the features that Northwest has to offer. Buy for today—and buy well, so you will be equipped to get things done tomorrow, *when only the best will be good enough.*

.... If it's a real Rock Shovel you won't have to worry about output in dirt!

NORTHWEST ENGINEERING COMPANY

1736 Steger Building · 28 East Jackson Boulevard · Chicago, Illinois

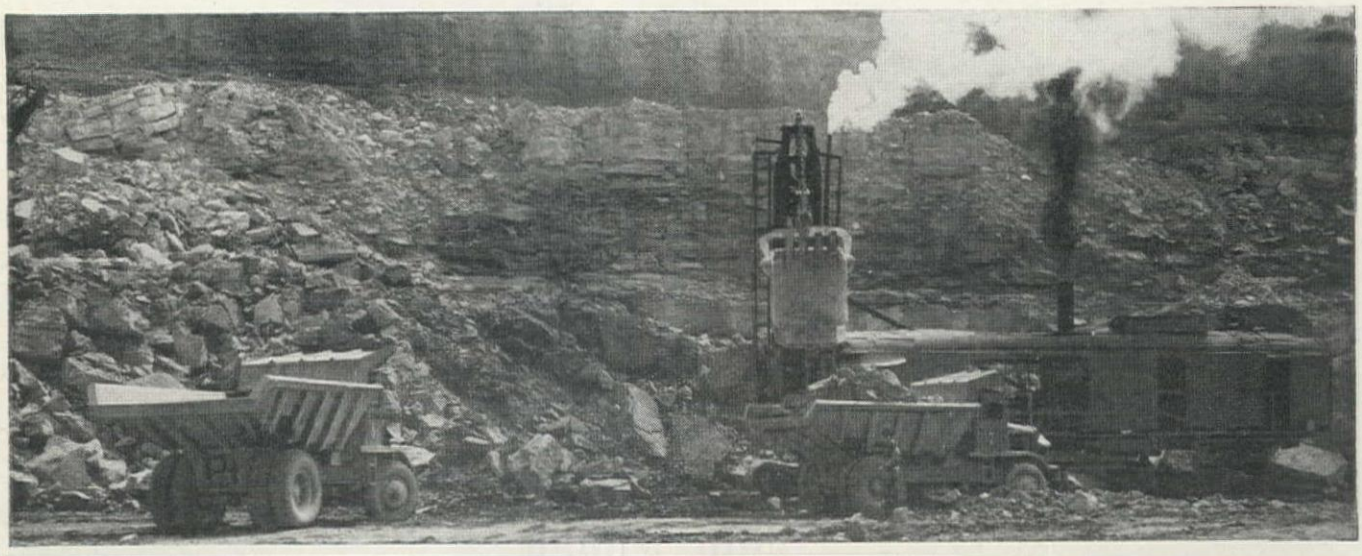
Branch Offices: 255 Tenth Street, San Francisco, California; J. L. TALLMAN, 1631 - 16th Ave., Seattle, Washington; 3707 Santa Fe Avenue, Los Angeles, California

Northwest Sales Agents: ARNOLD MACHY. CO., INC., 149 W. 2nd South St., Salt Lake City, Utah; MINE & SMELTER EQUIPMENT CO., P. O. BOX 788, Phoenix, Arizona

Operators of Rear-Dump and Bottom-Dump EUCLIDS, as well as those who service these units, make up a mighty important "task force" on the production front. Their jobs may lack the glory and adventure of action on the fighting front, but they're vital to victory just the same.

By careful operation and regular servicing to keep the "Eucs" rolling day in and day out, these men are helping to supply our mills and war plants with the coal, iron, aluminum, limestone and other materials that bring victory closer. Other jobs, too — airports, bases, military roads, etc., — are being completed in record time by Euclids and the men who drive them and keep 'em running.

The EUCLID ROAD MACHINERY CO. · · Cleveland, Ohio



EUCLID

SELF-POWERED HAULING EQUIPMENT

For EARTH..ROCK..COAL..ORE

CRAWLER WAGONS · ROTARY SCRAPERS · TAMPING ROLLERS

EUCLID THE PIONEER

CONTRACTORS' EQUIPMENT & SUPPLY CO., Albuquerque; INTERMOUNTAIN EQUIPMENT COMPANY, Boise; HALL-PERRY MACHINERY COMPANY, Butte; F. W. McCOY COMPANY, Denver; LOGGERS AND CONTRACTORS' MACHINERY CO., Portland; A. H. COX & CO., Seattle

WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED WESTERN HIGHWAYS BUILDER

The National Magazine of the Construction West

Contents for January, 1943

D. F. STEVENS, Editor

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Barber-Greene Representatives

AT YOUR SERVICE

B-G representatives can be of valuable assistance to you during the present emergency. **PARTS** Many carry in stock the B-G repair parts most frequently required. Others can assist you in ordering parts. **MAINTENANCE** They will gladly advise you on general maintenance. Many are equipped to bring your machine in and completely overhaul it. **RENTAL** B-G representatives are glad to assist you in locating machines for rental or will assist you in renting a machine which you have idle. **ENGINEERING SERVICE** Your B-G representative will gladly give you the benefit of his experience in any proposed changes in your material handling layout. **NEW MACHINES** New Barber-Greenes are not available except on very high priority. If you are planning a job which will carry such a priority, your B-G representative will give you every possible assistance.

BRANCH OFFICES

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BIRMINGHAM CAMBRIDGE CHICAGO
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WASHINGTON Paving Supply & Equipment Company
WINNIPEG Frost Machinery Company

BARBER GREENE

AURORA, ILLINOIS

42-4

A TIMKEN BIT FOR PRACTICALLY EVERY KIND OF ROCK

Faster drilling with less manpower are reasons why you should adopt Timken Bits now. These advantages plus lower costs make three reasons for their continued use after Victory.

Introduced eleven years ago, the Timken Rock Bit of today bears a remarkably close resemblance to those on the market in 1932. Improvements have been made —streamlined then, it's more streamlined now, heavy wing sections have become heavier—but basically it's the same design. Eleven years' experience has confirmed its correctness.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

The H series; a general purpose bit recommended for hand held hammers.

The R series bit used in soft formations such as limestone and sandstone.

The D series bit is recommended for use with wagon drills for deep hole drilling.

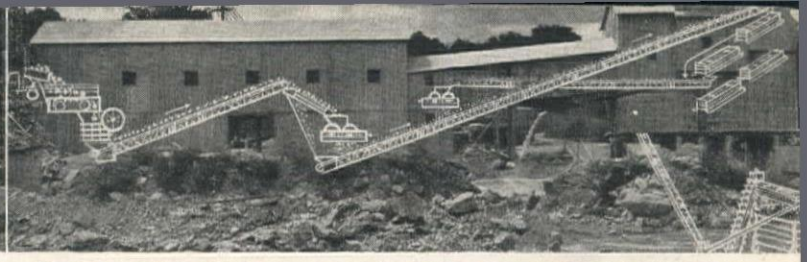
The F series bit, a heavy duty type used in mining to achieve fast drilling by virtue of its small gauge.

The M series, a general purpose bit, largely used in mining with mounted machines.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

ROCK BITS



Rock Plants AS YOU LIKE THEM •

No two rock jobs are alike. They vary in material — in the size of the feed — and the size and number of sizes in the product. Some rock must be washed — some rock is hard and brittle — others are tough — and some is soft.

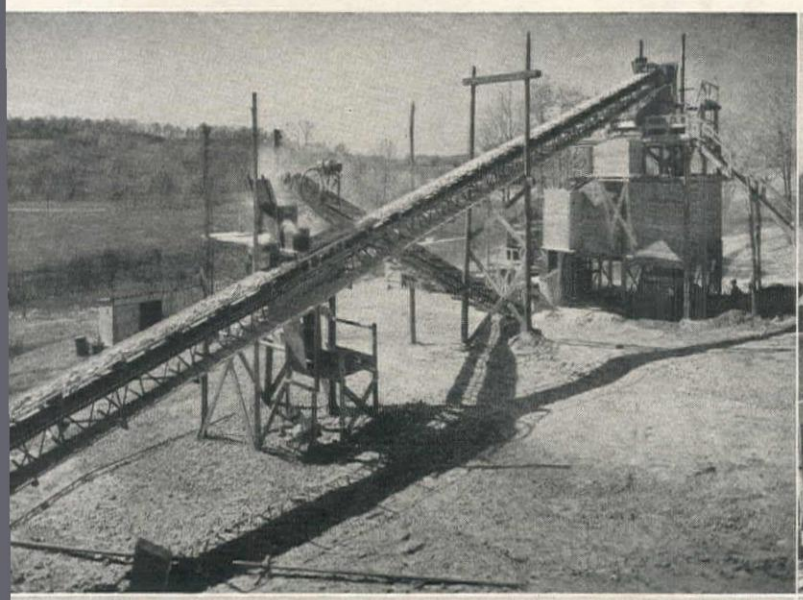
In one case, screening is the big problem — and in others it is crushing.

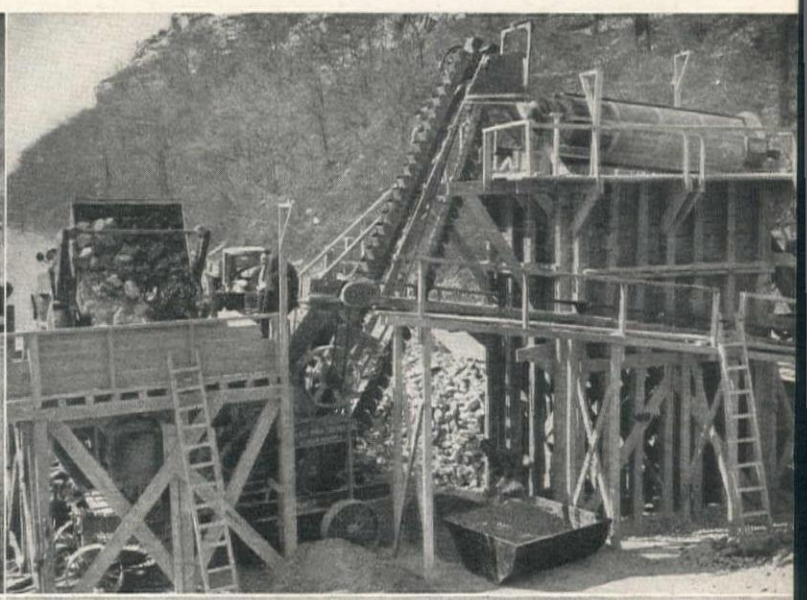
For *your* rock job, you want a plant that is tailored to your problem.

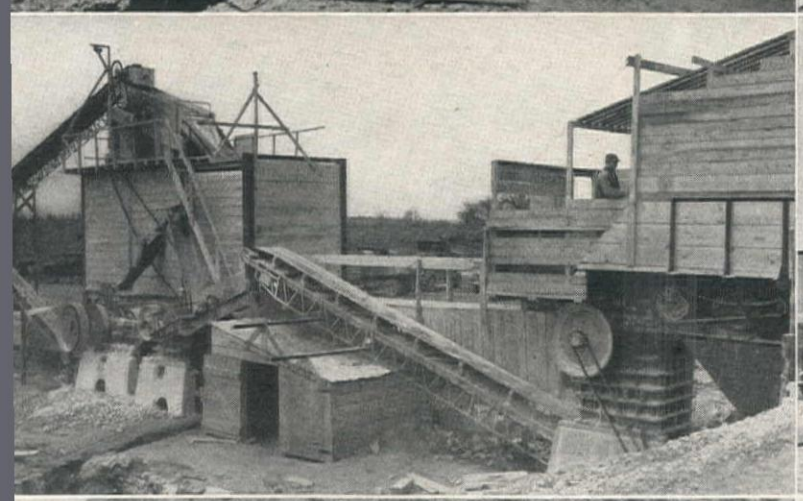
That is where Pioneer can help you. Pioneer Rock Plants are tailor made to suit the particular requirements of the job. Standard Pioneer Units are used — jaw crushers — roll crushers — screens — conveyors — elevators — and bins.

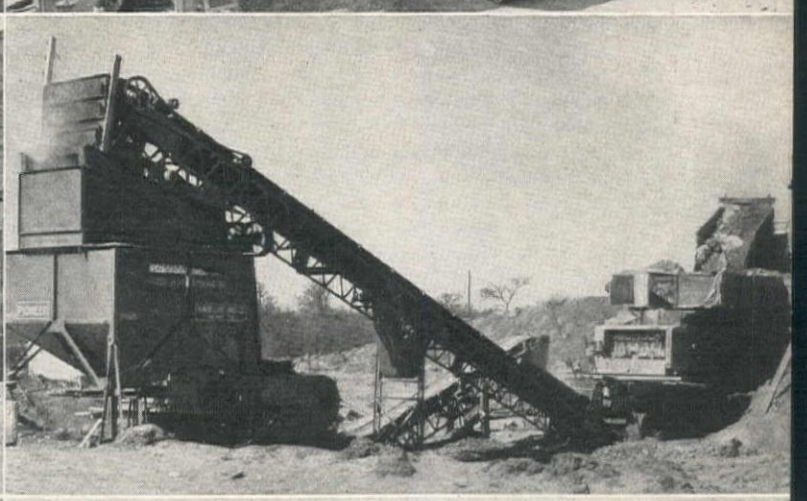
Tell us your rock problem. We will make a preliminary layout of a plant to suit your conditions. It will be submitted to you for revision and consideration. After approval, we will make finished installation and foundation drawings.

Furthermore, a Pioneer Rock Plant is complete with power, drives, and all accessories. It is fully engineered and factory built — yet tailored to your job — and there is no cost for this Pioneer Engineering Service.









Pioneer

ENGINEERING WORKS

Minneapolis, Minnesota, U.S.A.

To our many customers, prospective customers, and operator friends who are working both ends against the middle to help win the war, we extend our congratulations. The part you are playing in the victory program deserves the highest praise. Without your expert supervision, untiring efforts and the fine performance of your excavating and material handling machines, plans for an early victory could not materialize. No doubt, you are pushing your cranes, draglines and shovels to the limit, and in the rush to get things done faster, you may be neglecting to give your equipment the kind of attention it deserves. If this is the case, we urge you to take time out every day to inspect and service your machines. When new equipment is as difficult to get as it is today, it is doubly important that you take unusual care of what you have. Make it a 1943 resolution to do everything that you can to make your present equipment last longer—you will be doing yourself and country a big service.

AN IMPORTANT LINK IN THE *Victory* PROGRAM

★ ★ ★

LIMA LOCOMOTIVE WORKS, INCORPORATED

Shovel and Crane Division - - - - - - LIMA, OHIO

In the West: Seattle: Branch Office, 1932 1st Ave. So. Spokane: General Machinery Co., E. 3500 Block, Riverside. Portland: Feenaughty Machinery Co., 112 S. E. Belmont St. Boise: Feenaughty Machinery Co., 600 Front. San Francisco: Garfield & Co., 1232 Hearst Bldg. Los Angeles: Smith Booth Usher Co., 2001 Santa Fe. Denver: F. W. McCoy Company, 956 Cherokee St. Phoenix: Smith Booth Usher. Helena, Mont.: Steffect Equipment Company, Main and Cutter Sts.

★ *BUY WAR BONDS AND STAMPS*

Write for a copy of "Timely Tips", a booklet full of information to help your operator get better and longer service from his machine.

LIMA

CRANES, 13 TONS TO 65 TONS ○ SHOVELS, ¾ YD. TO 3½ YD.
DRAGLINES, VARIABLE

GET THE MOST OUT OF EVERY ELECTRODE

Burn them down to a 2" stub

Welding electrodes are scarce and must be conserved. By burning every electrode down to a 2" stub you can save up to 5 lbs. of electrodes from every 50 lb. box. This is one important way that good welding operators are helping to meet the electrode shortage. Some other important rules to follow are:

1. Choose the proper welding current for the size of electrode being used. Excessive welding current may break down the coating before the electrode is consumed.

2. Select largest diameter electrodes to get faster deposition of metal. Using an 18" length instead of 14" reduces the number of times it is necessary to change an electrode for a given length of weld. This increases welding speed 25-30% and saves 3-4% stub loss.

3. Make legs of fillet welds equal and make face of fillet welds flat. Convexity of fillet weld faces should never exceed 10%.

Follow these suggestions to get the maximum work out of every electrode. In this way you can help prevent waste of the vital materials that are needed for victory production.

Air Reduction

General Offices: 60 EAST 42nd ST., NEW YORK, N. Y.

IN TEXAS:
MAGNOLIA-AIRCO GAS PRODUCTS CO.
General Offices: HOUSTON, TEXAS
OFFICES IN ALL PRINCIPAL CITIES

AIRCO

IDLE CYLINDERS ARE PRODUCTION SLACKERS: *Keep 'em rolling for victory!*

WILSON

POWER and Traction

Let These Distributors Service Your Equipment

A—Glenn Carrington Co., Fairbanks
NA—O. S. Stapley Company, Phoenix

ORNIA
O. Adams Co., San Francisco, Los Angeles
y Equipment Company, Redding
e Tractor & Equipment Company, Sacramento
RADO—McKelvy Machinery Co., Denver
O—Intermountain Equip. Co., Boise, Pocatello
TANA—Industrial Equipment Co., Billings
ADA—Allied Equipment, Inc., Reno

MEXICO
Chesney-Rand Equip. Co., Inc., Albuquerque

GON
oward-Cooper Corp., Portland, Eugene, Klamath Falls
AH—The Lang Company, Salt Lake City

SHINGTON
loward-Cooper Corp., Seattle, Spokane, Walla Walla

Company Operated Branches

★★★ POWER and TRACTION are what it takes to get mammoth army trucks over rough roads in all kinds of weather to bring vital supplies to the fighting fronts . . . POWER and TRACTION are enabling Adams Motor Graders also to work in soil conditions ranging from sticky mud to loose sand to complete wartime grading and ground leveling jobs quickly and economically . . . POWER and TRACTION are but two of the many features you'll like in Adams Motor Graders when once again you are permitted to buy equipment for use on peace-time projects!

J. D. ADAMS COMPANY • INDIANAPOLIS, INDIANA

Adams motor graders, leaning wheel graders, elevating graders, hauling scrapers, tamping rollers, bulldozers and road maintainers are used by allied forces throughout the world.

Adams

ROAD-BUILDING AND EARTH-MOVING EQUIPMENT

Get the JUMP on trouble!

KEEP 'EM PROPERLY SERVICED.

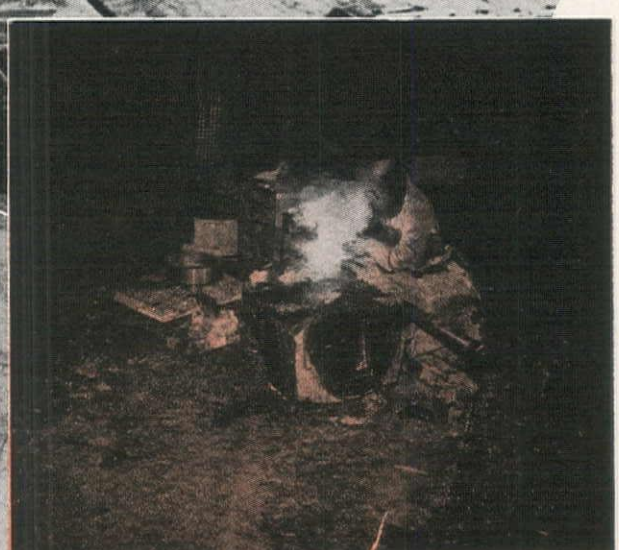
Trouble's ugly head will rear "as sure as shootin'" if your equipment is neglected. A machine run even one day longer than it should will be many times as expensive to repair . . . cost you plenty in lost production, too, and require considerably more critical material.

Keeping your equipment properly serviced will prolong its life, maintain production, cut depreciation and operating cost and increase your profits.

Close to you — as near as your phone — no matter where you are . . . is an Allis-Chalmers dealer, ready, fully-equipped to serve you. He will be glad to make frequent check-ups, tell you the exact condition of your outfits . . . let you know in advance what can be expected later. It's your guarantee against trouble! This is but one of the many valuable services offered to you by your Allis-Chalmers dealer. He is ready at all times to expertly handle your repair, rebuild or replacement work. His staff of skilled, factory-trained mechanics, using genuine parts, his knowledge and experience are always at your disposal. *Let him help you get the jump on trouble.*

Call your Allis-Chalmers dealer today!

ALLIS-CHALMERS
TRACTOR DIVISION · MILWAUKEE · U. S. A.

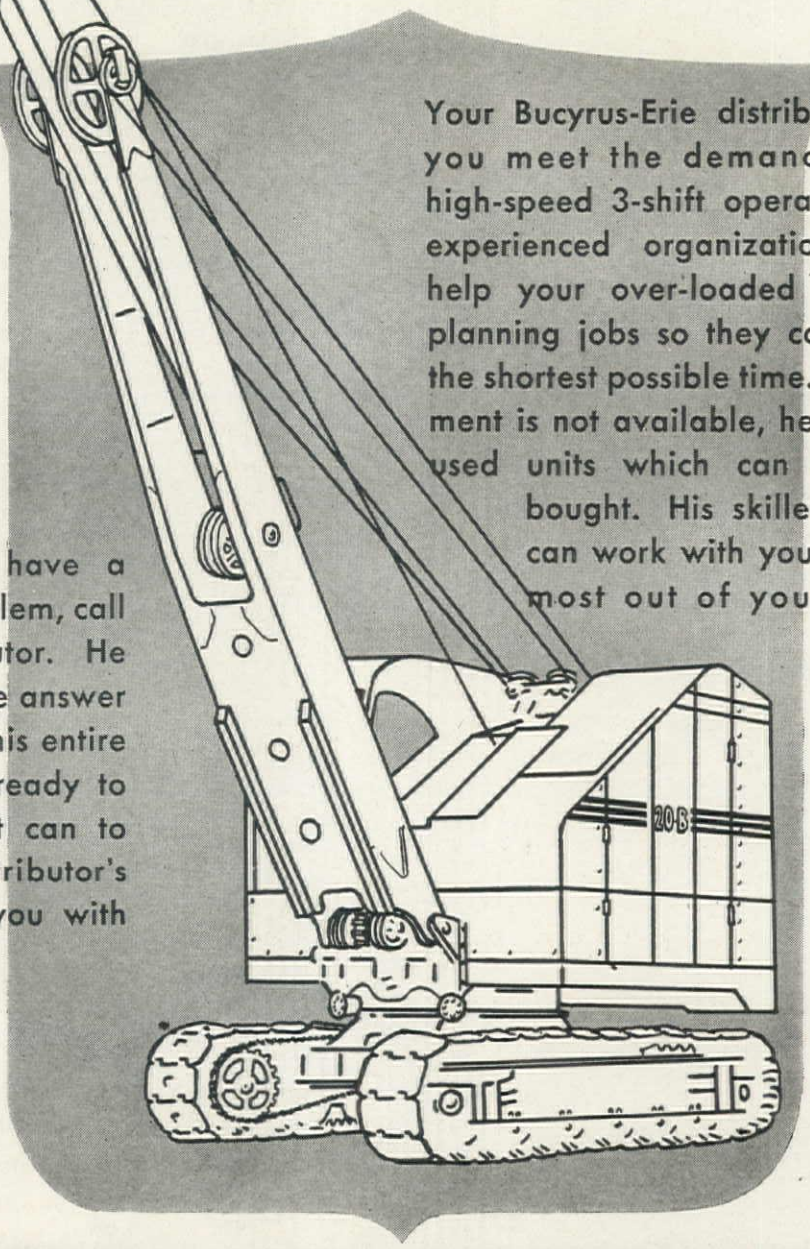


Factory-trained, Allis-Chalmers dealer service men, working under ideal shop facilities, using the right tools and parts, make short work of any repair, rebuild or overhaul job.

• • •

THROW YOUR SCRAP INTO THE FIGHT!

LET YOUR DISTRIBUTOR HELP WITH SPECIAL WARTIME DIGGING PROBLEMS



Your Bucyrus-Erie distributor can help you meet the demands of today's high-speed 3-shift operation. His job-experienced organization can often help your over-loaded executives in planning jobs so they can be done in the shortest possible time. If new equipment is not available, he may know of used units which can be rented or bought. His skilled service men can work with you in getting the most out of your equipment.

Whenever you have a dirt-moving problem, call on your distributor. He may not have the answer every time, but his entire organization is ready to do everything it can to help. Your distributor's job is to help you with your job.

Bucyrus-Erie employees have accepted the award of the Army-Navy "E" as a challenge to keep production rising. ★ ★

Bucyrus-Erie

SOUTH MILWAUKEE • WISCONSIN • U. S. A.

WASHINGTON: Bucyrus-Erie Co., 3408 First Ave. So., Seattle; Clyde Equipment Co., 3410 First Ave. So., Seattle; Construction Equipment Co., 1118 Ide Ave., Spokane. OREGON: Clyde Equipment Co., 17th and Thurman Sts., Portland. CALIFORNIA: Bucyrus-Erie Co., 390 Bayshore Blvd., San Francisco; Crook Co., 2900 Santa Fe Ave., Los Angeles. UTAH: The Lang Co., 267 W. First So., Salt Lake City. COLORADO: Ray Corson Machy. Co., 1646 Wazee St., Denver. IDAHO: Intermountain Equipment Co., Broadway at Myrtle, Boise. NEW MEXICO: R. L. Harrison Co., 209 Fourth St., Albuquerque. ARIZONA: O. S. Stanley Co., 723 Grand Ave., Phoenix. MONTANA: Westmount Tractor & Equipment Co., 150 E. Spruce St., Missoula.

Move More Yardage Faster & at Less Cost with TOURNAPULLS

One of a fleet of 14 Super C Tournapulls speeding a Midwestern glider base for Uncle Sam. Contractor is long-time LeTourneau fleet-user J. A. Terteling and Sons. Also on this job are 5 LeTourneau Dozers and 10 Model RU Carryall Scrapers.

You'll Need Fewer Units . . . Same Time Will Save Manpower and Steel for VICTORY

Tournapulls are quickly pusher loaded, haul up to 14.3 m.p.h., and spread their own loads. You get plenty of tractive power, too —Tournapull weight (plus 40% of the Carryall and its load) is centered on the drive wheels. That means surplus rimpull for quick acceleration to top speed or for pulling through tough spots.

Load, Haul, Spread—One Continuous Cycle

With Tournapulls you get tractor-scraper digging and spreading efficiency plus truck hauling speeds. You eliminate such one-purpose tools as shovels and elevating graders for loading, trucks for long hauls, and special spreading tools on the fill.

Result: you cut equipment investment almost in half, require fewer operators, move more yardage (see chart), move it faster, at less cost and with less steel. Consult your LeTourneau-"Caterpillar" dealer NOW for WPB release requirements.

OPERATORS—
Simple, Easy to Handle

Tournapulls are easy to operate—you pull and steer with the same wheels, just as you do with tracks on a track-type tractor. There are no front wheels to bog down when traveling or turning in mud or sand. Two-wheel design enables you to turn faster and sharper. Big brakes on both Tournapull and Carryall Scraper assure quick stopping and complete control on grade. Same fast, sure-acting LeTourneau cable control that has proved so popular on tractors, makes Tournapull-Carryall operation easy, too.

Have Dealer Check Your Equipment

Ask your LeTourneau-"Caterpillar" dealer to check your equipment periodically. He's well equipped to supply repair parts quickly, to build up Dozer blade tips, Rooter shanks, etc., or to handle major overhaul jobs. Call him NOW.

Haul One Way	98 H.P. Model C (11 yards heaped)		150 H.P. Super C (15 yards heaped)	
	Trips	Pay Yards	Trips	Pay Yards
600	17.1	150	15.0	180
1200	14.0	119	12.0	144
1600	12.3	104	10.7	129
2000	10.9	93	9.7	116
3000	8.4	71	7.6	91
5000	5.8	50	5.4	65

These figures are based on a 60-minute hour, loading common earth on the level with a "Caterpillar" D8 pusher and hauling over good roads.

LETOURNEAU

PEORIA, ILLINOIS • STOCKTON, CALIFORNIA

Manufacturers of DOZERS, CARRYALL* SCRAPERS, POWER CONTROL UNITS, ROOTERS*, SHEEP'S FOOT ROLLERS, TOURNAPULLS*, TOURNAROPE*, TOURNATRAILERS*, TOURNAWELD*, TRACTOR CRANES. *Name Reg. U. S. Pat. Off.

You Can Depend on Your JAEGER Distributor

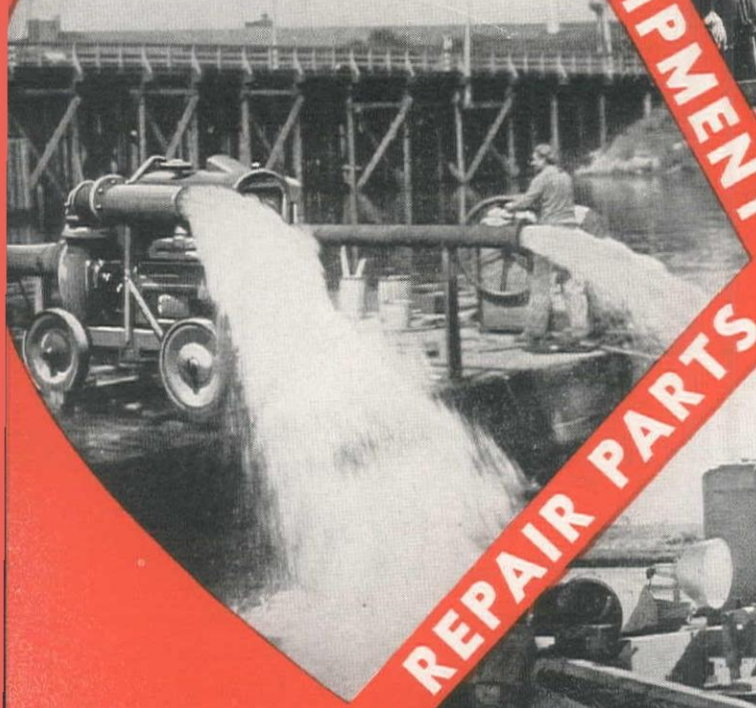
for EQUIPMENT

for SERVICE

REPAIR PARTS

IN STOCK: JAEGER "SURE-PRIME" PUMPS

—the Pumps that Give You CERTIFIED HIGH PERFORMANCE . . . Every Unit Individually Factory Tested . . . Sizes to Meet Your Need.



IN STOCK: JAEGER SPEEDLINE MIXERS with Machined Steel Drum Tracks, Automotive Type Transmission—to Mix Faster, Run Quieter, Longer.

FOR IMPORTANT PAVING JOBS: SCREW SPREADERS and TYPE "H" FINISHERS

—the Method Which Made Today's Pace Possible on Airports and Strategic Roads.

More Than 100 Service and Supply Stations—as Close as Your Telephone:

Wherever important construction and paving work are being done today, there is a Jaeger distributor close by—with the experience, the equipment and the organization to help you lay out and equip your job and keep your equipment rolling.

Complete Stocks of Parts—on hand to save you costly lay-ups and delays.

Trained Mechanics, with factory shop facilities to check, repair and keep your equipment working efficiently.

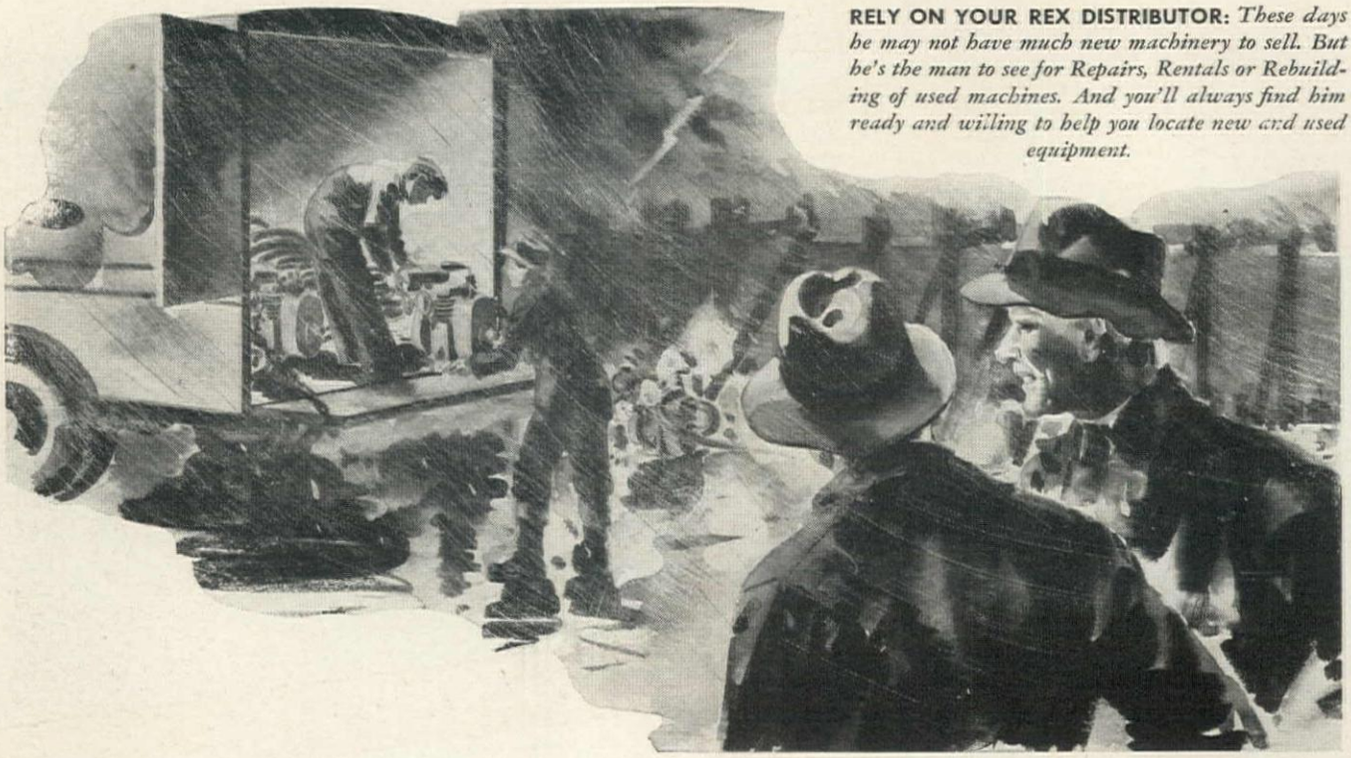
Stocks of Jaeger Pumps and Mixers, for sale or rent, in many sizes.

Direct Help on Your Paving Problems: Men who know today's methods and machinery and the local conditions will help you to lay out your job and meet your schedules. Jaeger traveling engineers are also available for special problems of spreading and finishing airports or strategic pavements, both concrete and bituminous.

JAEGER EQUIPMENT DISTRIBUTED BY: Edward R. Bacon Co., San Francisco; Smith Booth Usher Co., Los Angeles; C. H. Jones Co., Salt Lake City; H. W. Moore Equip. Co., Denver; Smith Booth Usher Co., Phoenix, Ariz.; R. L. Harrison Co., Albuquerque, N. M.; A. H. Cox & Co., Seattle, Wash.; Wilson Equipment & Supply Co., Cheyenne, Wyo.; Nelson Equipment Co., Portland, Ore., Twin Falls, Idaho, Spokane, Wash.; Montana Powder & Equipment Co., Helena, Montana.

HOUSANDS OF REPAIR ARTS for Major Items of Con-actors Equipment are Quickly vailable to You from Our istributors' Stocks.

MECHANICS WHO "KNOW THEIR STUFF" You will find Jaeger distributors outstanding in the caliber of their service organizations and shop facilities.



RELY ON YOUR REX DISTRIBUTOR: *These days he may not have much new machinery to sell. But he's the man to see for Repairs, Rentals or Rebuilding of used machines. And you'll always find him ready and willing to help you locate new and used equipment.*

It was raining cats and dogs at midnight

I NEVER did see such rain as we had that night. Our Rex Pumps were delivering every bit of their rated capacity. But we just didn't have enough of 'em.

"Let's call the Rex Distributor over," my foreman said. "I know it's past midnight, but he's the kind of a guy who will help us out, come hell or high water."

So we did. An hour later he was backing in on our job with a half dozen of those little 57-pound Rex Juniors in the back of his truck. "Just a little Rextra service," he punned.

Man, you should see those pumps handle that water. The Rex Distributor was right when he called them the champs of the lightweight, heavy-duty pumps! They certainly saved our job.

CHAIN BELT COMPANY OF MILWAUKEE

MIXERS • PUMPS • PAVERS • MOTO-MIXERS PUMPCRETE

See your REX Distributor *first* for

REPAIRS, RENTALS, REBUILDING

AMERICA'S LIFE LINE to the NORTH IS OPEN!—

Operating months ahead of even the stiff schedule set up by Army engineers!

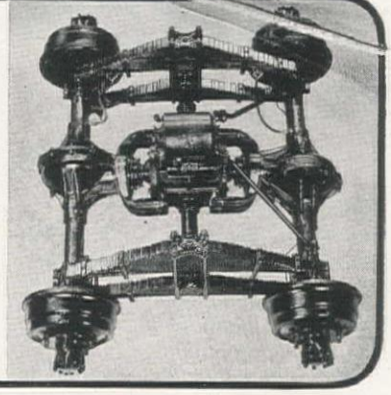
A tough assignment in rough country calling for husky, durable, efficient equipment — and right on the job is a big fleet of trucks with

THORNTON
FOUR-REAR-WHEEL
DRIVE

By means of **THORNTON** installations these trucks have been converted from 1½ to 2-ton vehicles into heavy-duty, four-rear-wheel drive trucks handling 6-yard dump bodies.

Standard heavy duty trucks are not available today—but here is the answer to that problem. You can convert new or used 1½ to 3-ton trucks to husky, reliable heavy-duty units of more than twice the capacity. They actually do the job better and cost less.

Put TWO driving axles under the load instead of one, double the gear speeds, improve springing and load flotation, gain vastly superior tractive ability.



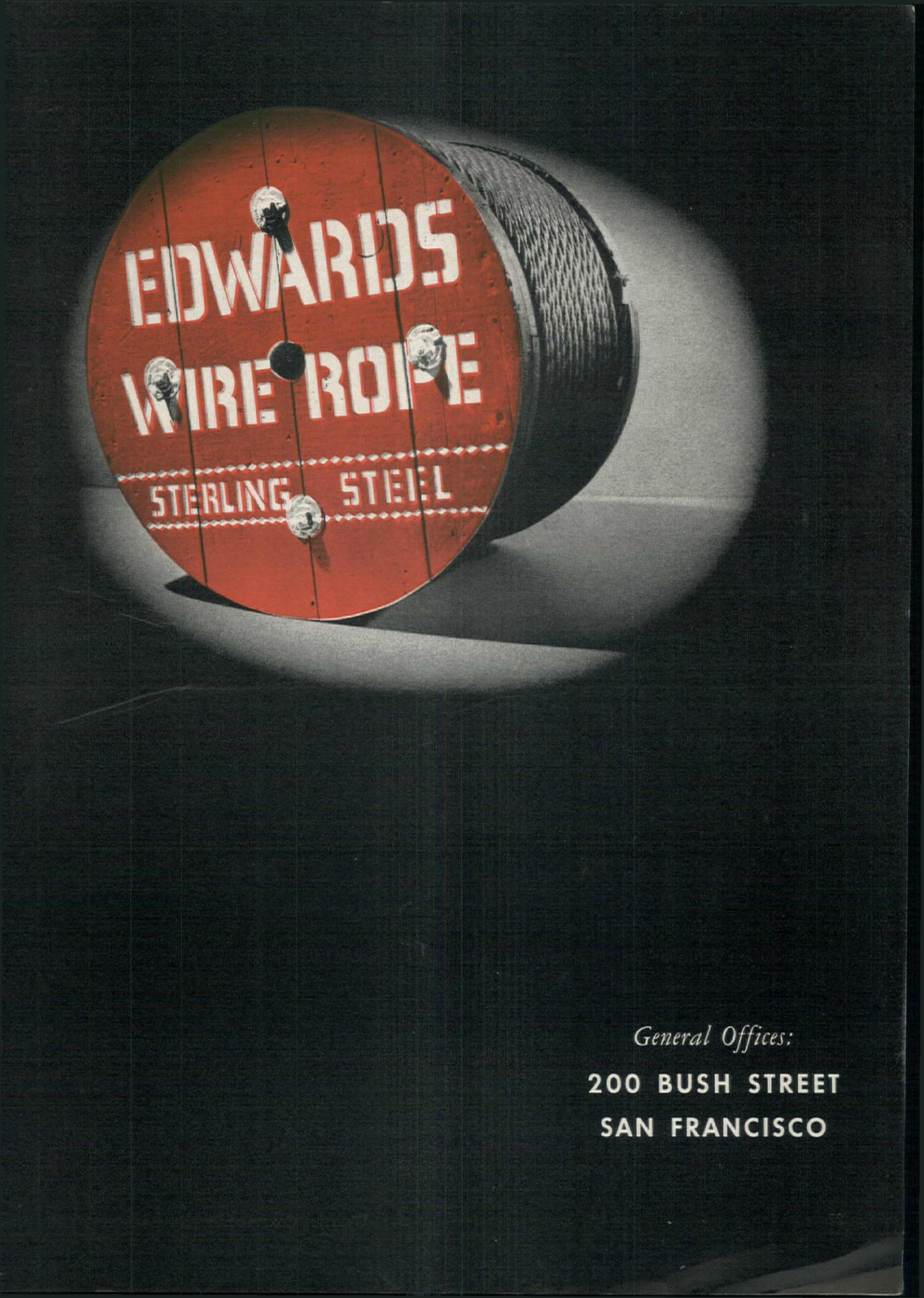
While Uncle Sam still approves, act quickly! Contact your nearest Truckstell-**THORNTON** dealer or wire the factory direct. Trained men will engineer this equipment to suit **YOUR OWN PARTICULAR JOB.**

THORNTON TANDEM CO.

8709-8779 GRINNELL AVE. DETROIT, MICH.

Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL

"When you need TRACTION you need THORNTON"



General Offices:

200 BUSH STREET

SAN FRANCISCO

merica Has A New "Main Street"!

It's the Alaska-Canada Highway, but it's Main Street for it's the *main* reason why the Japanapes won't rename it "Alaskakuo" and set up a puppet emperor over it.

You'll find Buckeye Clippers—the convertible shovels with vacuum power control—working along Main Streets in cities all over America and in gravel pits, material yards and on excavating jobs just off Main Street. And Buckeye Clippers made the dirt fly on America's new "Main Street." Subarctic weather is their meat—extreme heat or cold doesn't affect *vacuum control.*

Model 70 3/4 yd. Clippers were used, one of which is shown above. They're on many other vital war projects, too. It's Vacuum Control for Victory!

It's a people's war —defend your Liberty by buying war bonds.

BUCKEYE TRACTION DITCHER CO.
"Part of the Arsenal of Democracy"
Findlay, Ohio

How to Make Your Shovel Last Longer!

1. Keep dipper teeth sharp. (Saves fuel, oil and maintenance; increases production.)
2. Keep all parts well lubricated and clean. Accumulation of dirt gets into the moving parts and causes excessive wear and damage.
3. Don't abuse your shovel—lifting loads beyond its capacity—piling on extra counterweight—careless and rough operation.
4. Don't allow cables to cross wrap on the drum.
5. Keep crawler treads adjusted properly.
6. Don't use abrasive material on clutches and brakes. If grease gets on the linings, clean with gasoline.
7. Keep all joints on the vacuum system tight.
8. Change the oil in the motor crank case regularly.
9. Clean air cleaner regularly.
10. Use clean water in the radiator—flush it out occasionally.

Built by Buckeye

Convertible Shovels

Trenchers

Tractor Equipment

R-B Finegraders

Road Wideners

Spreaders

up to 40 TIMES more hole per auger

Cuts Faster . . . With Less Power . . . Reduces Replacements

Stoody Tube Borium is composed of tungsten carbide particles enclosed in mild steel tubes, suitable for application by welding. Because it is the hardest metal ever produced, it easily cuts materials such as granite, shale, concrete, and withstands the severest kind of abrasion. Auger bits when properly tipped with Tube Borium drill as much as 40 times more hole than unprotected augers, and they do it faster without sharpening . . . using less power.

Applications are made with ordinary electric arc or acetylene welding equipment at reasonable cost and with very little effort. Prices of Stoody Tube Borium and methods of application are more fully described in the Stoody bulletin "Tube Borium." Write for free copy!

STOODY COMPANY

1136 WEST SLAUSON • WHITTIER, CALIF.

STOODY COMPANY *Hard Facing Alloys*

FOR PARTS

FOR SERVICE

SEE YOUR "CATERPILLAR" DEALER

KEEP 'EM WORKING!

To win the war we must all pull together. "Caterpillar" owner, dealer and manufacturer—each has a responsibility to the other. All three have a responsibility to the Nation which is fighting to bring us Victory.

• • •

NEARLY ALL of "Caterpillar's" production has been "drafted" for the fighting fronts. The manufacturer has no choice. The dealer has no choice. The owner has no choice. For private contracting and production work, we must face grim necessity . . . we must make the present equipment do. Yet we must — and *will* — carry on!

"Caterpillar's" responsibility to the owner and dealer is to help keep both in business. . . . To supply the parts needed to keep "Caterpillar" Diesel Tractors, Graders, Engines and Electric Sets *working;* to supply the dealer so that he may render helpful mechanical service.

The "Caterpillar" dealer's responsibility is to give the owner the full benefit of his expert knowledge and service facilities. Fortunately, all "Caterpillar" dealers are well equipped for this. Their inspection, repair and maintenance facilities are modern. Their tools are specially designed, their men factory-trained for work on "Caterpillar" equipment.

The "Caterpillar" owner's responsibility is to himself and to his country, now at war. All the work his "Caterpillar" Diesels can perform is needed today in the war production effort. Idle machines are an aid to the enemy. The owner should have his "Caterpillar" dealer look over his equipment . . . to help in spotting trouble *before* it happens.

The owner himself knows when blades, grousers, track pins, rollers and sprockets have become worn from long or severe usage. It also may be apparent that engine power has diminished and that he is now getting considerably less of the work capacity which was originally built into these sturdy and dependable power-plants.

Other signs of needed adjustments, repairs, overhaul or parts renewals are usually less easily detected. A *service-dealer inspection pays.* DON'T PUT IT OFF. Then arrange with the dealer to fix up your "Caterpillar" Diesel units — to *keep 'em working.*

CATERPILLAR

REG. U.S. PAT. OFF.

DIESEL

CATERPILLAR TRACTOR CO.

SAN LEANDRO, CALIFORNIA • PEORIA, ILLINOIS

TO WIN THE WAR: WORK—
FIGHT—BUY WAR SAVINGS BONDS!

KEEP 'EM DIGGING!

ARMY E NAVY

A new star has been added to P&H's award for continued excellence in war production.

REGULAR INSPECTION AVOIDS TIME LOSSES

For greater wartime efficiency, regular inspections made when machine is idle or between shifts, will add to actual digging time. Determine in advance what wearing parts will need attention. Be prepared to handle repairs quickly. With such important advantages as welded rolled steel construction, automotive hydraulic control, oversize swing clutches and many others, your P&H will see you through the toughest digging with a minimum of attention. You'll get the most from your machine and aid the war effort by planning your maintenance properly to avoid shut downs during regular operation.

General Offices: 4490 West National Avenue, Milwaukee, Wisconsin

HARNISCHFEGER CORPORATION

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

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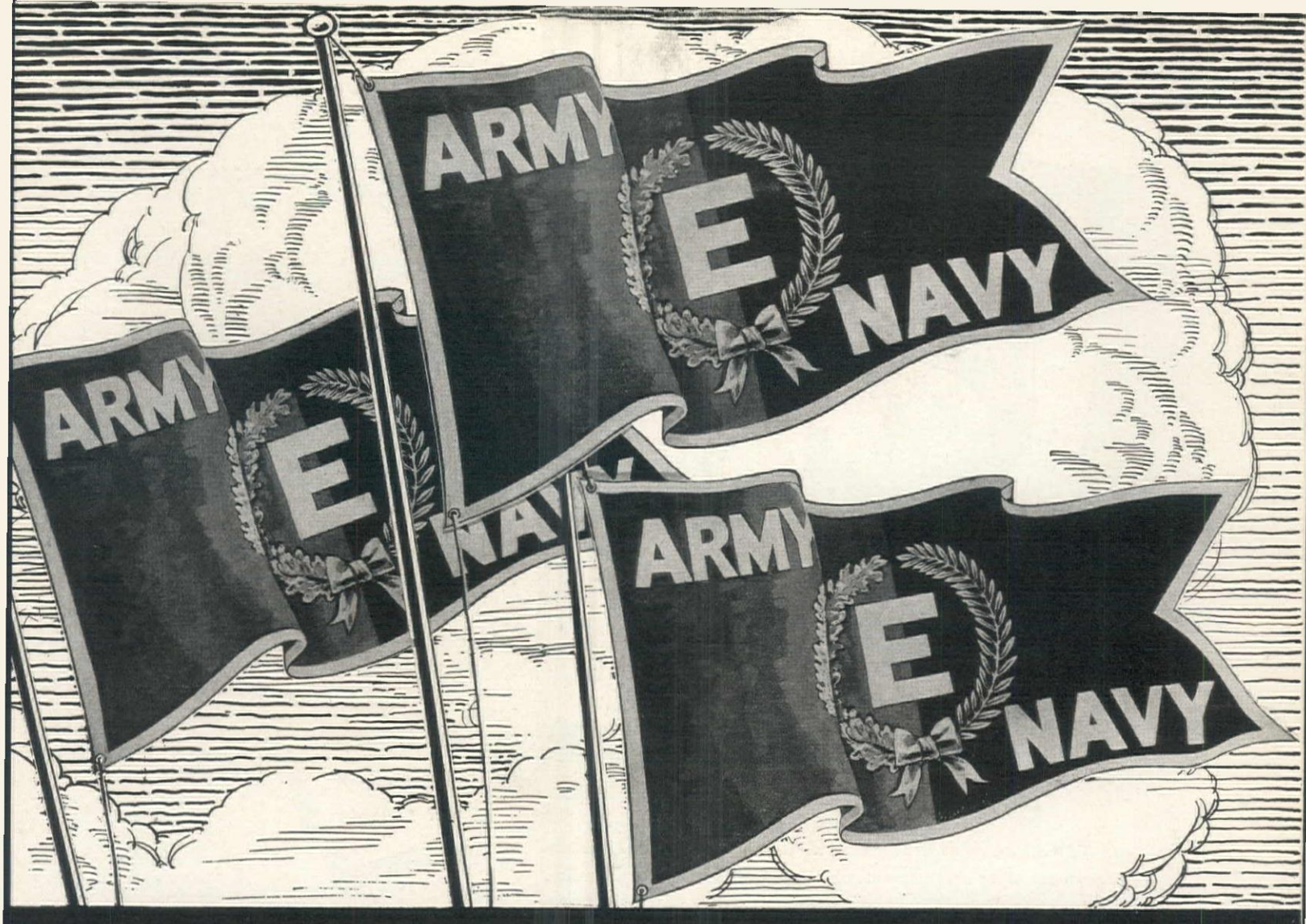
Los Angeles, California	Diesel Motor Sales & Service Corporation
Nanaimo, B. C.	Cummins Diesel Sales of B. C., Ltd.
Phoenix, Arizona	Watson & Meehan
Portland, Oregon	Cummins Diesel Sales of Oregon, Inc.
Salt Lake City, Utah	Cummins Intermountain Diesel Sales Corporation
San Francisco, California	Watson & Meehan
Seattle, Washington	Cummins Northwest Diesel Sales
Spokane, Washington	Cummins Diesel Sales of Spokane
Vancouver, B. C.	Cummins Diesel Sales of B. C., Ltd.



THREE PENNANTS FLY IN RECOGNITION OF

"High Achievement in the Production of War Equipment"

The employees of *all* Ingersoll-Rand plants won these Army-Navy "E" Awards for their high achievement in building equipment needed to win this war.

These men and women are turning out the Ingersoll-Rand machines urgently needed by our combat forces. They are also rushing through the I-R equipment that is vital for the production and operation of

Airplanes . . . Fighting and Cargo Ships . . . Tanks . . . Ammunition . . . Synthetic Rubber . . . Aviation Gasoline . . . Airfields, Bases, Roads and Bridges . . . Metal and Coal Mining . . . Railroads . . . Iron and Steel Mills . . . Machine Shops . . . Oil Production, Refining and Pipe Lines . . . Power Plants . . . Textiles . . . Foods . . . Process Industries . . .

The I-R line includes 1000 sizes and types of air compressors; over 500 different rock drills and pneumatic tools; hoists; pumps and engines for contractors and mines, quarries. Let us help you with your problems.

Communicate directly with any of the following Ingersoll-Rand Branch Offices:

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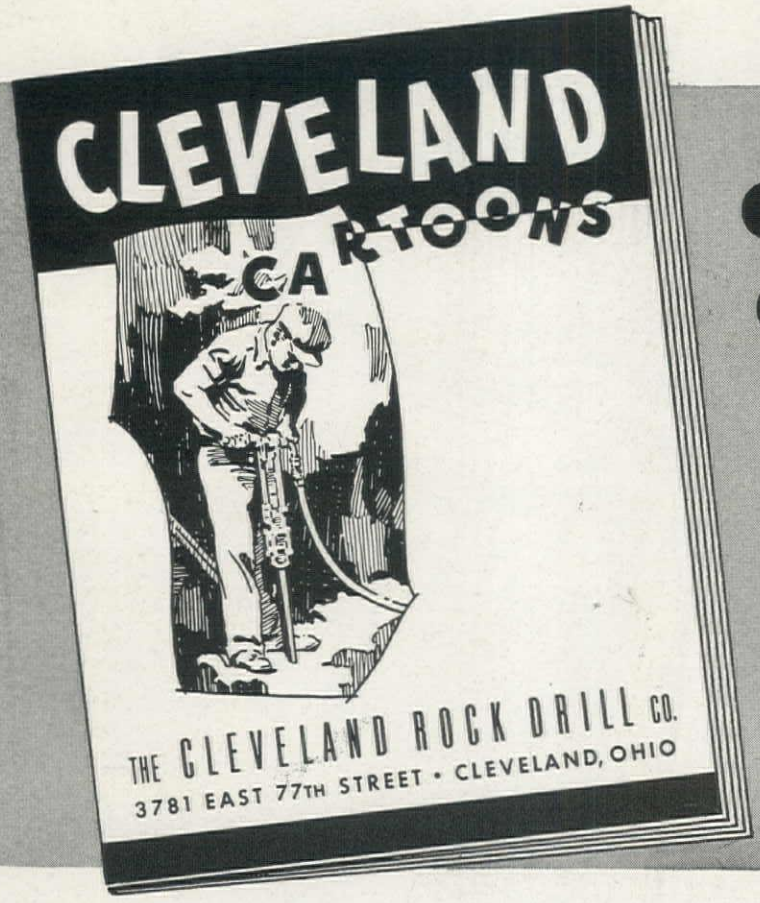

CLEVELAND CARTOONS tell how to keep rock drills *on the Job*

IT'S *FREE* write for a copy

THIS booklet of Cleveland Cartoons presents, in an amusing style, useful hints on proper rock drill maintenance. It tells you and your men what you can do to get more work out of your tools with minimum expense for repairs and compressed air. Your men will enjoy the practical, down-to-earth style of these cartoons. It covers many important phases of operation such as lubrication, dull drill steels, worn chucks, cleaning, etc.

We have already received requests for thousands of copies of Cleveland Cartoons. In the interests of efficient wartime operation, write *now* for your *free* copy.

WESTERN BRANCHES

BERKELEY, CALIFORNIA
572 Santa Barbara Road

WALLACE, IDAHO
518 Cedar Street

SALT LAKE CITY, UTAH
65 West Fourth South St.

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LE ROI-RIX MACHINERY COMPANY
3817 Santa Fe Avenue, Los Angeles

THE RIX COMPANY, INCORPORATED
582 - 6th Street, San Francisco

BUY U. S. WAR BONDS AND STAMPS

A TYPICAL CLEVELAND CARTOON

DON'T USE DULL DRILL STEELS—When the bit, from wear or improper sharpening, loses its gauge, it will no longer be free in the hole and the blows of the hammer wedge it tightly, greatly slowing up, if not entirely stopping the progress of the drill. Never use dull steel. You get no drilling to speak of, and you put your machine in the repair shop besides.

The CLEVELAND ROCK DRILL CO.

Subsidiary of The Cleveland Pneumatic Tool Company

CABLE ADDRESS: "ROCKDRILL" • CLEVELAND, OHIO

LEADERS IN DRILLING EQUIPMENT

Get the most out of YOUR TRACTOR with

BUCKEYE CABLE CONTROL

ADDING Buckeye Cable control to your tractor steps up its output two ways . . . first, you'll get higher output from your cable-controlled equipment with Buckeye's fast, accurate winch; second, your tractor can handle scores of new and *different* jobs with Buckeye's smooth, rugged cable power.

Using a two-drum Heavy-Duty Hoist, one drum can operate your dozer, ripper or scraper, leaving the second drum free to operate another piece of equipment or ready to handle the dozens of cable pulling, hoisting or hauling jobs that turn up on every project. Spooling 350 feet of ½" cable, the wide, husky Buckeye drum gives you over 8,000 lbs. line pull and a line speed of more than 300 ft. per minute. For hoisting jobs, your line can be reeved through single or multi-part sheaves—plenty of cable to work with, plenty of line pull for the tough ones. Simple job-made hoist frames can be mounted at the front, rear or sides of the tractor. Line may be run out directly from the drum to snake logs, pull out stalled equipment or pull cable, fencing, etc. To get the *most* out of your tractor, equip it with Buckeye Cable Control NOW!

Write for specifications on Buckeye winch models to fit your tractor . . . today.

THE BUCKEYE TRACTION DITCHER COMPANY
FINDLAY • OHIO

WITH BUCKEYE CABLE CONTROL, YOUR TRACTORS CAN DO MORE JOBS!

Built by Buckeye

Convertible Shovels

Trenchers

Tractor Equipment

R-B Finegraders

Road Wideners

Spreaders

Joseph B. Eastman, Director of the Office of Defense Transportation, addressing a Mack Conservation Meeting in Washington, D. C.

MACK TACKLES TRUCK CONSERVATION IN A NEW WAY

BRIGHT spot in America's truck conservation program is the remarkable success of Mack Truck Rallies, already held in 45 cities throughout the nation. At these gatherings, attended by drivers, owners and mechanics, as many as 3000 men at one time have raised their right hands and repeated in unison the oath of the U. S. Truck Conservation Corps.

Overflow meetings at Mack branches are heartening evidence that America's drivers and mechanics are eager for information on how to help the war effort by making trucks and parts last longer. Officials of O. D. T., including Joseph B. Eastman, have recognized the great value of these gatherings by personally addressing them.

How to keep America's vital trucks rolling till Victory is won! That's the big problem facing everyone connected with motor trucks. And that's the central theme of Mack Conservation Rallies. No sales talks! No pep talks! Just plain, down-to-earth facts on how truck life *can* be increased. Mack transportation engineers impress on their listeners that present trucks simply cannot be replaced, *must* be made to last for the duration. Stress is laid on the great responsibility of drivers and mechanics to give special maintenance attention to their equipment. Experts review the entire driving operation pointing out how the driver can test during his run to detect minor troubles before they develop into serious breakdowns. Displays of actual parts ruined by neglect and carelessness serve as a forcible reminder of the practical way in which drivers and mechanics can help the war effort by conserving critical materials and lengthening the life of irreplaceable parts.

Hundreds of truckmen have written in to tell us how much these meetings helped them. Let us give you the date of the next Mack meeting in your vicinity. Two hours now can add months and even years to the life of trucks you now operate.

MACK INTERNATIONAL MOTOR TRUCK CORPORATION

Los Angeles • Sacramento • Fresno • San Francisco • Seattle • Portland

YOU ARE INVITED TO ATTEND ANY OF THE FOLLOWING MACK CONSERVATION MEETINGS:

LOS ANGELES - JANUARY 29 — PORTLAND - FEBRUARY 9

SAN FRANCISCO - FEBRUARY 3 — SEATTLE - - FEBRUARY 12

SALT LAKE CITY - - FEBRUARY 16

Mack

TRUCKS

ONE TON TO FORTY-FIVE TONS

•

BUY U. S. WAR BONDS

A SALUTE to the Nation's War Effort

★ Since Pearl Harbor, our Nation has amazed the world with its speedy transition to war production. Today its tanks, ships, planes and guns, as well as its fighting men, are dealing telling blows on every far-flung fighting front. Marion salutes the Nation's war effort and is proud of the part it is playing in the production of vital raw materials and the construction of war plants. Victory is bound to be the reward of such determined effort.

THE MARION STEAM SHOVEL CO.

Marion, Ohio, U.S.A. *Offices in all principal cities*

Serving industry since 1884

MARION

SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • PULL-SHOVELS • WALKERS

Gasoline — Diesel — Electric — ¾ cubic yard to 35 cubic yards

PARSONS

TRENCHERS Speedily Build Home Defense

Long, wide crawlers, three point suspension, overload clutch, two speeds on buckets and conveyor along with 16 digging speeds are a few of Parsons' Trenchers outstanding features.

Finishing ahead of schedule means only one thing—SPEED. That's how the Parsons' Trenchers have built and will continue to build a home defense that will not be penetrated by the enemy. With sixteen digging speeds ranging from eleven to thirty-nine inches per minute how could they help but be a home defense weapon. Add to this sixteen forward speed changes and four different reverse accelerations. The traveling speed of these rugged metal soldiers is one and three-fourths miles per hour. An added speed feature is the two speeds on the bucket line. For SPEED as well as clean and deep digging, Parsons has been the accepted standard for over thirty-five years.

THE PARSONS COMPANY • NEWTON, IOWA

TRENCHING EQUIPMENT PARSONS

THIS AIR-FOIL DISC Can't Ever Make A "CRASH LANDING"

in Chapman's Non-Slam Check Valve

The Chapman Tilting Disc is designed on the same principle as an airplane wing, and for the same reason: To make it ride evenly in the slipstream, without a sign of flutter or vibration. And when flow in the pipe slows down, this airfoil disc is cushioned silently to a drop-tight seat. There is no slam, no hammer, no surging in the valve or opening of pipe joints. What's more, this disc is the only moving part of the valve, and is hinge-pinned and balanced so that wear is practically out.

Chapman's exclusive non-slam design means that head loss is cut 65% to 80% over conventional types of check valves, cuts pumping costs, keeps flow full with an inner waterway that is the same diameter as the pipeline. Operation is equally efficient on vertical or horizontal lines. Send for FREE BOOK that gives full test results and engineering data.

THE CHAPMAN VALVE MFG. CO., INDIAN ORCHARD, MASS.

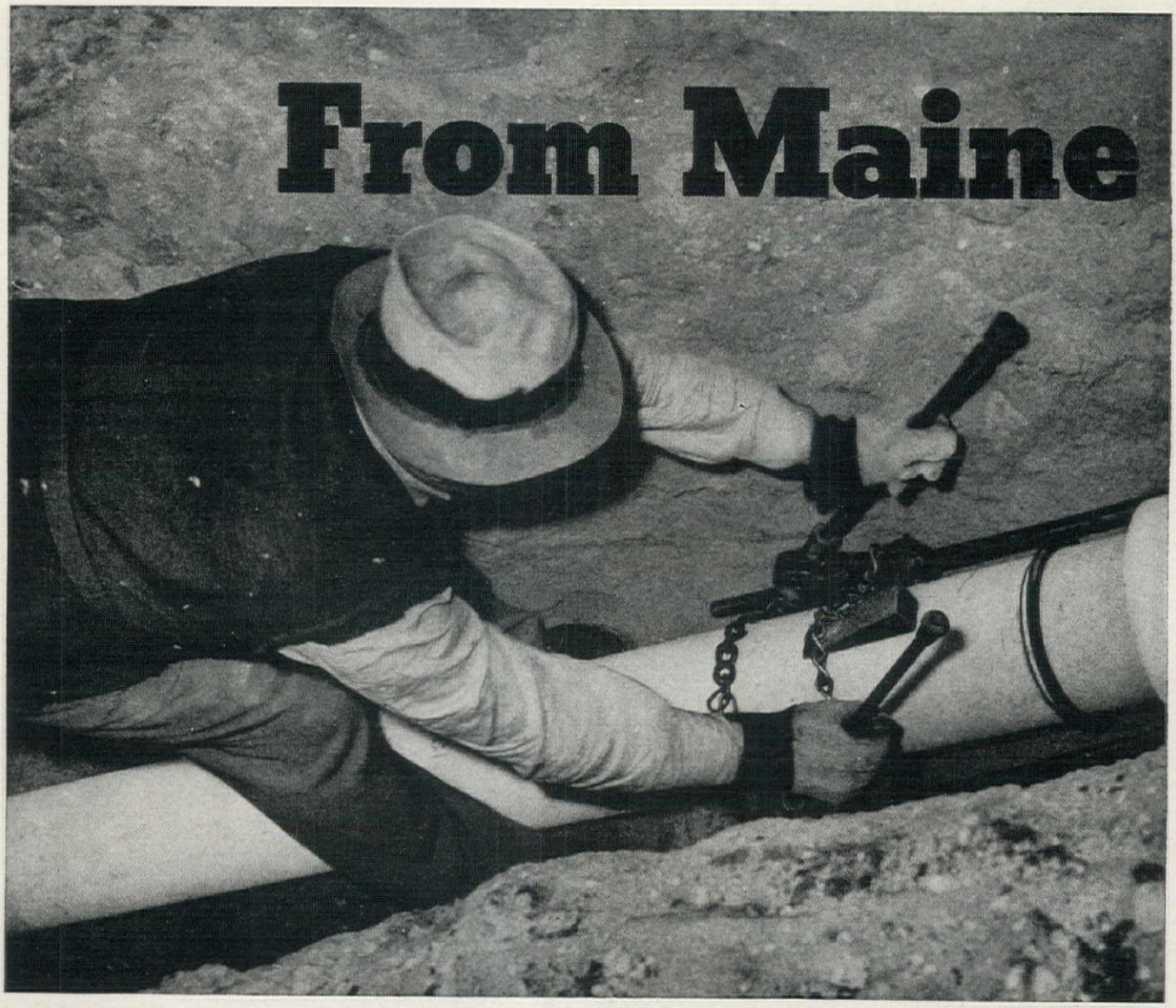
CHAPMAN NON-SLAM CUSHIONED CLOSING CHECK VALVES

U.S. cast iron PIPE

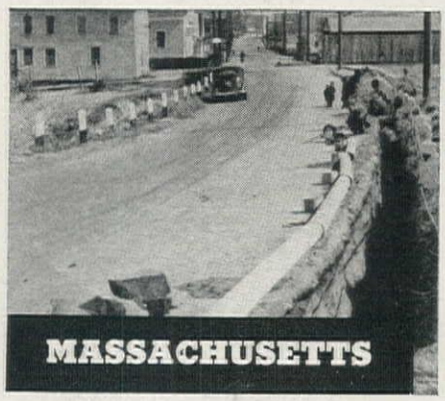
U. S. PIPE & FOUNDRY CO.
General Offices: Burlington, N. J.
Plants and Sales Offices throughout the U. S. A.

By metallurgical controls and analysis of raw materials, we know the *physical characteristics* of the iron used in making Super-de Lavaud Pipe. The pipe is cast centrifugally in a metal mold and heat treated to increase toughness and assure uniformity of metal structure. The finished pipe is subjected to a regularly scheduled series of rigid tests. By these methods and controls, a high standard is attained and maintained—of metal strength, ductility and impact-resistance.

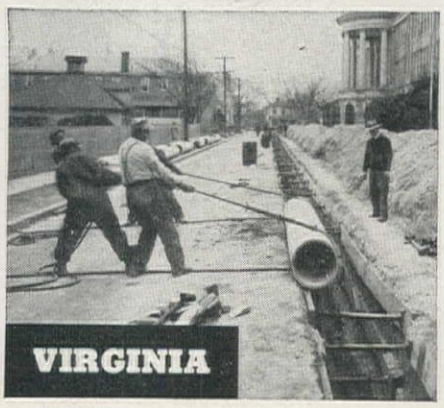
Lithographed on stone by Edward A. Wilson for U. S. Pipe & Foundry Co.


From Maine


MAINE


MASSACHUSETTS


OHIO


VIRGINIA


MISSOURI

to California . . .

ALL OVER THE COUNTRY, J-M Transite Pipe has steadily gained in use *for civilian water lines*. Now, virtually all new Transite Pipe goes into water transmission and distribution systems in camps, bases and war plants. For civilian *or* military use, these features of Transite Pipe mean efficient, low-cost water transportation:

No Tuberculation. Transite cannot tuberculate, because it is non-metallic. Its flow-coefficient is high initially (C=140) and in service.

Quickly Assembled. Even unskilled crews can form tight joints without difficulty with the Simplex Coupling. No heating or pouring required.

Easy to Handle. Light in weight . . . requires fewer men for handling . . . and only the larger sizes require mechanical handling equipment.

Low Maintenance. Made of asbestos-cement, Transite's inherent corrosion-resistance and maintained strength are important features in contributing to low maintenance costs.

Tight, Flexible Joints. The modern Simplex Coupling retains its tightness even when deflected as much as 5° at each joint, permitting wide sweeps with straight lengths.

For details on Transite Pressure Pipe, write for brochure TR-11A. Information on Transite Sewer Pipe for lower cost sewage-disposal systems is available on request—brochure TR-21A. Address Johns-Manville, at Los Angeles, San Francisco or Seattle.

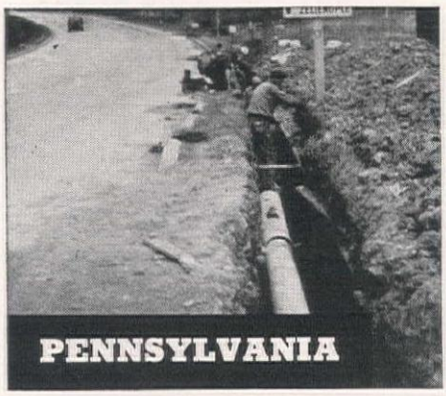
Johns-Manville

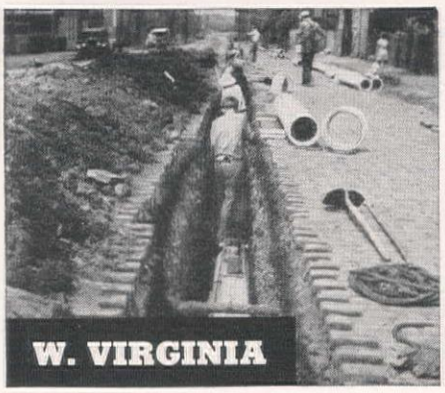
JOHNS-MANVILLE JM PRODUCTS

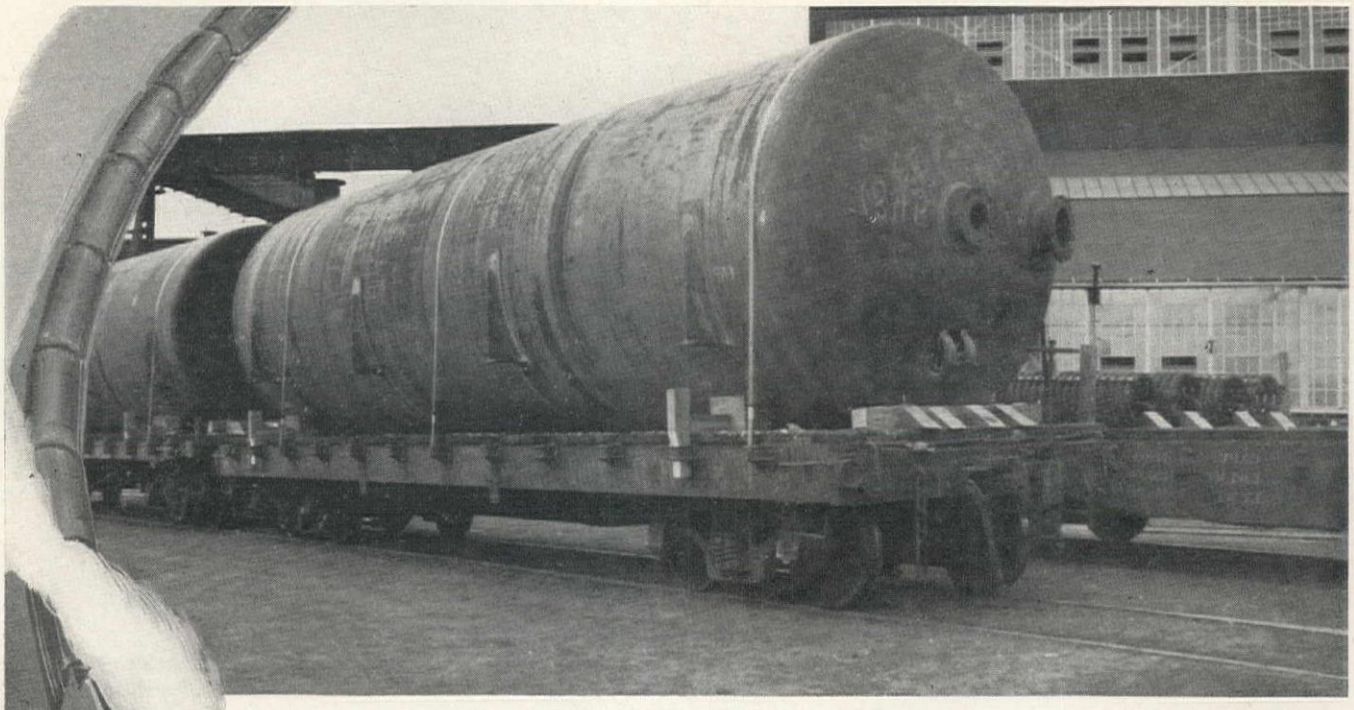
Transite Pipe

AN ASBESTOS PRODUCT

FOR EFFICIENT, ECONOMICAL WATER AND SEWER LINES







A TRAINLOAD OF *Digesters*

TO AID THE NATION'S WAR EFFORT

VIRTUALLY a whole trainload of these horizontal digesters were fabricated and shipped recently to a new aluminum plant. This particular installation, only one of many, merely serves to indicate the important role that welded steel pressure vessels are playing in the nation's war effort. The synthetic rubber industry, chemical plants and the petroleum industry are demanding welded steel pressure vessels of various types for their "production lines."

The fabricating of such pressure vessels at our plants is under strict inspection at all times. Complete facilities are available at our Birmingham plant for x-raying and stress-relieving as required by the governing specification. Vessels up to 13 ft. 2 in. in diam. and as long as can be shipped can be handled in the stress-relieving furnace. Those 80 ft. or less in length are stress-relieved at one time.

The digesters shown above were stress-relieved before being shipped from Birmingham. They measure 9 ft. 3 in. in diam. and 35 ft. long, and are designed for 200 lbs. per sq. in. pressure.

CHICAGO BRIDGE & IRON COMPANY

San Francisco.....1013 Rialto Bldg.	Houston.....5621 Clinton Drive	New York.....165 Broadway Bldg.
Birmingham.....1598 N. Fiftieth Street	Tulsa.....Hunt Bldg.	Philadelphia....1700 Walnut St. Bldg.
Chicago.....McCormick Bldg.	Cleveland.....Guildhall Bldg.	Washington.....330 Bowen Bldg.

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

WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED WESTERN HIGHWAYS BUILDER

January, 1943 — Vol. 18, No. 1

Plan Post-War Construction Now

REGARDLESS of future developments, no matter what direction events may take in the days to come, there is a job of planning to be done this year. When the war ends there will have accumulated a tremendous demand for all sorts of products; for highways as well as automobiles; for water supply and sewerage systems as well as houses; for industrial plants to house manufacturing equipment as well as calculators and typewriters. The manner in which these demands will be met after the war will be determined between now and the time the war ends.

There are those who say that all energy should be devoted to the immediate job ahead of us; that of winning the war, and that man-hours and money expended on post-war planning is stolen from the war effort and the war unnecessarily lengthened on that account. This is obviously false, particularly as it may apply to the construction industry. The work of the civil engineer and the contractor in producing war products is almost certain in 1943 to be reduced to about one-quarter of that expended in 1942. Some of the engineers, some of the contractors, and some of the construction workers will, of course, be employed this year in the design and construction of war facilities; others will enter new fields and contribute more directly to the war effort than they might otherwise; but some will find themselves with extra time which cannot be applied directly to the war effort by reason of the complicated and involved problems of production, supply and distribution. This time could be no better employed than in some form of post-war planning. There are some, engineers particularly, whose duties are confined to civilian activities and who could devote at least a part of their time to planning for the future.

There are others who say that we should not think of post-war planning for the very words imply overconfidence in the final outcome of the world-wide struggle. This is ostrich-type thinking of the most dangerous kind and will lead to disastrous results if continued. In the first place the statement itself implies ignorance on the part of those who would be engaged in the planning, but there can be no such thing as an ignorant but effective planner. In the second place no one who reads the news dispatches from the war fronts with any degree of intelligence can assume any measure of the confidence which appears between today's headlines. In presenting the subject of post-war planning for preliminary consideration, little thought need be given to how the war will end, but principally to the fact that it will end eventually. No matter how and when the the war may end, plans prepared for the following years will have to be adjusted in some degree to meet unforeseen conditions as they develop.

Finally, every engineer knows, and every citizen should realize, that advance planning is nothing more nor less than intelligent management. Everyone attempts to plan his personal affairs as far ahead as possible and this should apply even more to public affairs regardless of the present state of conditions. To fail to plan engineering structures as far ahead of their actual construction as possible would be bad enough in peace-time, but far worse in war-time when needed structures cannot be provided because of material, equipment, and labor shortages.

There are still others who say that a big program of public works will not be necessary following the war for wars are usually followed by boom times with only minor readjustments. Whether that be true or not has no bearing on the subject of post-war planning, for it is plainly evident that a tremendous backlog of urgently needed public works is being built up as a result of stringent war-time restrictions on construction. This is especially true in the eleven western states where great population shifts and increases have occurred. To neglect the planning of these needed public works so that they might be completed at the earliest possible date would endanger public health, safety, and welfare. They will have to be built regardless of boom or depression and plans for their completion should be ready, not only engineering-wise, but from a financial standpoint as well.

For the West the subject of post-war planning is a most important one. A well-planned program for development of the West, coordinated throughout the entire region, can be of the utmost value in the orderly development that has been on the way for many years and that has been materially increased by reason of the war. Haphazard planning, or no planning at all, might seriously cripple the future development of this region which would be a serious loss to the nation as a whole. It is essential that a well-planned development program be prepared.

Planning for the post-war period cannot be the responsibility of a single individual, a single group, or a single industry, of government or of private enterprise. It must be the responsibility of every individual and every industry as well as government. It can be effectively activated by the interest of groups such as professional and trade organizations through sponsorship of special projects and the deliberate activation of interest among individuals. The American Society of Civil Engineers, the Associated General Contractors of America, the Associated Equipment Distributors, and other organizations whose members are a part of the construction industry can do a great deal toward awakening an interest and sponsoring the undertaking of post-war planning. Labor unions of the buildings and trades crafts can likewise assist in the development of a post-war planning program.

Without question there is a job to be done. It looks big, but it can be done, even under the handicap of shortages in personnel, time, money, and materials. Many large industrial organizations have been considering the problem and laying their plans for a year. It is high time the engineers, contractors, workmen, equipment distributors, and equipment manufacturers gave it their personal attention. Don't leave it up to "the government" to take care of you.

Keeping a Time Honored Tradition Alive

and Making the New Year a Living Issue

Again, the time is at hand, when that wholesome American custom, of extending Greetings and New Year's Wishes, is observed by men of all stations and walks of life. It is a time of goodwill that springs from a spirit, grateful for the things we have and enjoy as a liberty loving people. And, it is a time of inventory and resolve—when the worn page of the past year is reviewed, turned and a new one greets us as we make a fresh start.

While endeavoring to look ahead, the year 1943 takes on a new significance. Heartened by what our armed forces are doing, we as a Nation have been spurred to greater action. And many of us, now more than ever, are striving to match the valor and sacrifice of our boys, so that throughout the coming year we can be happy in the thought of jobs well done—jobs that will hasten early victory and preserve that which we cherish and hold dear.

It is in this spirit, coupled with a desire to be of the greatest possible service, that we and all Austin-Western Distributors extend to you and yours our wishes for health and success, here at home as well as abroad.

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WESTERN CONSTRUCTION NEWS

JANUARY • 1943

Needed: POST-WAR PLANNING For the West

The foundation of sound planning for the western region should be built around conservation and development of our natural resources—To postpone this preparation until after the war has been won would be courting the disaster of unpreparedness

By REX L. NICHOLSON

Regional Director of the Federal Works Agency for the Eleven Western States and the Territories of Hawaii and Alaska

AFTER THE WAR which is it to be—a good job at good wages on important work, or relief? Our men in the fighting forces are asking that question. It is up to us to find the answer.

Much has been said recently about post-war planning. There are many different opinions as to what should be done. There are those who believe the post-war problem should be forgotten until the war has been won. They feel that every ounce of energy available will be needed for the job at hand and that when the war is over the demand for consumer goods and materials for the rehabilitation of the war-devastated regions will tax our productive power to the limit and utilize our surplus manpower for several years to come. Another school of thought recommends the immediate initiation of a large scale program of nation-wide planning, not only as a solution for the post-war problem but also as the only way of obtaining a stabilized economy in a changing world. James J. Hill, the great railroad builder, once said the only way to succeed in the field of construction and development is to first plan the work and then work the plan. Anyone who has ever been responsible for large scale operations on any front knows how absolutely right he was. The past several years have taught us many lessons that will not soon be forgotten. One of the most important of these is that a stable economy does not just happen any more. I believe the second school of thought is the right one.

A Program for Post-War Planning . . .

"There are those who believe the post-war problem should be forgotten until the war has been won. . . . Another school of thought recommends the immediate initiation of a large scale program of nationwide planning. . . . I believe the second school of thought is the right one."

"The great depression of the 1930's caught us wholly unprepared to utilize efficiently the millions of workers thrown out of jobs . . . consequently, projects had to be initiated for operation without proper preparation."

"If it becomes necessary to spend money to alleviate unemployment, why not make it a sound investment that will create additional opportunities for men to earn a livelihood . . . and accrue a return on the investment?"

"The West derives its income from three broad fields: agriculture, mining and lumber. . . . Industry has been attracted to the West by the availability of raw materials and cheap power."

"The very foundation of sound post-war planning for this western region should be built around the conservation, development and preservation of our natural resources. . . . Water is the pearl of great price in the West. . . . The entire program of water conservation, soil conservation,

(Continued on page 4)

Other nations of the world which have been torn to pieces by the war will have to be rebuilt and a large portion of the raw materials for their rehabilitation will have to come from the Americas. There will also be a considerable upturn in production for consumer markets here at home because of the inability to buy in wartime those goods and services which have come to be regarded as essential to normal, everyday life. Our automobiles will either be worn out or have become obsolete; we will need a new radio, a new range and a new refrigerator. Furniture will need to be replaced and the rugs will be badly frayed. A thousand other replacements will be made by those who have the purchasing power.

Between war and peace

But let us take a look at the picture from an over-all standpoint. The adjustment to be made this time in changing from a wartime to a peacetime economy will transcend anything we have ever experienced in the past. It is estimated that our armed forces will require from 7 to 9 million men, and at least 25 million workers will be exclusively engaged in actual war production at the height of the war effort. Six months after the actual fighting ceases 75 to 80 per cent of the war plants will close. Some of them will immediately re-tool for peacetime production. But this will require from six to twelve months during which time they will be entirely inactive from a production standpoint. It is hoped that at least 50 per cent of the armed forces can return home during the first year after the war has ended. It is this period of transition about which we need to be vitally concerned. There will be a definite need for a large cushion of public works to provide jobs and sustain the purchasing power of the people until the peacetime industrial upswing can get under way, for it has been estimated that the jobs of from 12 to 20 million workers will vanish at the end of the war.

The great depression of the 1930's caught us wholly unprepared to utilize efficiently the millions of workers thrown out of jobs during that period. It was too late then to sit down and

properly plan a program of public work. Time was the vital factor. The workers had to be employed immediately so they could eat; consequently, projects had to be initiated for operation without proper preparation and without being tied in with an over-all plan. It was impossible to furnish employment quickly on the type of project that would be self-liquidating or provide a permanent return on the investment. The preparation of this type of project requires a tremendous amount of time for the development of plans and specifications and we did not have the time.

The question we need to ask ourselves now is, Can we afford to have a repetition of that experience? The answer is very clear. We simply cannot. What we need in the West are more and better opportunities to earn a living. If it becomes necessary to spend money to alleviate unemployment, why not make it a sound investment that will create additional opportunities for men to earn a livelihood in their own communities and accrue a return on the investment at the same time? If we plan now for the efficient utilization of these potentially tremendous surpluses of labor when the time comes a large majority of them can be employed on sound, well-planned projects at prevailing wages that will increase the income of this nation by creating from $1.00 to $2.00 worth of profit earning assets for each dollar expended.

Development factors

Let us examine the requirements of a well balanced plan for this Western region of the United States. What are the essentials of any program that would tend to stabilize our community life and make it possible for the average citizen to enjoy a reasonable amount of prosperity, in either the rural or urban community, after the war? First, no urban community in the West can be prosperous without a prosperous rural community to support it; nor can there be any rural prosperity without those essentials that go to make up the source from which the rural livelihood is derived. In general, our rural population in the West derives its income in peace time from three broad fields of activity. They are:

1—Agriculture and stock raising.

2—Coal mining and the mining and smelting of our vast ore bodies.

3—The lumber industry throughout our Rocky Mountain and West Coast regions; the aircraft and shipbuilding industries on the West Coast; fishing and other allied activities and those industries that have been attracted to the West by the availability of raw materials and cheap power.

In an area as large as the eleven western states the scope of activity in each of these fields takes on a great variation and provides a wide opportunity for diversification.

Those crops which are grown successfully in various parts of the western states include citrus fruits, berries, soft fruits and nuts in the Pacific Coast states, together with all varieties of vegetables and some small grains and cotton; in the Rocky Mountain states large quantities of sugar beets, vegetables, hay, grain and fruit are grown wherever there is water for irrigation, while in the Pacific Northwest states there is one of the greatest apple and wheat producing belts in the United States. Stock raising, dairy farming and poultry products provide large sources of income throughout the agricultural and farming areas of all of these states.

The mining industry in this region produces gold, silver, copper, lead, manganese, magnesium, tungsten, molybdenum, cobalt, antimony, tin, chrome, arsenic, mercury, zinc, uranium, vanadium, zirconium, aluminum, titanium, berryllium and tantalum. Some of the largest coal fields in the United States are found in the West, plus large deposits of potash and asbestos.

There are large national forests in each of the eleven western states, which contribute more than two thirds of all of the lumber produced in the United States each year. During the past ten years some of the largest hydro-electric power projects in the world have been constructed in these states, providing an abundance of cheap power within their transmission radii.

Yet, with all these developments we have only just begun to open up the potential possibilities of the West. The great rehabilitation program made necessary by the war will utilize all of the raw materials which can be produced. In order to insure continuous sources of supply we must develop more mines, timber, water for irrigation, soil protection and hydro-electric power. These are the basic requirements for sustained production.

Power brings industry

Through surveys that have been made by the Corps of Engineers and the Bureau of Reclamation it has been determined that there are many more practical sites on our rivers and streams where hydro-electric power can be developed at reasonable costs. Almost without exception, the same water that produces power can be used for irrigation. Cheap power and increased agricultural activity will attract more industries to the West and more industries mean more jobs and more income and more opportunities for small business.

Instead of producing raw materials and shipping them East for processing and fabrication as has been done in the past, manufacturers can be interested in establishing large plants near these raw materials and cheap power so that our communities will have the advantage of the resultant payrolls. The final cost of the finished products can be reduced materially and still allow the manufacturer to earn a reasonable profit through the elimination of the transcontinental transportation costs we have experienced in the past.

The very foundation of sound post-war planning for this western region should be built around the conservation, development and preservation of all of our natural resources. Every effort should be made to stabilize income and to preserve and perpetuate the sources from which it is derived.

Generally speaking, responsibility for the financing of a program of conservation and development of natural resources will have to be assumed by the federal government. A comprehensive plan for this purpose should be laid out for each of our main rivers and their watersheds. In most cases, these rivers cross several state lines, making their development a joint responsibility of groups of states and the federal government.

Almost without exception, conservation projects can be set up on a sound, self-liquidating basis, so that the ex-

Post-War Program

reforestation, power development, and flood control can be accomplished by broad programs."

"We should have adequate and thorough mineral surveys in order to make proper plans for the development of low-grade ores. . . . Localized production of natural gas and petroleum presents a definite distribution problem."

"All of this type of work is not only economically sound, but is absolutely essential. . . . Employment can be provided for every surplus worker in the eleven western states. . . . Money spent on this basis will be a sound investment in permanent income."

"There should be developed a complete grid system of highways tied into transcontinental highways. . . . By the end of the war there will be a definite need for 9,000,000 new rural and urban homes. . . . Along with the need for additional housing will come an equal need for additional utilities and community facilities. . . . Present airport facilities will be found to be entirely inadequate."

"Comprehensive studies of population trends should be made. . . . Development of a plan of this scope will require active participation by practically all governmental groups, engineers, contractors, organized labor, and public spirited citizens. . . . A board representing all groups would undertake development of the general plan. . . . Individual plans should be completed to detailed estimates of materials and man-hours."

"It will require the joint effort of the enterpriser, the worker, and the government to readjust our own country and the other countries of the world after the war. . . . To postpone preparation for this task will be courting disaster."

penditure will become a good investment instead of a capital outlay without hope of return.

Soil conservation is basic

It is an accep'ed fact that the foundation of all wealth is the soil, directly or indirectly. It has been demonstrated that the productivity of the soil can be increased immensely and prolonged almost indefinitely through carefully planned program of soil treatment. The best authorities on soil conservation state that in order to conserve and protect properly the soil in this western region a balanced plan must include land terracing, noxious week eradication, water conservation and flood control. Millions and millions of tons of the most fertile soil in our states is washed down our rivers and streams to the sea each year because of failure to provide adequate control of the rainfall and melting snows.

By controlling the quick runoff of surplus water during wet seasons three essential objectives can be accomplished:

First, the conservation of every drop of available water possible for the irrigation of arid lands. Water is the pearl of great price in the West; our land will grow almost anything if we put sufficient water on it. Every effort should be made to develop more water for this purpose; few of our present irrigation districts have a sufficient supply to insure good crops during dry years. There are many ways in which the supply can be increased and immediate attention should be given this problem.

Second, one of the most destructive forces of nature, namely, floods, can be prevented. It is conservatively estimated that many lives as well as some $700,000,000 in property is lost each year in the United States because of the absence of flood control protection for our rivers and streams.

Third, our timber resources can be conserved. The supervisors of our great forests tell us that one of the first essentials to a sound program of reforestation and preservation of our forests is to prevent the quick runoff of the rainfall and snow water. If proper safeguards are provided and surface water runoffs are slowed down, the entire program of water conservation, soil conservation, reforestation and flood control can be assisted materially. This can be accomplished by broad programs of land terracing and the construction of literally thousands of small check dams and reservoirs in the mountains, forests and in the lowlands. This will provide a means of slowing up and impounding the excess water and releasing it slowly so the capacities of the rivers and streams in the lowlands will not be overtaxed; then the water can be used to the maximum for power development, irrigation and stock water.

In the beginning this nation had 900,000,000 acres of excellent forests. These have been depleted until there are only about 200,000,000 acres left. Even large portions of the forests which remain have been logged off or burned over and more extensive plans should be made for their reforestation. Millions of young trees should be set out each year. The forest rangers are badly in need of additional fire trails and roads to facilitate fire fighting.

Comprehensive programs of pest eradication and blister rust control also are essential to protect the growing timber. There are large areas where snags should be fallen and debris cleared away to make way for the growth of new timber. The records indicate that we are consuming 2½ billion board feet of lumber each year in excess of the new growth. It does not take an economist to tell you what will happen to that source of raw materials in a few years if we do not begin now to do something about it.

In providing this type of treatment for our forest lands a speedy reforestation of those areas would be brought about. This must be accomplished in order to protect our future timber supply.

WITH THE EXCEPTION of manganese, magnesium and lead the western states have a preponderance of the natural resources on which a post-war development can be built if planning is properly handled and coordinated.

Triple-purpose flood control

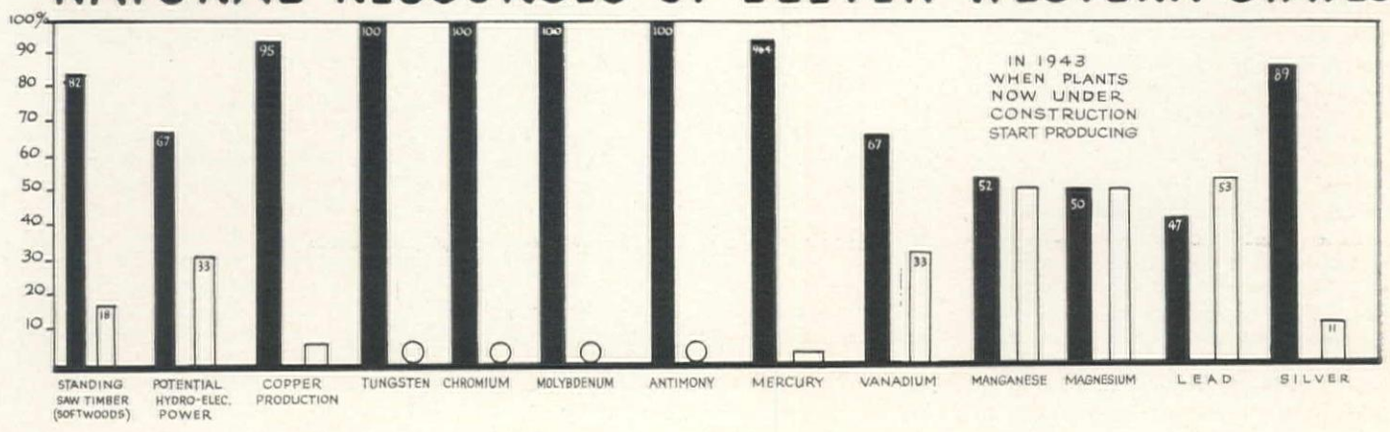
At the same time, and with the same effort, a great contribution will be made toward the control of flood waters. Splendid programs of bank revetment and channel stabilization have been carried on by the Corps of Engineers on some of America's larger rivers. Projects of this kind should be planned for every stream of any size in the entire country. It is conservatively estimated that 3 billion tons of fertile top soil are lost every year through erosion caused by wind and surface water. The actual figures on property damage caused by floods in the United States during the past ten years are simply staggering. If a like amount of money could be spent on well planned flood control projects during the next ten years the nation would be comparatively free of similar losses for the next 50 years.

Another very definite advantage of proper water conservation is that it can be made to provide small tracts of irrigated lands for thousands of farmers who are trying to make a living on dry lands. When there is abundant rainfall, these dry-land farmers raise good crops because the soil is very fertile. But generally the rainfall is light, resulting in poor crops or in no crops at all. How much better it would be if this dry land that has been plowed up could be seeded to grass and again used for grazing livestock. These dry-land farmers could then be transferred to small tracts of irrigated land where they would be sure of regular crops and a fair chance at a livelihood. It is still profitable to raise cattle and sheep on this dry land and will be for a long time to come if proper provision is made.

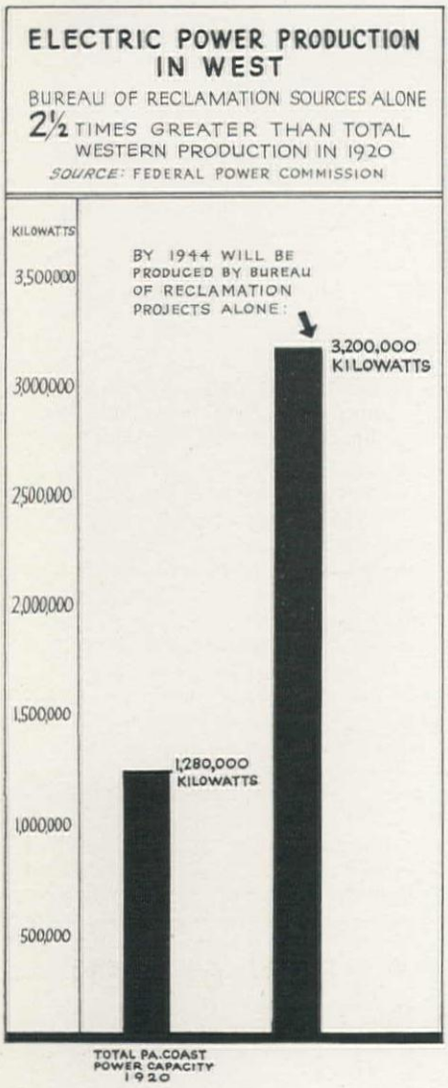
There is tremendous need for the extension of rural electrification. Comparatively few country homes are now supplied with electric power and yet it is one of the most valuable assets a farmer can have. Modern improvements in the generation of hydro-electric power have made small plants both practical and economically sound. There are hundreds of sites all over the country where both large and small amounts of hydro-

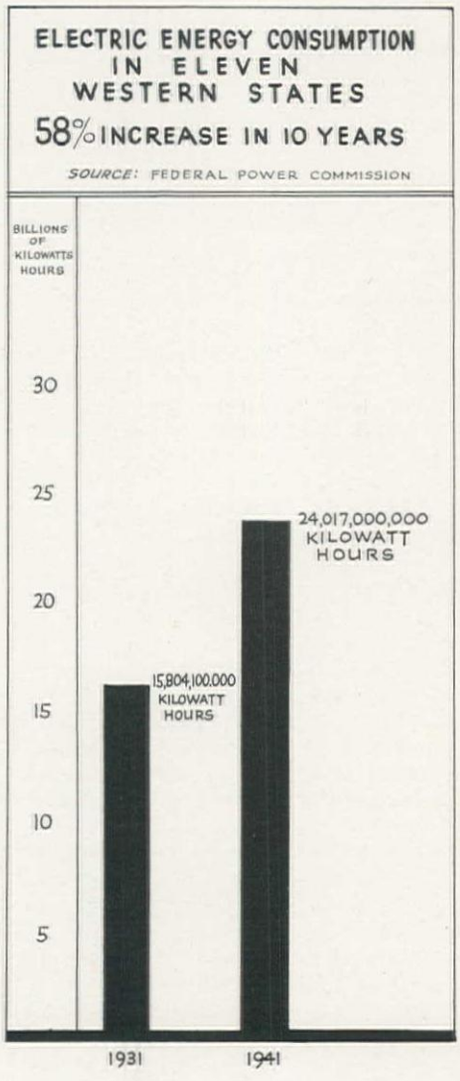
WEST ■ PARTIAL LIST OF □ REST OF U.S.

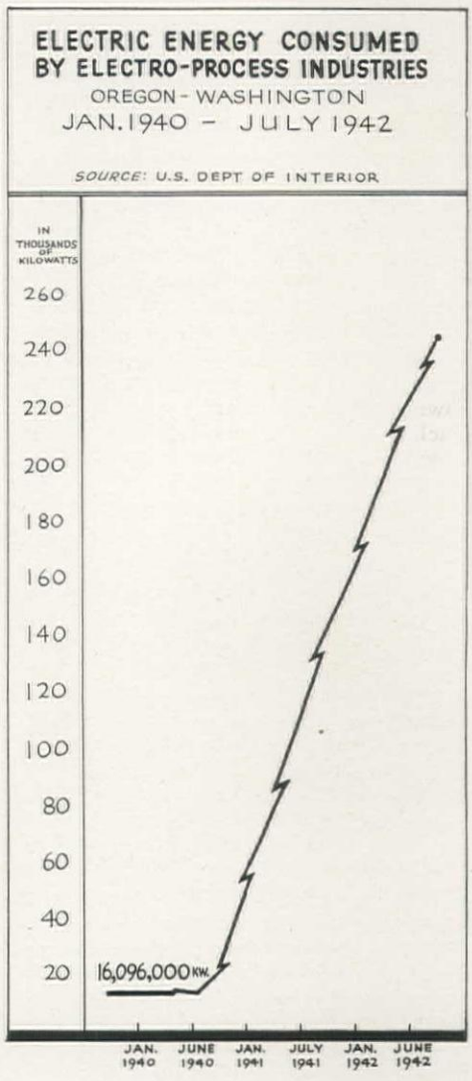
NATURAL RESOURCES OF ELEVEN WESTERN STATES



ELECTRIC POWER IN THE WEST







electric power, considered to be unsound for development in the past, are now feasible for exploitation. Each such project can be made to serve the multiple programs of soil and water conservation, reforestation and flood control.

Mineral and petroleum resources

The potential resources in mines and the metals industry are unknown simply because to determine where available low-grade ore bodies really are, and their extent, adequate and thorough mineral surveys should be made of each state in the West. It is generally believed that these low-grade ore bodies are tremendous but in order to make proper plans for their development we need definite knowledge of where they are and how much there is in each place. With this information, proper determination can be made as to the practicability of development and whether or not they can be mined and marketed on a profitable basis. We already have knowledge of some large low-grade ore bodies that have not been developed because of the lack of low cost transportation. These resources should be examined and plans made for the construction of mine-to-market roads wherever feasible; also some shallow water transportation from potential ore bodies to markets should be expanded.

LOW-COST POWER is essential to the exploitation of mineral resources and in the West power development is a natural factor always included with plans for water conservation which is a western necessity.

Natural gas and petroleum production is distinctly localized, at present confined to the eastern slope of the Rocky Mountains, with the exception of a small area in southern California. This leaves a vast area on the Western slope which contains potential possibilities of these natural resources which should be thoroughly surveyed for future developments. The present localized production presents a definite distribution problem; long water or rail hauls are necessary to provide these vital products to the rapidly-growing Northwestern empire, including western Canada and Alaska.

Recent experiences show that, during times of emergency, rail and water facilities are overtaxed in the transportation of materials which can be moved in no other manner. A comprehensive plan of oil and gas pipelines should be developed at this time in preparation for future emergency needs.

All of this type of work is not only economically sound but it is absolutely essential if we expect to hold what we now have in rural income; it is doubly essential if we expect to increase it.

Employment can be provided on projects of the kinds I have suggested for every surplus worker residing in the eleven western states after the war is over. Money spent for such projects will be a sound investment in permanent income that will double and triple as the years go on.

Transportation needs

The entire transportation system will undergo a radical change during and after the war. Both automotive and rail transportation will be much faster than they are now. It will be necessary to redesign the major portion of our present highway system. A complete grid system, tied in to two or more transcontinental highways of from four to eight lanes each from the West to the East and four or more similar lines from the north to the south should be developed. This

north-south system should connect with Canada and Alaska on the north and Old Mexico and Central America on the south.

Our state highways and county roads should be tied in to these main arterials in a net of sufficient scope to meet the entire motor transportation needs of the country for the next 30 years. The development of additional irrigated lands and new ore bodies will require many more farm-to-market and mine-to-market roads. Those of our present highways which are not redesigned will have to be resurfaced because of lack of attention during the war.

The Public Roads Administration has developed some excellent plans along this line that should be blueprinted and made ready.

Housing needs

Next I invite your attention to the housing problem. By the end of the war, at least 25 per cent of the present housing in the United States will be 50 years of age or older. It is estimated there will be a definite need for 9,000,000 new rural and urban homes in addition to the apartment houses necessary to replace slums that must be removed from the larger urban centers. Slum clearance and its replacement with suitable apartment houses and the construction of individual homes offer an excellent opportunity for private investment on a long time basis.

Public works needs

Along with the need for additional housing will come an equal need for more utilities and community facilities. Very few western cities and towns have ample sewage disposal facilities. Lakes and streams are still being polluted by raw sewage. Modern sewage disposal plants and sewer systems of sufficient capacity to meet their needs for the next 20 to 30 years should be designed for each urban center. Municipal water systems should be redesigned and expanded. This, of course, will require additional water supplies that must be developed. Sidewalks, curbs, gutters and street paving programs should be planned. There will be a need for additional schools, hospitals, health centers, clinics, playgrounds, parks and recreation areas to meet the requirements of an expanding population.

Present airport facilities will be found to be entirely inadequate after the war. Larger and better airports, hangars and shops will be needed on our national and international airways to accommodate the mammoth air transports that are being developed for long haul passenger and air freight transportation. Improvements in light aircraft will make it desirable for each community to have its own airport. A network of small airports should be connected with modern flyways properly laid out and marked so that the average flier can find his way around.

Coordination in planning

Planning for all of these community facilities should be based on projected population expansion that will come as a direct result of the development of our natural resources and the increase of community income. There are three vital factors to be considered in the development of a plan of this scope. They are:

(1) The acquisition of land for sites and rights of way and the financing of the planning.

(2) Population trends.

(3) Coordination and direction of the planning.

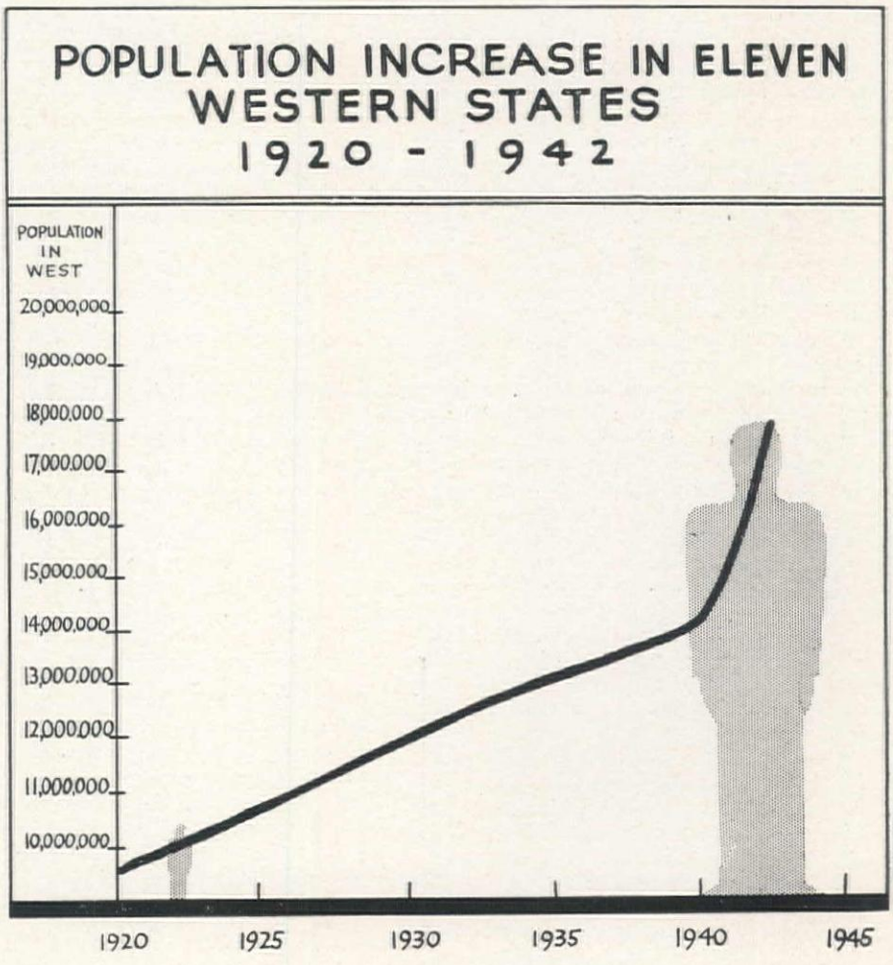
Major General Philip B. Fleming, Administrator of the Federal Works Agency, in an address before the American Municipal Association in Chicago on October 21, 1942, suggested that in his personal opinion immediate preparation for large scale post-war planning should be initiated by the enactment of legislation that would authorize the federal government to make loans or grants or both to states or their public bodies in aid of the preparation of their programs of public works. He suggested that this legislation should also authorize the government to acquire by purchase or the exercise of the power of eminent domain any lands necessary for the accomplishment of the purposes of any project included in the comprehensive program of public works. It should also authorize the acquirement of additional property when it is found that its control by the United States or by a local public body will promote the purposes of the project, and to sell or lease any property acquired or project constructed to the appropriate local public body. The General's suggestion offers the best solution for this problem that has been brought forth to date.

Basic factors for study

Comprehensive studies of population trends should be made in each county based on (a) the county's population before the war effort began, (b) what it is now, (c) what it would be likely to be if the county's natural resources were developed to the maximum, (d) how many of those who have gone elsewhere to work in war plants could be expected to return to their own communities when the war is over if they knew there would be jobs at prevailing wages on some important public work project waiting for them if they need them to help re-establish themselves.

The development of a truly national plan will require the active participation of all states and their political subdivisions; practically all branches of the Federal government operating in the field, consulting engineers, architects, contractors, organized labor, private enterprisers, civic and trade organizations and all public spirited citizens who are interested in the progress and development of their own communities.

POPULATION in the eleven western states was increasing at 3½ times the national rate according to the 1940 census. Planning for post-war development must be based on a study of population expansion that will result from development of resources.



No program of the magnitude I have outlined can succeed without thoroughly experienced and competent leadership. The agency to act as the coordinating head should be selected and its responsibilities and authority established.

Each participating body should appoint one or more persons to represent it on a board which would undertake the development of the general plan. This board should have at its disposal the best technical advisors available in the various fields of operation. Second, the general plan should be laid out carefully, checked from every angle to make sure it is all-inclusive. Third, complete and thorough surveys should be made wherever it is found sufficient information and data are not available to assist each local planning body to determine the desirability and location of individual projects. Fourth, as soon as this information is available, the individual project should be decided upon, the actual location to be determined only after it had been thoroughly investigated from an engineering standpoint. Tests for footings and foundations and any and all other tests necessary should be made and raw material such as sand, gravel, stone and timber should be found as near the construction site as possible and tested for quantity and quality.

Complete designs necessary

When this preliminary work has been completed, the design of the project should proceed. Designing should be done by the most experienced and best trained experts available, after which complete plans and specifications should be prepared and supported with detailed estimates of the man-hours of work required, by occupational classification, and the materials and equipment necessary to complete the job. These blueprints, with all supporting data and appurtenant information, should be approved and catalogued in their proper sequence of priority to the over-all plan. When the time comes to initiate construction, all that will be necessary will be to call in the contractor, price the job and put him to work.

A considerable amount of planning is being done now by various agencies and groups, but much of it is the same kind of planning that has been done for the past 50 years. It has no particular relation to any comprehensive regional or nationwide program and yet most of these bodies have agreed for some time past that if the challenge of the future is to be met we must have a nationwide plan developed by regions and completely tied in to the over-all for the nation. The eleven western states have many and varied problems that are peculiar to themselves, as do the other regions of the United States. But if the outline which has been suggested here is carried to its logical conclusion, it can be tied in to the national plan and will help to solve a major portion of our own peculiar problems in the West.

America is a comparatively new country and very rich. She has tremendous natural resources but we have made the same mistake that humanity has made from the beginning. We have taken the way of the least resistance. Raw materials, power and transportation that could be obtained and utilized with the least effort are being depleted. We have in sight no well-developed, clearly-defined over-all plan for the protection, preservation and perpetuation of the supply. Likewise, we have made no such plan for the development of those latent resources that we have every reason to believe are tremendous.

When the war is over, our war industries will have to close down and re-tool for peacetime production; during this readjustment period there will be millions of American workers who will need jobs until the nation gets going on the mammoth job of rebuilding and rehabilitation that lies ahead.

Post-war planning—Now!

When our boys come home from the fighting fronts they will need and want good jobs at good pay on important work—and God knows they are entitled to them. This is not a reward; they will have earned it.

If we make proper preparations now to utilize these potential surpluses of labor represented in war workers and men of the armed forces, to develop more wealth and insure a continuous supply of raw materials, we can take our proper place in the rehabilitation of the world and face the future with confidence. More important, we can prove to the whole world that a free people, working through channels of a free democracy, can meet the challenge of any forces who dare to oppose them.

There are those who believe it will be impossible for a free people operating through the channels of free enterprise, to meet the challenge of post-war rehabilitation. But, America has been built into the most powerful nation on earth through the accomplishments of free enterprise. America does not need and America does not want any other system.

The enterpriser, the worker and the government have joined hands with an unbreakable grip in their determination to win this war. It will require the joint effort of this same trinity after the war is over to readjust and restabilize our own country and the other countries of the world. To postpone proper preparation for this task will be courting disaster; to start now will insure success.

The challenge is ours. We must meet it.

RECOGNIZING that post-war planning is a controversial issue but one that merits the foremost consideration of contractors and engineers, *Western Construction News* will welcome discussion of the preceding and following articles in this issue. Additional suggestions and discussions are solicited.—Editor.

Engineering Students Are Asked to Register

FOLLOWING RECENT increases in demand for technically-trained personnel, the National Roster of Scientific and Specialized Personnel is urging senior and graduate students of chemistry, physics, engineering and other specialized fields to register their skills. The principal national professional and scientific societies are constantly cooperating with the National Roster to stimulate complete registration in their respective fields.

The National Roster, a part of the War Manpower Commission, now has listed and punch-card-indexed approximately 550,000 names in more than 60 specialized occupations. These fields cover every technical activity from genetics and geophysics to housing and radio broadcasting. The Roster is a compilation of the nation's technical manpower resources, for such use as the critical war emergency may demand.

Registration with the Roster is not to be considered application for employment. Many who have filled out the questionnaires are now at work in their chosen professions. Many of those registered have received offers of employment. Acceptance of such offers is optional with each individual registrant. In the past twenty months 140,000 men and women have been referred to prospective employers of specialized personnel, particularly for war production and research. Methods will shortly be inaugurated whereby the Roster will maintain a check on the results of its recommendations.

To register with the Roster, a man or woman with scientific or other specialized training should write to Dr. Leonard Carmichael, Director, National Roster of Scientific and Specialized Personnel, War Manpower Commission, Washington, D. C., mentioning the field or fields in which he or she has training or knowledge.

Martin Dam Construction to Be Completed After the War

IMPEDED by lack of both equipment and men, the U. S. Engineer Dept. project near La Junta, Colo., the Caddoa flood control and irrigation dam on the Las Animas River, will soon be completed as nearly as possible until after the war. Earth fill on the main dam is completed except for a roadway across the top of the dam. This includes the road-section over the 4,000-ft. earth fill section and the 1644-ft. concrete spillway section which is located at nearly the center.

Three of the sixteen concrete bridge sections over the spillway section have been completed, with another probably to be completed within the next few weeks. The twelve remaining sections will be completed in the spring when temperatures permit. Sixteen steel radial gates for the spillway cannot be obtained until after the war.

Post-War Planning—Flood Control

Army Investigating New Work

Construction can be started with less than a month's notice on a $500,000,000 flood control and waterway improvement program in the western states from plans completed by the Corps of Engineers

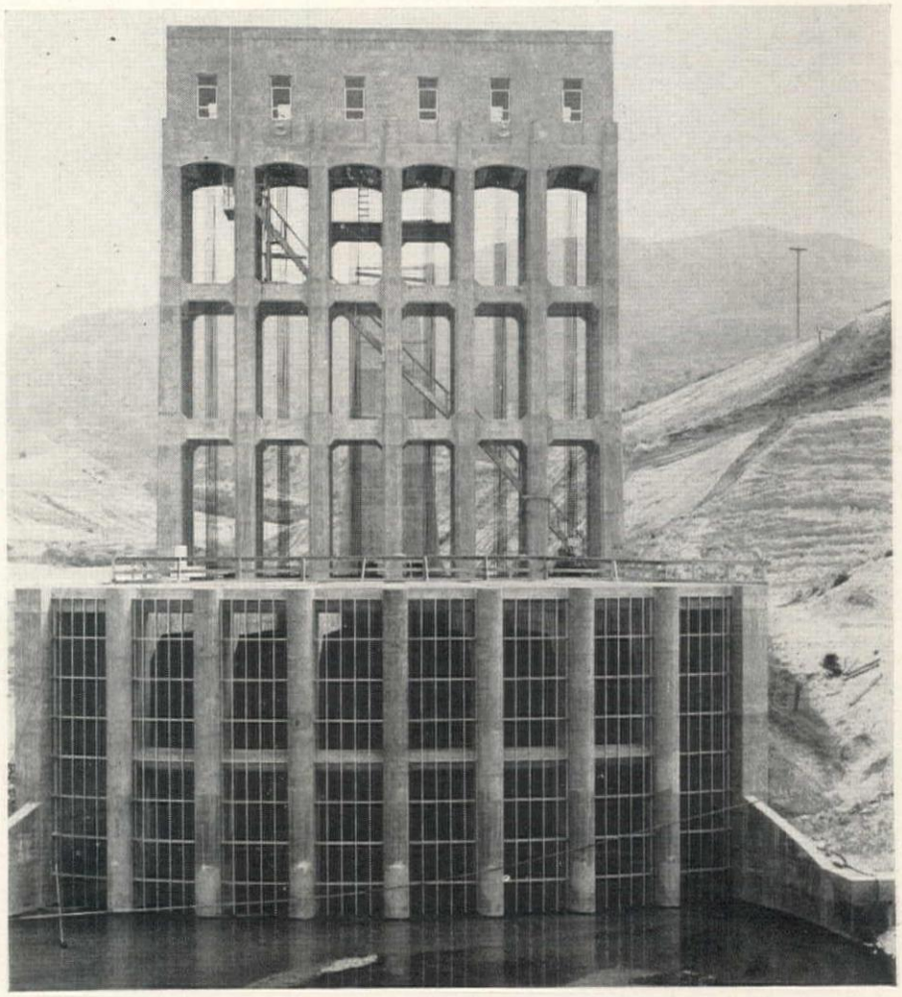
THE DETERMINATION that the winning of the war shall now be put above all else, incorporates the motive that the energy and resources of America shall, at the earliest possible instant, be turned again to peaceful pursuits that will open up once more the limitless opportunities for developments which characterize our Nation. Were it not so, there would be small reason to fight a war.

Foremost among these developments are the improvements by the Corps of Engineers of the United States Army for navigation, flood control, power development and other purposes. The improvements that have been accomplished over a period of years with an expenditure of several hundred millions of dollars, though great in the eyes of this generation, are little more than surface scratches when over-all potentialities are considered. It does not seem too visionary to contemplate a future in which the ultimate possibilities of our river systems will be fully developed.

Multiple water uses

The advantages of cheap water-borne transportation can be extended up our large western rivers and their tributaries by a combination of dams that will provide irrigation, flood control, and power. River basins can be connected by suitable canals in a manner which already has proved so successful in Europe and the British Isles. Rainfall on its way to the oceans, can be used over and over again. The waters which now contribute to destructive floods can be impounded and then released to generate power that will operate pumps to put the same water into irrigation channels further downstream. Many other benefits such as abatement of pollution, the improvement of recreational facilities, and the establishment of wild life preserves, form a definite part of this picture.

Water has always been, and will always be, a major factor in the development of civilization. The first engineering developments of record in the history of mankind were works designed to conserve and bring adequate water supply to centers of population. The first use of water must be for domestic consumption but its uses for navigation, hydroelectric power, irrigation, and allied purposes follow in close order and to enjoy these beneficial uses, recurring floods must be controlled. In this country the development and improvement of rivers since the beginning has been a function of the Corps of Engineers. They have had years of experience in actual construction and have accumulated in factual reports, more detailed information than is available to any nation of the world on its respective water resources.



FLOOD CONTROL WORKS, such as the southern California dam spillway above, which have been completed by the Army Engineers to date represent but a small part of the ultimate possibilities in the full development of multiple purpose river control.

Since the Congressional directive of January, 1927, which authorized and directed the Secretary of War to make surveys of the navigable rivers of the United States and their tributaries with a view to their most effective improvement for navigation, the control of floods, the development of water power, and for the needs of irrigation, over 200 rivers have been reported upon. Furthermore, these reports have been and are being continuously reviewed and brought to date in order that changing conditions may be promptly reported to Congress and plans be kept ready for construction.

With a month's notice, or even a week, construction can be started on a nation-wide scale, limited only by the appropriations made by Congress. The hundreds of projects that have been recommended in these reports and accomplished prior to the present war emergency and the hundreds more that have been authorized or for which detailed plans are complete can not be tabulated in the limited space available. However, some idea of the scope of the work that has been completed is now authorized and awaiting only appropriations, or is planned in detail ready for post-war consideration of Congress, may be gained from the fact that, in addition to the many local protection projects on minor streams, general comprehensive plans involving reservoirs, levees, channel improvements and allied works have been approved and initiated for nine of the major river basins of the United States.

Western project summary

The Western States are well represented in the authorizations, planning, and construction of flood control and multiple-purpose projects. Included in the existing authorizations by Congress are: a comprehensive plan of reservoirs and channel improvements for the development of the Willamette River Basin in Oregon for flood control, navigation, stream-flow regulation, hydroelectric power and other beneficial water uses; a series of levees along the Columbia River and its tributaries in Washington and Oregon for the protection of valuable agricultural areas; a comprehensive system of retarding basins, debris basins, and channel improvements for flood protection of the metropolitan area of Los Angeles County, California; a system of flood control reservoirs in the Santa Ana River and adjacent areas for the protection of Orange County, California; a system of levees, by-passes and channel improvements in the lower Sacramento River Basin, California for the protection of the highly-productive agricultural lands and important transportation facilities in that area; comprehensive plans for reservoirs and protective works for flood control, power and water conservation in the headwaters of the Missouri, Arkansas, and Red Rivers and tributaries; and reservoirs on Cherry Creek, Colorado, for the protection of the City of Denver. The total estimated cost of the approved projects in these basins is in excess of $500,000,000.

Of this extensive program, the Department has already completed construction of 10 dams and reservoirs, levees at more than 50 localities, and about 55 mi. of concrete lined or rock paved channels. In order that the remainder of this authorized construction program may be resumed at the earliest possible date after the war emergency and thus afford a very substantial contribution towards the transition from a war-time to a peace-time economy, the preparation of the detailed construction plans and specifications is being continued without interference with the war activities of the Department. At the end of the war, the Corps of Engineers will be prepared to continue immediately this large construction program of flood control and multiple purpose projects including many additional reservoirs and local protection works.

Additional investigations

In accordance with authorizations by Congress, the Corps is also making examinations and surveys of most of the large river basins and many of the smaller basins throughout the Western States to determine the feasibility of further improvements for continuing development of the water resources of those basins. The recommendations resulting from these surveys will serve as the basis for such authorizations for additional improvements as Congress may consider desirable in the public interest. These advance planning activities include surveys of such important river basins as those of the Gila River in Arizona and New Mexico; the Missouri River and several of its important tributaries; streams draining into the Great Salt Basin in Utah and Nevada; Sacramento and San Joaquin Rivers, California; Santa Ana River, California; the Rio Grande in New Mexico; the Snake River in Oregon and Idaho; and the Columbia River in Oregon and Washington.

In addition to controlling floods the general comprehensive plans, which are made in full co-operation with other interested Federal Agencies, are designed to conserve and utilize every drop of available water in the arid and semi-arid west. And it is worthy of note, that with the ultimate development in mind, the Congress, in its wisdom, approved these basin plans with such modifications thereof as in the discretion of the Secretary of War and the Chief of Engineers may be advisable.

Project backlog increases

Last October the War Production Board issued an order suspending or stopping all large public and private construction not directly connected with the war effort. Since then the War Department has co-operated fully in determining the essentiality of projects under its jurisdiction. Those civil projects determined to be essential to our war effort will be continued on an expedited schedule and those projects found unessential will be temporarily suspended, or allowed to proceed for a brief period, either because the project is substantially complete and will require insignificant amounts of critical materials and labor to complete, or because some work is necessary to place the project in a safe condition, or to protect the work already done. The effect of reducing operations to a program of works important to the prosecution of the war is to further increase the large reservoir of public improvements that the Department has planned in detail and from which it may formulate post-war plans.

Avoid generalities

Planning is very essential, but without in any way depreciating the value of the plans, it might be said that the idea that large numbers of people, a great amount of discussion, and a great amount of time are required to make plans is often a fallacy. At all times there should be planning with thoroughness and planning for accomplishment but let us not confuse the real thing with time consuming voluminous reports filled with generalities and Utopian visions but lacking the definiteness necessary for actual accomplishment and tragically devoid of practicability.

WESTERN WATERWAY PROJECTS

List of Congressional Documents Containing Reports of the Chief of Engineers on Certain Western Rivers

Doc. No.	Congress	River and Location
House 97	75th 1st session	Willow Creek, Ore.
House 409	75th 2d session	Powder River, Ore.
House 544	75th 3d session	Willamette River and tributaries, Ore.
House 579	75th 3d session	Yakima River and tributaries, Wash.
House 617	75th 3d session	Spokane River and tributaries, Idaho
House 704	75th 3d session	Columbia and Snake Rivers, Ore., Wash., and Idaho
House 250	76th 1st session	Platte River, Nebr.
House 426	76th 1st session	Cherry Creek and tributaries, Colo.
House 480	76th 2d session	Salt Fork of Arkansas River, Okla.
House 630	76th 3d session	Kings River and Tulare Lake, Calif.
House 684	76th 3d session	Umpqua River and tributaries, Ore.
House 694	76th 3d session	Rio Grande and tributaries, Colo.
Senate 185	76th 3d session	Pudding River, Ore.
House 721	76th 3d session	Cowlitz River, Wash.
House 719	76th 3d session	Walla Walla River and tributaries, Ore. and Wash.
House 821	76th 3d session	Missouri River
House 838	76th 3d session	Los Angeles and San Gabriel Rivers and tributaries, Calif.
House 845	76th 3d session	Fresno County Stream Group, Calif.
House 961	76th 3d session	Crooked River, Ore.
House 957	76th 3d session	Boise River, Idaho
House 205	77th 1st session	Sacramento River, Calif.
House 304	77th 1st session	Yaquina River and tributaries, Ore.
Senate 89	77th 1st session	Birch Creek, Ore.
House 323	77th 1st session	Ventura River, Calif.
House 452	77th 1st session	Snake River, Idaho, Wash. and Ore.
House 621	77th 2d session	Nehalem River and tributaries, Ore.
House 620	77th 2d session	Coquille River and tributaries, Ore.
House 631	77th 2d session	Alkali Canyon, Ore.
House 635	77th 2d session	San Diego River, Calif.
House 701	77th 2d session	Willapa River, Wash.
House 888	77th 2d session	Palouse River, Idaho, Wash. and Ore.

Post-War Planning—Procedure

Practical Considerations

Proper approach to post-war planning involves consideration of many economic and social factors in which some assumptions are necessary—Preparation of a general development, or "Master Plan," is the first and most important step in the program

By ARTHUR H. ADAMS
Acting Chief Engineer,
Los Angeles County Regional Planning Commission

GEORGE WASHINGTON said: "To be prepared for war is one of the most effectual means of preserving peace." Were he alive today he would probably advise "In time of war prepare for peace," and this is exactly what a great many people are now doing. From the highest level of government to the lowest, in industry, and in private life much thought is being given to the preparation of plans for the post-war period. This is fortunate and no doubt is largely brought about by experiences of recent years.

The question has been asked "What is the proper approach for counties to the subject of post-war planning?" The answer is not simple and requires consideration of many factors both social and economic. Some of these factors are unknown at present; therefore certain assumptions must be made before attempting to answer the primary question. The writer assumes no superior powers of prophecy and can only judge by present trends of thought and action what the conditions may be subsequent to a cessation of the present hostilities.

Population increases

It is assumed that the subject question is one asked by a county which has been vitally affected by the war effort, where its normal increase in population has been suddenly augmented by the influx of workers in the war industries. Many California counties have been so affected, and it is in these counties that post-war planning assumes major proportions.

It must be assumed that most of this new population should remain in California after the war, with its needs properly cared for. This involves physical planning both as to desirable living quarters and environment, as well as concerted economic organization. To make it possible for these people to remain is a problem for the whole people, planners, industrialists, chambers of commerce, governmental bodies and all those interested in civic welfare.

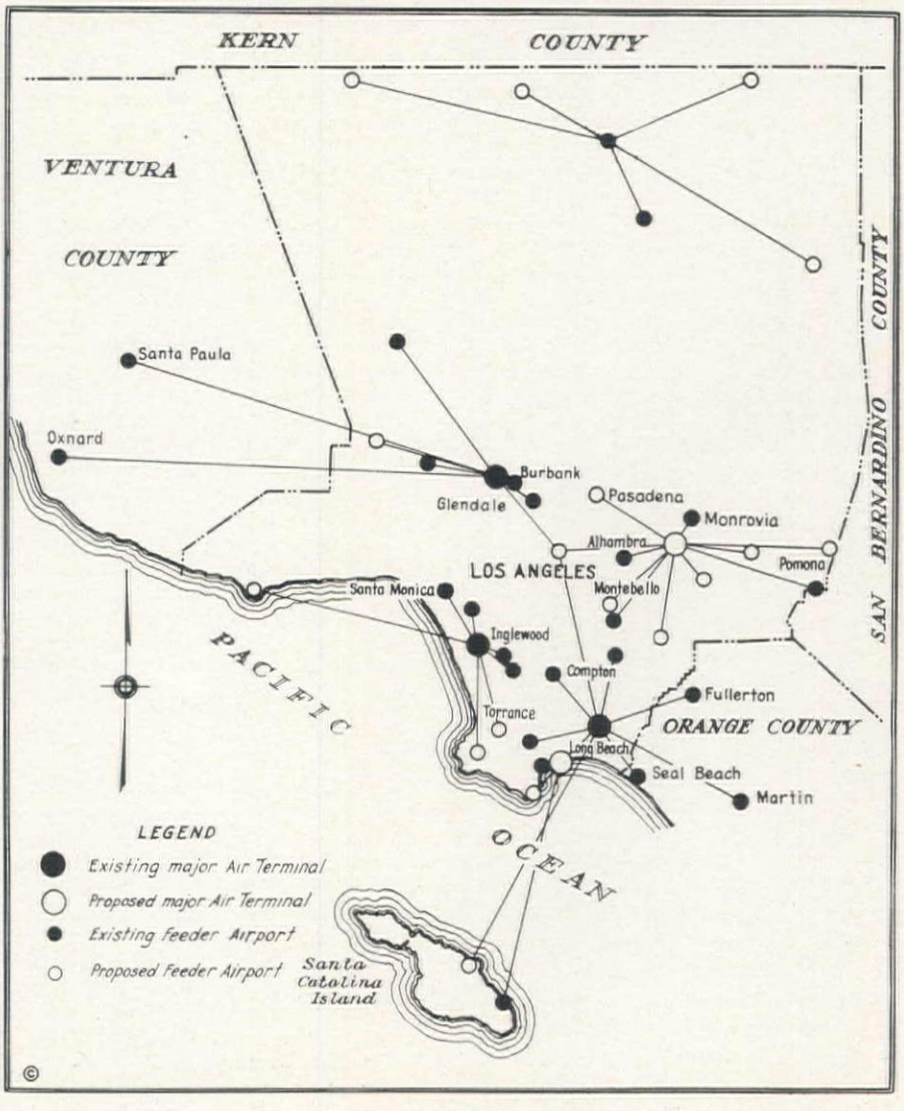
Also, it must be assumed that no radical change will be effected in our economic system, although it is realized that very significant changes are taking place, in both economic practices and technical processes which affect them, and will doubtless continue.

Order of planning

The first and most important step in attacking the problem would be the preparation of a general development plan, completed and ready for quick execution in the period of transition to a peace-time economy. Many parts of this plan are clearly set forth in the California Planning Act; its preparation, of course, takes time, and work on it should be begun as soon as possible. Fortunately, in a number of our counties a large proportion of this work is already far advanced. And even if it may not be possible for a county or region to complete all of the component parts of its general development plan prior to the end of the war period there are some parts that are fundamental; these can and should be undertaken first.

In Los Angeles County the master plan of highways was developed first, followed in succession by the master plans for airports, land use, shoreline development, and the civic center. To these will be added a master plan of freeways, a conservation plan, a master plan of parks and recreation, and later a master

MASTER PLAN OF AIRPORTS prepared by the Los Angeles County Regional Planning Commission is illustrated in diagrammatic form in the map, including both existing and proposed fields with indications as to the classifications of each.



plan of transportation. A great deal of work has been accomplished on these, and important parts of them are approaching completion. Standards of community design have been perfected and in accepted use for some time.

From the regional planner's standpoint the above subjects constitute at least the major part of his field. The importance of a general development plan is emphasized because whatever is done in the way of construction should fit into the ultimate pattern and it is the planner's function to endeavor to foresee that pattern and work towards its achievement.

Considering industry

Unusual conditions induced by war have accelerated development to such an extent that plans which were intended for future years are being executed much earlier than expected; on the other hand certain plans are being seriously disrupted by developments which could not have been foreseen. These present developments require the planner to be on the alert to prevent so far as possible the impairment of the adopted plans, revising the latter as rapidly as these new elements can be stabilized.

Planners can also offer much valuable assistance in the transformation which inevitably must take place in the war industries. New manufactured products must be produced to take the place of war products, in order that there may not be a serious unemployment problem. Many plants will actually have to convert to different products; some, in reviving production of their old wares, will find problems of new materials and models. New distribution problems will arise. In all of these cases the planner will have much helpful data, on such elements as strategic location, availability of materials, markets and labor.

When peace comes and materials of construction are available, public and private construction should and probably will be promptly initiated. There should be, on all levels of government, a concerted effort to have available detailed plans ready for this time of need, all based on the general development plan.

Detailed plans

One of the early steps, then, in preparing for post-war planning is the collection from all county departments of an estimate of the projects thought necessary by each, not only for the immediate future, but for a period of at least five or six years. These projects should then be listed both as to type and priority, and the following additional steps taken:

1—All plans should be coordinated with post-war plans of each of the cities in the region.

2—A plan of financing should be worked out which will be subject to revision as may be required.

3—Estimate employment need.

4—Comparison of points 2 and 3.
  a—How nearly does 2 meet 3.
  b—What "extra" sources of financing can be contemplated.

5—What specific steps by private industry should be fostered to make the public load as light and short as possible.

When all of the data is compiled a report should be issued if possible and distributed to all interested agencies, in order that they may familiarize themselves with it and have an opportunity to offer constructive criticism. The above procedure applies equally well to a city and varies only in scope.

The time for initiating post-war planning is now and its beneficial results will be felt for many years to come.

Leadville Drainage Tunnel Proposed To Increase Critical Metal Output

A NEW DRAINAGE TUNNEL to cost approximately three million dollars to drain deep levels at the old mining camp at Leadville, Colo., was being seriously considered last month as mining men of that district met with representatives of the War Production Board at Leadville. Mining leaders believe the tunnel would open up the old deep workings of many properties and stimulate production of metals in that area. The Government particularly is looking to Colorado and to the Leadville district for increasing production of zinc. Representatives of the Colorado Mining Association who attended the meetings at Leadville said that there was ample ore available in the Leadville district to assist the Government demands for strategic metals.

Principal information sought by the Government representatives was some indication of just how much ore would be available if lower levels were drained. Difficulty in the task has been that the blue limestone of the Leadville district crumbles and caves. Early day miners worked their properties until water came in and then quit. There is plenty of ore in the old deep shafts of the area but none of it was blocked out by the old miners, because of crumbling, and therefore there is little way to determine the amount of metal reserves available. The Yak tunnel, completed in the early part of the nineteen hundreds, has been the principal mine drainage at Leadville. It is not deep enough to unwater known ores at deep levels.

In a very elaborate report more than twenty years ago by Emmons, Irving and Loughlin of the U. S. Geological Survey, known as professional paper No. 148, feasibility of deep tunnel for Leadville was discussed. G. F. Loughlin, who aided in preparing this report, now is chief geologist of the U. S. G. S.

Several attempts have been made in the past to get Washington to help in financing the tunnel project. The Colorado authorities some years ago presented to the PWA in Washington a complete plan for the tunnel and asked that financial assistance be given. The PWA said that it had no authority to lend to any mining project. Colorado authorities then included agricultural betterment in the tunnel project, asserting that it would give more water for farms in the Leadville district. The revised plan was rejected.

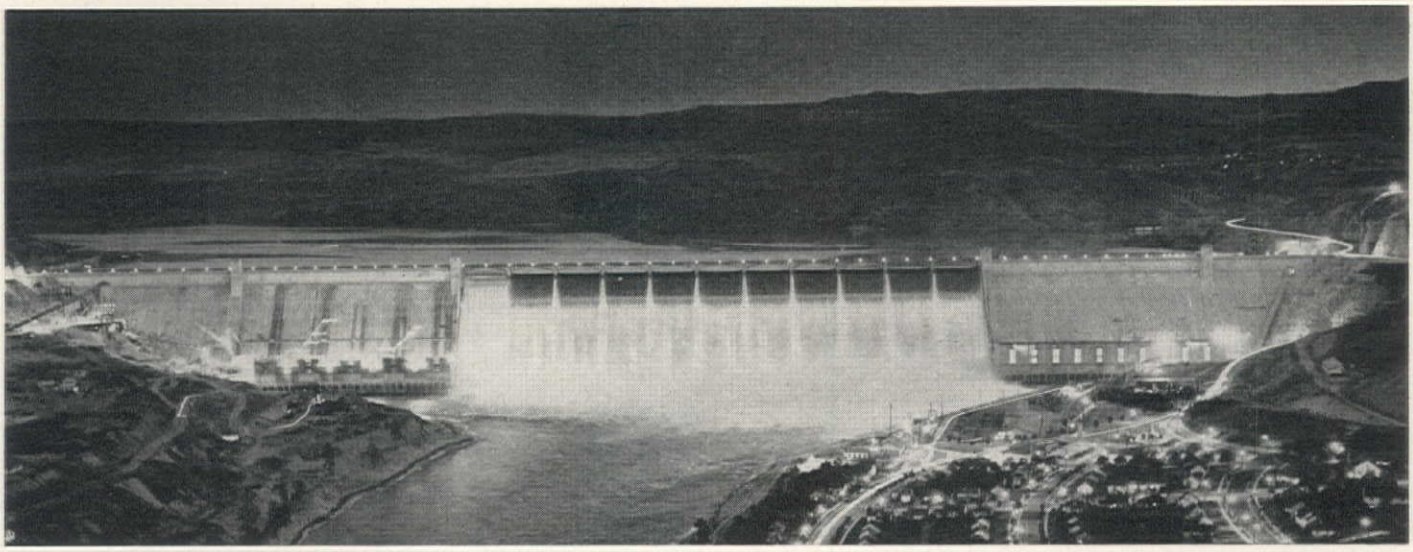
Due to the war emergency the War Production Board is now in a position for the first time to construct the tunnel with funds from the Reconstruction Finance Corp. to stimulate production of strategic metals. This money would be a direct Government subsidy to the district. The Lake County Mining Assoc., formed to get all mine owners and all other interests in the Leadville district together, is giving all possible aid to the tunnel project.

Central Valley Project Problems to Be Studied

TWENTY-FOUR co-operative studies of engineering and economic problems in connection with the Central Valley Project in California will be undertaken by a staff to be headed by Dr. Harlan H. Barrows, consultant for the Bureau of Reclamation, and formerly head of the Department of Geography of the University of Chicago. He will be assisted by a field coordinator and staff, with headquarters at Sacramento, Calif. The 24 basic problems were set forth in a report of a Bureau of Reclamation committee headed by H. W. Bashore, assistant commissioner, and are divided into three groups: (1) problems relating to the prosecution of the war; (2) those related to post-war adjustments; and (3) those inherent in the project from its inception. The problems include such things as irrigation for guayule rubber; immediate irrigation with minimum of construction; requirements for industrial water users; allocation of costs; necessary legislative measures; power and water rates; and supplementary facilities. A departmental advisory committee on policies in connection with the Central Valley Project matters has been appointed to consist of John C. Page, commissioner, as chairman; Lee Muck, Office of Land Utilization; Arthur Goldschmidt, Division of Power; J. D. Wolfsohn, General Land Office; and Dr. Barrows.

* * *

COLUMBIA COUNTY and Garfield County, Wash., will share the services of C. A. Winnett, county road engineer of Columbia County. Under the engineer-sharing plan, Winnett will spend eight days each month in Garfield County, and the remainder of his time in Columbia County.



Post-War Planning—Irrigation

Reclamation Investigations

Work can be immediately resumed on 25 Bureau of Reclamation projects in 14 states and on 5 new projects which have been authorized—More than 200 projects in 17 states are under investigation and 60 of these will be completed in 1943

POST-WAR PLANNING by the Bureau of Reclamation is directed toward programming construction activities on irrigation and multiple-purpose projects in the arid and semi-arid regions of 17 western states. These projects will provide immediate employment at the site for returning service men and war industry workers and will afford an outlet for the material and equipment output of converted war plants. They will thus aid in stabilizing employment at a distance from factories.

On completion, some of the projects will provide settlement opportunities on newly irrigated lands. Others will provide supplemental water for agricultural lands now short of irrigation supplies, and will enable established farming regions to support more people.

In co-operation with the Bureau of Labor Statistics, the Bureau of Reclamation is making studies of the potential employment which may be provided by each project in the post-war program. Through the Columbia Basin Project, Joint Investigations in Washington State, and the Yuma Mesa Predevelopment Committee in Arizona, the Bureau is making studies of settlement and related agricultural problems affecting land which will be irrigated for the first time. The Central Valley Project studies of the Bureau in California are directed toward pointing the way to the best results which can be obtained from irrigation and power facilities which will be constructed in an agricultural area largely established but need additional water supply regulation for stability, flood control, power production and other purposes. These three current studies will serve as a guide in connection with other projects to come under construction.

The work on these studies is being carried on so as not to interfere with the prosecution of the war. Progress, on them and other work in connection with post-war activities, however, will be determined by manpower available. The post-war programming is divided into two classes, projects under construction or authorized and projects under investigation.

Under Construction or Authorized

Work can be resumed promptly on 25 projects in 14 states where construction already under way has been halted by the war. It can be started immediately on five others which have been authorized. Designs for many of the uncompleted structures of these projects are ready or can be issued on short notice. To provide employment, work could be undertaken on practically all of these projects.

The projects in this list include the Columbia Basin development of 1,200,000 ac. which normally might require 20 years to bring under irrigation. Also included are the supplemental irrigation and remaining power features of the Central Valley and Colorado - Big Thompson projects. Other projects range downward in size to those in the Water Conservation and Utilization program involving as few as 2,250 ac. In all, about 2,500,000 acres of new land are involved, and about 5,000,000 ac. to receive supplemental water.

When completed these projects will provide settlement opportunities on irrigated land for 40,000 to 50,000 farm families. Security will be given 85,000 additional farm families now on land inadequately irrigated by other systems. Normally, cities and towns dependent on irrigated land have a population 2 to 3 times that of the farms.

Potential Projects

More than 200 projects are under investigation, with final reports scheduled for completion during the calendar year 1943 on some 60 projects in 17 states. The work includes the completion of preliminary designs of major structures on a third or more of the projects. Others will be added to the list from which selections will be made of feasible projects which can be quickly launched, when needed.

More than 850,000 ac. of productive land are involved in these projects. The greater part of this area is land now inadequately irrigated and requiring additional water surplus if established agricultural communities are to be maintained. The projects range from small undertakings to irrigate small bodies of

new land or provide supplemental water, to large multiple-purpose dams, so that in addition to irrigation, many of the projects involve one or more of the following features: power, flood control, silt control, navigation, municipal water supply, domestic water supply, stock water supply, wild life refuge, fish propagation, recreation, pollution abatement, hydraulic mining control, salinity control, and drainage. Besides the engineering surveys, land classification and extensive economic studies are required for all investigations.

The multiple use problems involved in these projects under investigation have made comprehensive planning so essential that the Bureau is concentrating on two types of investigations:

1—Basin surveys covering an entire river basin with the view of evolving a coordinated basin-wide plan of development for multiple uses in which all possible future projects are considered.

2—Detailed project investigations which are carried to the point where data obtained are sufficient for designs and estimates of project works and the preparation of the project for construction.

The Project Planning Section has experienced increasing difficulties in the prosecution of the investigations because of loss of personnel to the armed forces and war industries and the difficulties of replacing trained men. The progress of this work has also been somewhat slowed up by lack of adequate funds.

Investigations in progress are outlined herein under the 17 states involved. In every case there is co-operation with state and local agencies, often with their direct participation with funds, personnel, or equipment. Coordination with the Engineer Corps of the War Department is effected in areas of mutual interest.

Washington

Detailed investigations are in progress on alternative methods of irrigating the valleys of Green and Puyallup Rivers, in conjunction with a flood control reservoir on Green River.

A project in the vicinity of Hanford contemplates a dam on Columbia River at Priest Rapids for power development and irrigation from the Columbia River, in part with relifts from high level canals.

Oregon

A survey of the Rogue River Basin is nearing completion and detailed investigations of a number of projects in the basin are in progress. Development of the Debenger Gap and other Rogue River Dam sites for irrigation, flood control and power production are being investigated. About 12,500 ac. near Medford, now inadequately irrigated, and some 19,500 ac. of new land in the vicinity could be fully irrigated from storage on Rogue River, together with approximately 10,000 ac. of new land in Sams Valley across the river from the Medford area.

In the Talent area around Ashland in Bear Creek Valley, 10,000 ac. now inadequately irrigated, and 6,000 ac. of new land, are being studied for development by importing water from nearby streams in the Klamath River watershed, and by additional storage on Bear Creek, for irrigation and flood control.

Investigations in the Merlin area contemplate the irrigation of 12,500 ac. lying to the northwest of Grants Pass with storage at the Winona Dam site on Jump-Off Joe Creek and the Pease Bridge site on Grave Creek.

Detailed project investigations are also contemplated in the Illinois River Valley, Applegate River Valley and Evans Creek Valley.

Detailed investigation of a multiple-purpose project in the Grande Ronde Valley is nearing completion. The plan of development includes a reservoir of 202,500 ac.-ft. total capacity on the Grande Ronde River, another of 29,000 ac.-ft. total capacity on Catherine Creek and a third of 11,500 ac.-ft. capacity on Little Indian Creek to provide storage regulation for flood control and complete irrigation or supplemental water for 63,500 ac. of land in the vicinity of La Grande.

Investigation is continuing for a reservoir on Bully Creek on the Vale Project in Oregon to irrigate an additional 5,000 ac. and provide flood control.

Plans for a project near Pendleton include a dual purpose reservoir on the Umatilla River, which may be used in the irrigation of some 20,000 ac. of new land northwest of Pendleton with the aid of offstream irrigation storage.

A survey of the Crooked River Basin is nearing completion. Detailed investigation of the Ochoco Project in this basin is also in progress. The tentative plan of development contemplates storage on the main stream, at a site near Prineville, for flood control and a supplemental water supply on 8,500 ac. of land in the vicinity, now in part inadequately irrigated.

Investigation of the East Long Tom Project is nearing completion. This project contemplates the irrigation of some 10,500 ac. of new land in the vicinity of Junction City, by a gravity diversion from the Fern Ridge Reservoir, under construction by the War Department for flood control and other uses.

On the Yamhill River in the vicinity of McMinnville, multiple purpose reservoirs at the Pike Dam site on North Yamhill River, the Wallace Bridge site or Fort Yamhill site on South Yamhill River and the Willamina site on Willamina Creek are under consideration, together with irrigation systems to be dependent thereon and serve the greater part of the irrigable lands in this fertile valley already under cultivation by dry farmed methods.

California

Flood control storage projects developed by the Army Engineers for streams entering San Joaquin Valley from the east are being studied for determination of optimum capacities for the multiple purposes of water conservation and power production, in addition to flood control, and to ascertain how they may be inter-related with Central Valley Project features. No irrigation distrib-

REGULAR PROJECTS UNDER CONSTRUCTION

WHERE WORK CAN BE ACCELERATED FOR POST-WAR EMPLOYMENT AND SETTLEMENT

State	Project	Purpose
Arizona	Gila	Irrigation of 150,000 ac. of new land for settlement.
Arizona-Nevada	Davis Dam	Power development.
California	All-American Canal	Irrigation of 250,000 ac. of new land; supplemental water for 15,000 ac.
California	Central Valley	Irrigation facilities for supplemental water for 1,000,000 ac. with salinity and flood control to benefit additional 1,000,000 ac.
Colorado	Colorado-Big Thompson	Supplemental water for 615,000 ac. and power development.
Idaho	Boise-Payette	Irrigation of 50,000 ac. of new land.
Idaho	Anderson Ranch Dam	Supplemental water for 320,000 ac. and power development.
Montana	Sun River	Irrigation of 20,000 additional ac. of new land.
New Mexico	Tucumcari	Irrigation system for 45,000 ac. of new land.
Oklahoma	Altus	Irrigation of 70,000 ac. of new land and municipal water supply.
Oregon	Deschutes	Irrigation of 50,000 ac. of new land.
Oregon-California	Klamath-Modoc	Reclamation for pasture and crop land of 30,000 ac.
Utah	Provo River	Supplemental water for 90,000 ac., and municipal water supply.
Washington	Columbia Basin	Irrigation facilities for 1,200,000 ac. of new land and power development.
Washington	Yakima-Roza Division	Completion of irrigation system for 60,000 ac. of new land.
Wyoming	Kendrick	Irrigation of 35,000 ac. of new land.
Wyoming	Riverton	Completion of irrigation system to add 54,000 ac. of new land.
Wyoming	Shoshone-Heart Mountain Division	Completion of distribution system for 40,000 ac.

uting systems, other than those of existing projects, or canals which may be features of the Central Valley Project, are being considered in connection with possible multiple purpose reservoirs which may be constructed for the San Joaquin River group flood control project. A canal may prove desirable on the east side of the San Joaquin Valley from the American River to the Mendota Pool. Outside the main stream valleys for which flood control is considered in the Army Report, off stream reservoirs are desirable to give more complete flood control and supplement regulation of water for construction purposes.

The Kings River Project involves initially a reservoir at the Pine Flat site of 1,000,000 ac.-ft. capacity for supplemental irrigation, flood control and power production with the addition later of storage at the Wishon site, power development at the Haas site, and enlargement of the Balch plant.

In co-operation with a committee representing existing irrigation districts and units, a further study is in progress on participation in Pine Flat storage and on any possible benefits the districts may receive from power development on Kings River.

A tentative plan of development for the Kern River Project involves a reservoir at the Isabella site with an active capacity of 500,000 ac.-ft. for flood control and irrigation, with three existing power plants benefiting. Irrigation and flood control phases of the project are being studied further, in part with representatives of local interests.

A comprehensive project investigation is in progress to determine the irrigation, power and flood control possibilities on the American River, one of the major units in the plan for the full development of the water resources of the great Central Valley. The present use of American River water for irrigation, domestic, and mining purposes is small, and even the ultimate local demand for water will leave much for export to the San Joaquin Valley, where a deficiency exists. The American River Project involves flood protection for the City of Sacramento and production of much power. The control reservoirs require two large dams 400 to 500 ft. high, one on the South Fork and one on the North Fork. Alternative sites on each fork are being studied.

Studies in the Bear River Basin involve alternative plans of development for flood control, silt detention, placer mining debris control, new and supplemental irrigation. Detailed investigations are planned for development of a dam at the Rollins site, as proposed by the War Department for multiple purposes.

A detailed investigation is in progress on the Clikapudi Project to determine the feasibility of augmenting the irrigation water supply for an area east of Redding and south of the Shasta Reservoir on the Sacramento River. Various methods of providing irrigation service are being considered, including diversion by tunnel from Shasta reservoir, and reservoirs on the smaller streams in the area.

A basin survey of the Russian River, being conducted for the purpose of selecting the most desirable plan of development, taking into consideration the multiple requirements of the watershed, is nearing completion. Flood control studies have been made by the War Department.

A detailed project investigation is in progress for diverting surplus waters from the Trinity River to the Sacramento River Basin to augment irrigation supplies in the Central Valley. Potential power developments cover a total drop of approximately 1400 ft. for the average annual possible diversion of about 1,000,000 ac.-ft. per year. Large storage capacity will be required on Trinity River and possibly also on Clear Creek, a stream with an average annual runoff of approximately 340,000 ac.-ft. which is crossed by the inter-basin conduit. The imported water will empty into either the Shasta or Keswick Reservoirs. No independent irrigation system is contemplated. As tributary streams to the Trinity River are actual or potential spawning waters for salmon, consideration must be given to this problem.

A detailed investigation of the water resources of Santa Barbara County contemplates preparation of a comprehensive plan for utilization of its water resources, and regulation for flood control. Irrigation farming now is almost wholly by means of individual pumping from the underground basins with the ground water table in the Santa Maria Valley and the South Coastal areas steadily receding. Dams are proposed on the Cuyama and Sisquoc Rivers to retard the floods to replenish and sustain the ground water reservoir for irrigation and domestic use. Dams are proposed on the Santa Ynez River to control and store flood waters and to divert surplus water through the mountains to the coastal area for increased domestic and irrigation uses, and particularly for increasing the diminishing supply of the receding ground water table, in order to maintain present highly developed farm lands.

Nevada

In the upper Truckee River Basin in California and Nevada, a plan is being sought for the solution of problems arising from the fluctuation of Lake Tahoe levels and to ascertain possibilities of developing power, providing supplemental water supply for irrigation, and providing flood control for Reno. Power development by means of a pressure tunnel and penstock from Boca Reservoir to the Mystic power site on the Truckee River below the existing Farad plant is attractive.

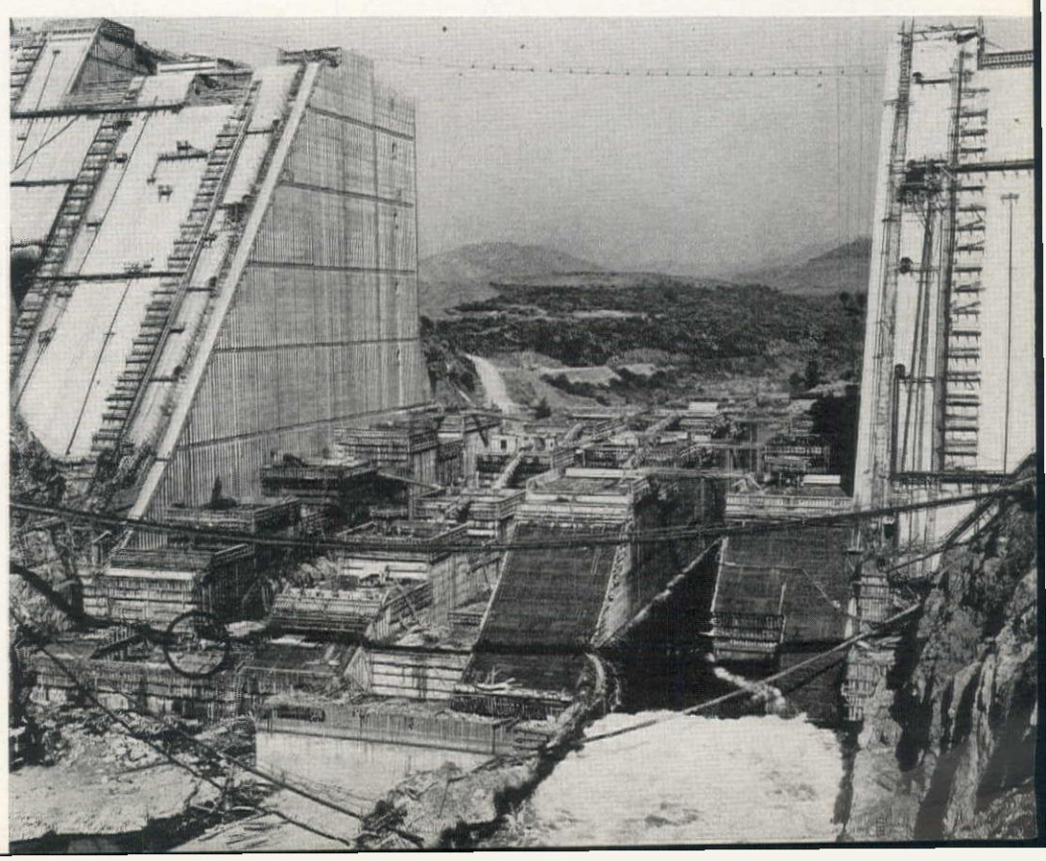
An investigation of the Fort Mohave Project, located in the southern tip of Nevada, about 23 mi. north of Needles, Calif., is in progress. Around 3,800 ac. can be irrigated by pumping from the Colorado River.

Idaho

An investigation of the possibilities of developing a supplemental water supply for some 4,000 ac. of land in the Lewiston Orchards area is in progress. Under study are the rehabilitation of a worn-out wooden pipe line distribution system, additional storage, and the possibilities of diverting water from adjacent watersheds.

The Rathdrum Prairie Project, located northwest of Coeur D'Alene is receiving further consideration. The proj-

SHASTA DAM, major unit of the Central Valley project in California will be completed next year, but in the meantime investigations are in progress to develop supplemental water supply for the Central Valley from streams on the Coast slope west of Shasta.



ANDERSON DAM constructed in Idaho was halted by WPB, but work on the structure can be resumed when labor and materials are available. This structure and Cascade dam for which plans have been completed are part of the Mountain Home project.

ect contemplates a supplemental water supply for some 8,200 ac. now served by Rathdrum Prairie Creek and by pumping from Hayden Lake, and for 32,000 ac. of new land, by pumping from Spokane River.

A survey of the Weiser River Basin is nearing completion. There being no broad valleys or large reservoir sites in this basin, potential irrigation developments are in scattered small units. Detailed investigations are in progress on several of these units. The Cambridge Bench Project contemplates a supplemental water supply for 2,200 ac. near the town of Cambridge with 3,200 ac.-ft. of storage at the Horse Flat Reservoir site, a feeder canal from Pine Creek and two distribution canals. Detailed investigations in the vicinity of the towns of Council and Mesa are also under way.

A comprehensive basin survey is in progress on the Salmon River in Idaho to determine the plan of ultimate development for irrigation, including transmountain diversion to the Mountain Home area, power and other multiple purposes.

An irrigation project in the vicinity of Challis contemplates a 4-mi. canal diverting water from the Salmon River and developing power at a drop to be used for commercial purposes and in pumping water to 1,300 ac. on a bench above the stream. Another unit of this project anticipates a storage development on Challis Creek to supply supplemental water to 2,300 ac. on that stream.

A detailed investigation of the Mountain Home Project is continuing in cooperation with the State of Idaho. In general, the present plan proposes to secure water for an area of about 367,000 ac. from the Payette River, Boise River and Salmon River watersheds. The present irrigated area is less than 10,000 ac. A power head of 1,200 ft. is available, in the diversion of water from the North Fork of Payette River to a proposed reservoir on Middle Fork, and its immediate development for war purposes has been urged. Other power sites are present. The partially constructed Anderson Ranch and Cascade Reservoirs will become integral parts of the project.

Studies are continuing on water supply and utilization features of the proposed Palisades Reservoir, located about 15 mi. downstream from the Idaho-Wyoming state line on Snake River. This project contemplates a reservoir of 1,420,000 ac.-ft. total capacity for irrigation and flood control, and a power installation of 30,000 kw. The reservoir will supply supplemental storage water for the 1,200,000 ac. now under irrigation.

Detailed investigations for developing a supplemental water supply for 7,400 ac. in the Malad Valley is nearing completion. The project plan contemplates a reservoir of 4,000 ac.-ft. active capacity on Devil Creek at a site about 8 mi. north of Malad.

Utah

The Bear River Basin of Wyoming, Idaho and Utah, in recent years of low runoff has developed conflicts among existing irrigation and power rights precluding needed developments for supplemental water and new irrigation. A comprehensive basin survey is in progress in co-operation with the states to develop acceptable projects to eliminate water shortages for irrigation, produce more power, and enable irrigation of new lands to the extent of possibly 250,000 to 300,000 ac.

The rapid population growth in Ogden and vicinity, resulting from the establishing of war industries in northern Utah, has created a need for additional domestic and industrial water supply. Investigations are in progress to evolve a plan of development to meet this emergency situation which would also be coordinated with the plan of ultimate full development of the water resources of Ogden River for irrigation uses. The plans of development being considered are the enlargement of Pineview Reservoir, construction of a reservoir at the Magpie site on the South Fork of Ogden River, and the purchase of water from power rights.

A basin survey initiated on the Weber River is aimed at reclamation of poorly producing lands on the Weber River delta, irrigation of a small area of new lands south of Ogden, and further diversion of Weber River waters to Provo River for irrigation purposes.

In co-operation with the State of Utah, an investigation to divert water from the Green River to the Great Basin for the irrigation of about 200,000 ac. and to provide some supplemental water is almost completed. The project involves storage and power developments on the Green and Yampa Rivers, and a transmountain conduit with pumping plants comparable to the Metropolitan Aqueduct of Southern California.

Investigations are substantially complete for the Dewey Reservoir, with a capacity of 6,000,000 ac.-ft. on the Colorado River about 30 mi. upstream from Moab. The site will produce 150,000 kw. continuously of power, which might be used to develop the Thompson magnesium deposits located nearby, or to furnish power for various purposes in Utah and Western Colorado. The storage regulation afforded will enhance flood control, increase power production at Boulder Dam by enabling a reduction in storage capacity dedicated to flood control, and greatly increase firm power production at the proposed Bridge Canyon Dam.

Detailed investigations are now in progress for an extensive power development on the Green River from the Wyoming line to Green River, Utah, and on its principal tributary, the Yampa River, from Craig to its mouth. The Echo Park site, key plant of the series, involves a dam around 400 ft. high to produce roughly 1,000,000,000 kw-hrs. annually.

Surveys on the Price, Uinta and Duchesne Rivers, tributaries of Green River in northeastern Utah, are in progress. A number of detailed project investigations are planned in these basins when the comprehensive basin plans of development have been determined.

A comprehensive plan is being prepared for development of water resources of the Virgin River Basin, covering portions of Utah, Nevada and Arizona for irrigation, flood control, power, silt control and recreation. Detailed investigations of projects in the vicinities of Hurricane and St. George in southwestern Utah will proceed when the basin plan has been developed.

Arizona

The possibility of using the Colorado

River waters in central Arizona is under investigation, with three alternative plans being considered, to enable extension of the irrigated area, and for supplementing the water supply of lands now inadequately irrigated from Salt and Gila Rivers.

The Parker-Phoenix route involves a lift of 1,300 ft. from Lake Havasu on the Colorado River near Parker, with the main conduit ending at Granite Reef Dam on the Salt River about 25 mi. above Phoenix. The Glen Canyon-Phoenix route (often called the Arizona High Line Route) involves primarily a gravity tunnel from the Colorado River near Lees Ferry past Flagstaff to the Verde River near Cottonwood. A dam on the Colorado River near Lees Ferry would impound water for irrigation, flood control, and silt storage, and would permit of a tunnel portal 200 ft. above the river bed.

A third plan involves diversion at a high level at the Bridge Canyon Dam site with a series of tunnels and canals leading southwesterly and connecting with the pump canal of the Parker-Phoenix route, or pumping at Bridge Canyon to secure a tunnel route to Verde River.

The Glen Canyon and high level Bridge Canyon plans will enable much power to be produced enroute to the irrigated lands. Use of waters for such a project would be alternative to the Gila Valley Project, on which the first unit of 150,000 ac. is under construction, with an ultimate area of around 500,000 ac. contemplated.

Exploration work, and most other preconstruction field work is complete at the Bridge Canyon Dam site on the Colorado River at the head of Lake Mead, about 120 mi. by water from Boulder Dam. Tentative plans contemplate a dam about 600 ft. high, a reservoir of about 1,500,000 ac.-ft. of active capacity, and a power plant of 600,000-kw. capacity. The reservoir will extend to the west boundary of Grand Canyon National Park. Operated in inter-connection with Boulder, Davis, and Parker Power Plants on the Colorado River, Bridge Canyon Dam can produce about 3.5 billion kw-hrs. annually, of firm power. Detailed preliminary designs are in progress. The dam will be closely comparable in size and cost with Boulder Dam.

A comprehensive survey of the Little Colorado River Basin for irrigation, flood control and silt control purposes is nearing completion, indicating four individual areas for detailed project investigation, some of which are also in progress.

An area of 10,000 ac. north of Puerco River between Chambers and Navajo is irrigable, with storage on Black Creek. A supplemental water supply is contemplated for lands in the vicinity of Showlow, Shumway, Taylor, and Snowflake, by means of reservoirs on Showlow Creek, but the preferred storage sites have not yet been selected. Storage for multiple-purposes at the Forks site on Little Colorado River just below the mouth of Silver Creek will provide supplemental water for present lands and enable additional irrigation from Woodruff to Winslow. A project of some 8,000 ac., located about 9 mi. west of Winslow, involves a reservoir on Clear Creek, a diversion dam several miles downstream, and a canal from Clear Creek to the area.

The Hassayampa Project involves storage of Hassayampa River flood flows at the Box Canyon site, about seven miles north of Wickenburg, for flood control regulation, irrigation and domestic water supply. Some 10,000 ac. of virgin land, lying about 35 mi. northwest of Phoenix, could be developed by gravity diversion from this reservoir.

A supplemental water supply is proposed for 2,500 ac. of land in the Chino Valley Project some 15 mi. north of Prescott, by enlargement of storage capacity at the Watson Lake and Granite Creek Reservoirs, and development of ground waters.

New Mexico

In the Middle Rio Grande Valley, silt entering and remaining in the Rio Grande stream channel is raising the bed of the river, impairing the drainage system of 68,000 irrigated ac. in the valley and increasing flood hazards. An investigation is in progress to develop a plan of action to remedy this condition. Storage sites on the main stream and tributaries are being investigated, with a view to withholding silt to a point enabling the main stream to maintain a suitable channel, and to reduce flood peaks.

The importation of Colorado River waters by means of the San Juan-Chama plan presented in 1938, will shortly be further studied to ascertain areas to use the water, and to ascertain power possibilities in the descent of the water to Rio Grande.

Basin surveys are in progress on the Cimarron River in northeastern New Mexico, southwestern Kansas, and northern Oklahoma.

Investigation of the Hammond Project is nearing completion. This project contemplates the irrigation of 3,670 ac. by a gravity diversion from the San Juan River in the vicinity of Bloomington.

Colorado

A comprehensive survey of the San Juan River Basin in Colorado and New Mexico is in progress. Detailed surveys are being conducted in this basin for more extended use of Vallecito Reservoir, supplemental storage for 12,000 ac. of land irrigated from Florida River, together with development of 10,000 ac. of additional lands, and a project with two reservoirs of 44,000 ac.-ft. capacity on La Plata River to provide flood control and supplemental storage for 20,000 ac. of irrigated lands in Colorado and New Mexico.

A reservoir is proposed on Dolores River near McPhee to serve 55,000 ac. of new land on the Mancos River slope of the Dolores-Mancos divide near Dove Creek.

Near Collbran, a 40,000-ac.-ft. reservoir at the Vega site on Plateau Creek, with an outlet canal leading westerly, is to serve 21,000 ac. of land largely irrigated, but inadequately, by streams from Grand Mesa.

Detailed investigations are in progress for the Minnesota Division of the Paonia

WATER CONSERVATION AND UTILIZATION PROJECTS

UNDER CONSTRUCTION

State	Project	Purpose
Colorado	Mancos	Supplemental water for 7,000 ac.
Montana	Buffalo Rapids Divisions Nos. 1 & 2	Completion of irrigation facilities for 35,000 ac. of new land.
Nebraska	Mirage Flats	Irrigation facilities to serve 12,000 ac. of new land.
North Dakota	Buford-Trenton	Completion of irrigation facilities to serve 14,800 ac. of new land.
South Dakota	Angostura	Irrigation facilities for 16,200 ac. new land.
South Dakota	Rapid Valley	Supplemental water for 12,000 ac. and municipal water supply.
Utah	Newton	Supplemental water for 1,445 ac.; new supply for 810 ac.
Wyoming	Eden	Supplemental water for 11,500 ac. and full supply for 8,500 ac.

PROJECTS AUTHORIZED OR PROPOSED

State	Project	Purpose
California	Kings River	Supplemental water and flood control for 800,000 ac.
Colorado	San Luis Valley	Supplemental water for 400,000 ac. and flood control.
Idaho	Palisades Dam	Supplemental water for 600,000 ac., flood control and power development.
Montana	Canyon Ferry	Power Development and storage to benefit 100,000 ac.
Texas	Valley Gravity Storage	Supplemental water for 550,000 ac., full supply for 165,000 ac., and power development.

Project which contemplates a supplemental water supply for 2,700 ac. from storage in a small reservoir on East Fork of Minnesota Creek.

A survey is in progress in the Gunnison River Basin to evolve a comprehensive plan of development, including power possibilities near Montrose.

A survey of the upper Arkansas Basin in western Kansas and southeastern Colorado is in progress to evolve a plan of development for multiple use of water resources in the area above Garden City, Kansas, which is the eastern limit of extensive irrigation development on this stream. Importation of water from the upper Gunnison River Basin is contemplated because annual water shortages of around 375,000 ac.-ft. are experienced by the lands now under ditch in the Arkansas Valley. The only possible means of furnishing these lands with a full supply is through diversions from the Colorado River Basin.

In co-operation with the City of Denver, a detailed investigation is in progress on a project to divert water from the Blue River in the Colorado River Basin to the South Platte River in the Missouri River Basin for municipal supply, power development and supplemental irrigation supply. Diversion of about 800 sec.-ft. is contemplated. Tentative plans include storage on Blue River near Dillon and on Williams River near Leal, a long tunnel under the Continental Divide and storage on the South Platte River. Nearly 400,000 ac. of lands in the vicinity of Denver would receive a supplemental water supply and a large block of power could be developed.

A detailed investigation of an irrigation and flood control project with storage on the Purgatoire River at the Sorpis site about 5 mi. west of Trinidad is in progress.

Wyoming

A survey of the upper Green River Basin and its tributaries, Henrys Fork and Little Snake River, is in progress, the purpose of which is to determine the ultimate plan of development of the water resources of the basin for multiple uses. Investigation of a number of projects in these basins will proceed when the comprehensive basin plan has been determined.

A detailed investigation of the Kortes power site located in Black Canyon on North Platte River between the backwaters of Pathfinder Reservoir and the tailwater of Seminole power plant is in progress. Over 200 ft. of head can be developed, and approximately 1,000,000 ac.-ft. of water would be available annually for power production.

The survey of the Big Horn River Basin has been completed. The plan for this basin would provide supplemental irrigation water for 99,000 ac., irrigation of 443,000 ac. of new land, power installations totaling 115,000 kw., flood control and silt control. Three multiple purpose reservoirs on the main stream are planned. At the Boysen site in Wind River Canyon 730,000 ac.-ft. of storage would be developed; at the Kane site in Wyoming near the Montana state line 750,000 ac.-ft. are planned, and at the Yellowtail site in the lower Big Horn Canyon in Montana, a capacity of 470,000 ac.-ft. is contemplated.

Detailed investigations are in progress on several units in the Big Horn River Basin. The Paintrock Project contemplates a supplemental water supply for 6,000 ac. and development of 2,700 ac. of new land in the vicinity of Hyattville, with 7,000 ac.-ft. of storage at the Lake Solitude site on Paintrock Creek.

Montana

A detailed project investigation for developing a supplemental water supply for some 95,000 ac. in the Bitterroot Valley is nearing completion. The plan of development contemplates the enlargement of three small reservoirs for additional storage regulation, and the extension of some existing canals.

A report has been submitted on the Missoula Valley Project to irrigate 1,200 ac. adjacent to the city of Missoula by pumping from the Clark Fork River and 900 ac. south of Missoula by gravity diversion from Bitterroot River.

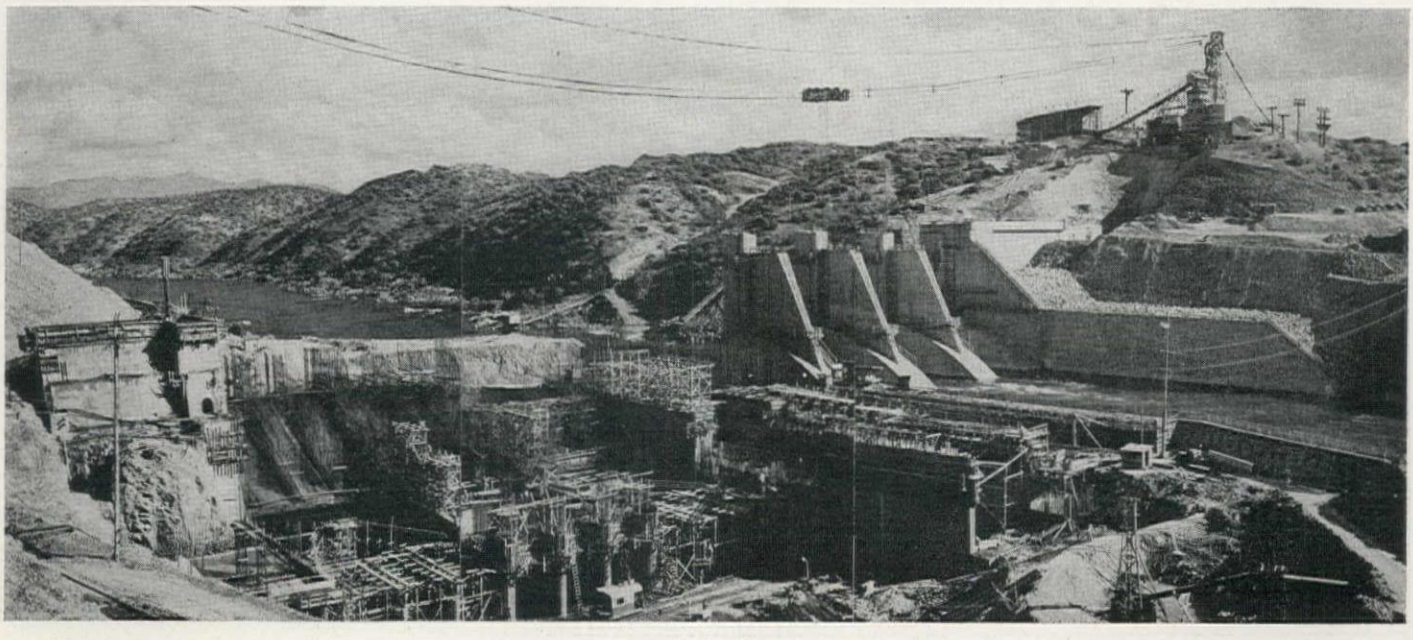
Topographic surveys of irrigable areas in the vicinity of Kalispell were made during the year, pointing to a gravity irrigation project of possibly 80,000 ac. to receive water from Flathead River near Columbia Falls.

A comprehensive survey of the Missouri River Basin, as to irrigation and power possibilities above power plants of the Montana Power Co. at and above Great Falls in co-operation with the power company and the state, is aimed to evolve a plant to eliminate conflict in this basin between power and irrigation interests brought on by ten years of low streamflow and to enable additional irrigation and power developments. The Canyon Ferry site near Helena and the Ulm site near Great Falls, are under consideration for storage regulation and power development.

A detailed investigation is nearing completion on the Marias Project. The preferred plan of development includes a reservoir of 600,000 ac.-ft. capacity, on the Marias River at the Tiber site located about 14 mi. south of Chester; a main canal over 100 mi. long and a pumping plant located on a branch canal, to irrigate approximately 115,000 ac. of new land.

A comprehensive investigation is in progress in the entire Yellowstone River Basin, including the Powder River and Tongue River, sub-basins, in Montana and Wyoming, the purpose of which is to evolve a comprehensive plan of ultimate development of the water resources of the basin for multiple uses.

Detailed investigation of the Third Division of the Buffalo Rapids Project on the lower Yellowstone River is in progress. This project is considering three potential pumping units, one above



KESWICK DAM, reregulating structure on the Sacramento River below Shasta dam is another structure on which construction can be resumed on short notice.

Miles City, a second near Terry and a third between Terry and Glendive. The total potential irrigable area is around 18,000 ac.

North Dakota

A preliminary report has been completed on the Missouri-Souris Project which contemplates the irrigation of 1,298,000 ac. of new land in northwestern North Dakota and northeastern Montana from the Missouri River as regulated by Fort Peck Reservoir and by utilizing power from Fort Peck Dam for pumping. The project would also supply water for 19 cities and towns along the James and Sheyenne Rivers and replenish natural streams and lakes to provide water for stock and much needed recreational centers. The plan of development involves 112 mi. of main canal of 6,200 sec.-ft. capacity and 50 mi. of 12,000 sec.-ft. capacity, a regulating reservoir of 5,000,000 ac.-ft. total capacity, a pumping plant of 12,000 sec.-ft. capacity and a 100-ft. lift, two smaller reservoirs and a distribution system including a number of small pumping plants located on the Missouri River.

Detailed investigations are in progress for two of the Missouri River pumping units of this project.

The Nesson unit of 14,800 ac. located about 25 mi. east of Williston involves a main pump lift of 33 ft. and three small relift plants.

The N-Bar-N unit contemplates the irrigation of 7,400 ac. across the river from Frazer, with a 62-ft. pump lift.

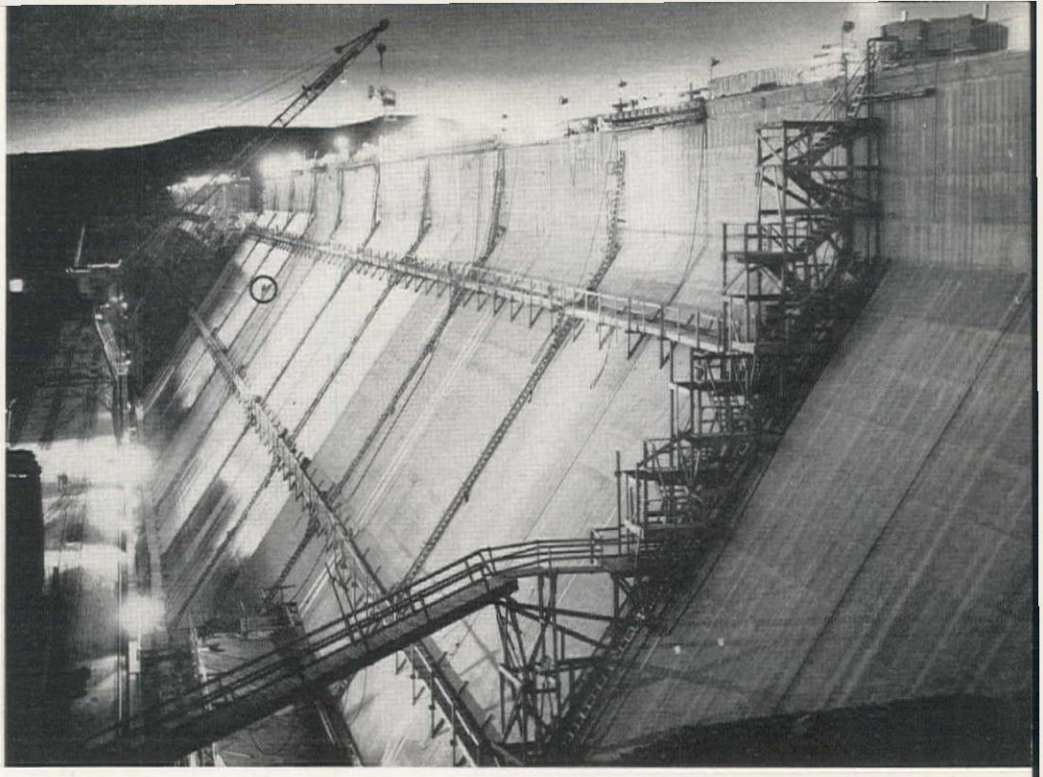
A project investigation has been made on Knife River. The project includes 15,400 ac. of new land to be served from 60,000 ac.-ft. of storage on that stream at the Broncho site about 15 mi. above Beulah.

South Dakota

Basin surveys are continuing on the western tributaries of the Missouri River. These are in progress on the Bad, Moreau, Sheyenne and White Rivers and have been completed on the Grand River.

Tentative plans for development of the Grand River include two reservoirs on that stream, the first of 134,000 ac.-ft. capacity at a site near Shadehill and a second of 50,000 ac.-ft. at the Blue Horse site about 17 mi. south of Morristown. About 12,000 ac. could be irrigated by gravity and 16,500 ac. by small pumping units.

A detailed investigation of potential storage developments on the Missouri River is in progress. Storage in this area would provide control for navigation (on the lower Missouri), silt detention, flood control and power which could be used for developing a number of irrigation pumping units along the Missouri in North Dakota and South Dakota totaling 180,000 ac. There is need for 4,000,000 ac.-ft. of storage capacity to satisfy conflicting interests in the use of Missouri River waters. These interests are lower river navigation and the suggested Missouri-Souris project which contemplates the irrigation of over a million acres of land in northeastern Montana and northwestern North Dakota. The War Department is investigating dam sites below Chamberlain and the Bureau of Reclamation is investigating sites above there. The Bureau has three sites under consideration: the Oak Creek site about 5 mi. north of Mobridge, the Oahe site 10 mi. northwest of Pierre and the Big Bend site between Pierre and Chamberlain.



FRIANT DAM on the San Joaquin River in California has been practically completed but the water distribution system consisting of Madera and Friant-Kern canals are still to be constructed, although plans are nearly complete for both waterways.

Nebraska

A comprehensive survey of the Republican River Basin in southern Nebraska, northeastern Colorado, and northwestern Kansas is nearing completion. A plan for ultimate development of the water resources of the basin for multiple uses will be determined. Detailed investigations are also in progress on several projects in the basin in Nebraska.

The Cambridge Project contemplates the irrigation of 13,600 ac. by a gravity canal diverting from the Republican River below the mouth of Medicine Creek. Tentative plans of development include a storage reservoir on the latter stream.

The Bostwick Project contemplates the irrigation of scattered areas of land in the Republican River Valley between Naponee, Nebraska, and Concordia, Kansas, from storage provided in the Harlan County Reservoir proposed by the War Department for flood control and multiple uses. Distribution to the lands would necessitate a number of diversions or an equal number of low lift pumping plants.

Kansas

A basin survey having been previously completed and a basin plan of development determined, detailed project investigations are now in progress in the Smoky Hill River Basin.

A multiple purpose reservoir on the North Fork of Solomon River at a site near Kirwin is being investigated. Tentative plans call for the development of 60,000 ac.-ft. of storage for the irrigation of 10,000 ac. Enlargement of the reservoir for flood control is also being considered.

The Cedar Bluff Project contemplates a reservoir on the Smoky Hill River at a site about 13 mi. southwest of Ellis for irrigation, flood control, recreation and possibly municipal water supply. Sufficient water is available to irrigate 13,000 ac. with 110,000 ac.-ft. of storage, of which 70,000 would be active. Additional capacity would be necessary for flood control.

Basin surveys are in progress on Walnut Creek and Pawnee Creek basins, tributaries of the Arkansas River in central Kansas, and possibilities of irrigating by pumping from the main stream in the vicinity of Ingalls are under consideration.

Organization

All operations of the Bureau of Reclamation are under the general direction of John C. Page, Commissioner, with headquarters in Washington, D. C. Engineering construction and project planning work are under the supervision of S. O. Harper, Chief Engineer; W. R. Young, Assistant Chief Engineer, and J. L. Savage, Chief Designing Engineer. Other divisional heads of the Denver staff include: W. H. Nalder, Assistant Chief Designing Engineer; L. N. McClellan, Chief Electrical and Mechanical Engineer; E. B. Debler, Hydraulic Engineer, project planning; H. R. McBirney, Senior Engineer, canals; K. B. Keener, Senior Engineer, dams; I. E. Houk, Senior Engineer, technical studies.

Post-War Planning—Motorways

Freeways Solve Two Problems

Contractors, engineers, and architects can contribute to the development of an economic post-war construction program and solution of city traffic problems by backing a comprehensive plan for badly needed express urban highways

By LYNN ATKINSON
Los Angeles, Calif.

THOSE INTERESTED in the post-war future of America, and especially in the post-war future of construction, need not be reminded of the uncertainties and the perplexing and confused future which confronts us. All should realize that only by anticipating peace and post-war planning can America and the construction industry in particular hope to avoid stagnation and chaos.

Like most other Americans, we of the construction industry think we are too busy with war activities and the affairs of the moment to contemplate this future, in spite of the fact that we all know that we cannot anticipate that the lush days of construction activities that have been and are now enjoyed can last forever, unless plans are made to meet this coming emergency. It is evident that an enlightened self interest demands that we face this problem intelligently and promptly.

The problem

This important industry, which involves the provision of shelter, factories, transportation facilities, and all public utilities, is second only to agriculture as a national industry. For this reason the leaders of this industry must recognize their obligation and responsibility for making every effort to provide not only for their own employment, but it is also their patriotic duty to insist that every effort be made to provide economic employment for the millions of our citizens now serving on the war fronts and in defense industries when peace comes.

If we are to secure the survival of the American way of life the industrialists of America must see to it that intelligent provision is made for post-war employment. If private enterprise and those in the construction industry do not see to it that post-war planning is definitely and tangibly done in such a manner as will provide practical and economic employment for our people promptly, the politicians and public officials of the post-war period will quickly take advantage of the opportunity and provide impractical and uneconomic employment such as the revival of W.P.A. activities, or worse still resort to the dole at government expense. Political demagogues will then have further excuse to dominate and control industry.

Private industry cannot permit America to again endure such a catastrophe. We must rise to the emergency now, and respect the phrase "He profits most who serves best." The activities and profits of today will be of little consequence if we do not now earnestly and competently analyze this larger problem and provide for its proper solution. The question in the minds of all is "What can be done about it?" The answer is not so simple, but much can be done if those interested will devote their energies and the initiative typical of this great industry to the solution of this most vital problem.

We must immediately carefully explore and analyze all phases of anticipated post-war construction and determine in what manner we can best inspire and generate a large reservoir of economic constructive employment that will be instantly available when peace comes. Peace may come sooner than we think and find us unprepared as did the present war. We must dispassionately and frankly analyze the future possibilities of all fields of post-war construction without indulging in hopeful thinking. We cannot dismiss the question and take the future for granted.

Above all we must realize that it will take time for both private and public enterprise to reorient their activities and determine procedure when peace comes. Even more time will be required to prepare detailed plans and specifications and arrange the financing of projects whether we contemplate bungalow building or major construction developments. It is this transition period or gap between the end of war and reorientation and conversion to peace activities that we must bridge with instant employment if we are to avoid chaos.

We who have built America are best equipped to do this job and we must and can prevent such catastrophe and secure the survival and maintenance of private industry in construction. We can and must see to it that real work is available that will permit of prompt demobilization after the coming armistice.

THIS ARTICLE is specifically intended to challenge the genius of the construction industry to constructive action, and to inspire an economic solution of the coming post-war problems. If we are to preserve private enterprise and contracting as we have known it, we must thoroughly explore all possibilities of usual construction activites and find new frontiers of constructive employment. The future is, therefore, analyzed by the author as follows:

Possibilities of private construction

We can all agree that there will be a large demand for housing, slum clearance and mass housing, but it will take time for owners to proceed and for land to be subdivided, plans to be drawn, and specifications to be written, and to arrange for financing. For such reasons it is not reasonable to expect that any large reservoir of construction can be instantly available from this source when peace comes.

We may also anticipate that there will be a volume of new street construction and activity in the utilities field, including the development and extension of gas, electric, sewerage, and water supply systems to new subdivisions, but such activities are also subject to delay awaiting completion of plans and specifications and financing.

There will also be a demand for construction relating to the transition of industry with its accompaniment of reconstruction of plants and factories, etc. This will provide employment for a limited group, but it will take time for industrial America to reorient itself and make new plans for the future, and even this type of reconstruction work will not be available instantly when peace comes.

Certainly we cannot anticipate that construction incident to the newly discovered fields of aviation will yield much construction activity, as all will concede that manufacturing facilities in this industry are overbuilt at present and every town and hamlet is overstocked with airports.

As we review the possible fields of post-war construction activities that may be generated by private enterprise, and the ability to instantly proceed with employment of any large portion of the enormous forces now engaged in war and war production we find comparatively limited possibilities in such fields.

Possibilities of public construction

When we carefully analyze the usual fields of public works construction we can anticipate numerous activities that will contribute much to our postwar employment, but none of which form a scopic national program that can be anticipated as generating a nation-wide, large scale activity. Some cities need hospitals, other sewerage development, others harbor development but necessity requires a dynamic program that can be universally and instantly placed under construction and furnish broad-scale employment in our urban centers, where unemployment will be most concentrated, to complement such various other projects.

A frank analysis of these usual fields of construction indicates their limitations, both as to quantity and availability, and it is not disparaging to say that they do not represent a competent answer to the problem.

It is granted that the development of intercity and interstate highway systems of America is not completed—it never will be, as intercity and interstate highways will constantly continue to be extended and broadened to meet increasing future traffic. However, it will be conceded by most that the demands for intercity and interstate highways have to a large degree been satisfied to approximately the full extent of their present economic justification. We cannot hope to tax our people for intercity and interstate highways much heavier than they have been and are now being taxed for such facilities.

For such reasons it would seem evident that we cannot look to intercity and interstate highway construction as forming a very large reservoir of post-war construction. We can only anticipate the normal continuation of such construction, which will not create a large volume of employment for our people generally or the construction industry in particular. It may fairly be anticipated that only a normal quantity of this type of construction work will be instantly available when peace comes, for the simple reason that we will again be confronted with the problem of not only planning but of financing.

We may also anticipate that a limited volume of reclamation work will be available, but again we are confronted not only with the problem of planning and financing, which will take time, but also the more difficult and time taking procedure of securing authorizations by public bodies such as the federal Congress, and federal bureaus, and state, county, and other bodies. During the last depression we exhausted most of the economic possibilities of public works construction, such as reclamation development, in an effort to find work for our people, and for this reason we cannot look to this former large field of construction for large scale future employment.

While it is true that public works bodies can provide some employment in new governmental building construction, it must be conceded that the federal government, as well as municipal and state governments, have during recent years to a degree exhausted this field, and built numerous monumental structures throughout America that are akin to the pyramids because of their lack of economic value. Because of this public building construction will probably be limited to a comparatively few state buildings, city halls, civic centers, etc., as most states, cities, and towns are generally fairly well equipped with public buildings.

The foregoing summary and analysis of the usual construction activities yields no large reservoir of construction, even when considered as a whole, that can be instantly available. At best we can only regard such usual fields as offering a nominal and makeshift solution of the problem which will at most be "too little and too late."

Since these usual fields of construction activities will offer only relatively limited possibilities of large scale prompt employment, it is evident that the solution must be found in an economic field of activity not heretofore developed. We must explore the possibilities of new frontiers — new horizons of economic construction that are needed by our people.

Because our forebears have heretofore faced similar post-war emergencies and endured and recovered from depressions even more difficult than those that confront us, and preserved the American way of life and private enterprise, it would seem logical to briefly review the historical solutions of similar problems in the light of past experience.

Historical solutions

Looking backward on other decades and the solution of similar problems in the past we can now recognize that whether they planned it that way or not our forefathers found new frontiers of construction and solved these problems and maintained employment of our people, and it is interesting to note that the basic field of construction and the generating force that inspired large scale construction was directly related to improvement of transportation facilities. After the Civil War the great reservoir of construction related to the development of our vast transcontinental railway systems, both interstate and intrastate, together with large scale construction of intracity railway systems and terminals.

History indicates that the construction of these transcontinental railways and terminals on a scale conceived to meet the universal transportation demand of that era provided large scale economic employment. Prior to that time America had only looked upon railway transportation as an incidental mode of transportation and relied principally upon barge canals and rivers for transportation. The impetus given to railway construction during the Civil War and the necessity of railway transportation development for national defense and efficient living inspired a decade of railway building and prosperity that was a basic cause of recovery from the Civil War depression of the 70's.

The very building of these railways inspired and generated construction and reconstruction in every city, town and hamlet throughout America, and employment was developed not only in the building of these vast railway systems, but also measurably more employment was provided by the construction activities generated because of railway development.

After the Spanish-American War railway development continued, but our people again found a new frontier of construction and employment in the revision of intracity and urban transportation facilities and for the two decades following the turn of the century street railway and interurban traction development formed the large reservoir of construction that compelled the rebuilding of every city and town in America.

We of this generation can remember that for two decades following the armistice of 1918 the great generating force that inspired the reconstruction of America, and which created the large reservoir of constructive employment was highway development. Millions of our people were engaged during this period in the development of our network of interstate and intercity highway systems, and it must also be remembered that however large this volume of intercity and interstate highway construction totalled it was not comparable with the greater employment generated by the construction and reconstruction which it inspired throughout America. Just as in the days following the Civil War it became necessary to accommodate railway transportation, so it again became necessary to reconstruct America for automotive and highway transportation.

Since we have admittedly to a large degree solved the problem of transcontinental and interstate highway development, should we not now explore the possibilities of developing improved intracity and urban transportation facilities in order to properly and efficiently adapt these cities and urban centers to the automotive age?

We of this generation must comprehend that in the past we have found economic employment and recovery from depression and post-war conditions at the close of other wars by building improved transportation facilities that were inspired by the railway and automotive age. With this past experience in mind can we not "plan it that way" now?

The solution—motorways or stagnation

Those of us who live in the cities and towns of America need only drive our

cars within these urban centers to realize the crying need and demand for revised and improved transportation facilities within our cities and towns in this automotive age. For too long we have enjoyed the efficiency of our intercity and interstate highway systems and endured the inefficiency and congestion and hazard of our city streets. For too long our through intracity traffic has endured the wasteful and costly "stop and go" signal and the time consumed in going through and about our cities and towns, and the excessive cost of making deliveries to our factories, stores, and homes.

Fifty years ago most of our people lived in the country. Today most of our people live in our cities and urban centers and more than two-thirds of our automobiles are owned by those living in the metropolitan areas and cities and towns of America, and this large majority of automobile owners seldom enjoy the efficiency of the out-of-city highways, which they have built and financed by gas taxes.

Fifty years ago our farmers came to town at weekly or monthly intervals. Today they swarm our streets constantly and suffer the same difficulties and delays when making deliveries to or travelling through our cities and towns. Just as those in the cities appreciate and receive the benefit of improved rural highways, so will those in rural areas benefit from and enjoy improved transportation facilities within our urban centers. The solution of our nationwide problem of traffic congestion and its economic value will appeal to all types of citizens.

All recognize the need and economic importance of vastly improved facilities for motor transportation within and through these metropolitan areas, and cities and towns. The city streets of yesterday were not designed for automotive transportation. They are not adequate or competent to carry the automotive traffic which we are trying to carry on them even under gas rationing, and one of its greatest benefits may prove to be the fact that the decreased traffic on our city streets has illustrated to every citizen the improved efficiency and safety of city streets when relieved from congestion. The necessity of developing segregated highway or motorway systems within and through these cities and towns is obvious, whether they be large or small.

All will concede that immediately upon the termination of war everyone will want to own and be in a position to own more automobiles than we have hitherto owned. However, unless provision is made for motorway development there will be no place to drive the automobile of tomorrow on existing city streets unless we now plan and arrange for the immediate construction of the highways of tomorrow when peace comes.

These highways of tomorrow must of necessity be visualized as needed most within and through our metropolitan areas and urban centers where bottlenecks of transportation and congestion have become most aggravated, and just as we have for decades visualized transcontinental and interstate railway systems from intracity and urban street railway systems, so must we now differentiate and realize that our intracity and urban highway facilities have not kept pace with our transcontinental and interstate highway developments.

We travel efficiently and safely in and about the countryside at speeds averaging up to 50 and 60 m.p.h., but we travel inefficiently and hazardously within our cities at speeds averaging less than 15 to 20 m.p.h., and all because we have refused to face the problem of developing improved transportation facilities within these urban centers.

The term "motorways" anticipates all types of segregated highways or "freeways" to be constructed within cities and towns which are designed to be free from intersections and without grade crossings. It is intended to include either the depressed type of freeway with overhead intersections, or the ground level type with intersections either depressed or overhead, such as are evidenced by the Pasadena and Ramona and Cahuenga freeways in Los Angeles, and the Bayshore highway on the San Francisco Peninsula. Such types of motorways or parkways are adaptable to residence districts.

Motorways are also intended to include overhead or express highways in and through business districts, such as the overhead Westside Express Highway in the heart of Manhattan, and the Pulaski Skyway across the river in New Jersey, and such as the approaches to the Golden Gate Bridge in San Francisco. In general motorways are conceived as being usually and best built through blighted areas or the middle of blocks where condemnation costs are lower and to prevent spoiling existing streets and frontages.

Small cities and towns may contemplate a few miles more or less of motorway construction that would relieve their city streets of through traffic and its hazard to overcrowded Main Streets, while larger cities and metropolitan areas could contemplate an arterial system and network that would make this transportation facility available to all residents. Such motorway facilities will permit of efficient rapid transit and mass transportation by modern high speed non-stop automotive buses and hasten the removal of outmoded streetcar systems where such still exist. Motorway development can and should be as scopic and national in character as railroad and street railway and highway development has been in other decades. It is the new frontier of construction.

The segregated motorway developments as evidenced by the express highways of New York City and the parkways of Chicago and the freeways of San Francisco and Los Angeles districts have illustrated to our people the economic benefits of bridging the traffic with segregated motorways that must be resolved into motorway systems in metropolitan areas.

The construction of modern transportation facilities has lagged far behind automobile production. We have tried to use the streets and roads laid out by our grandfathers for a horse and buggy age as facilities for automotive transportation too long. We all can conceive the great savings in time and efficiency that can be achieved by extensive motorway development which would result in traversing metropolitan areas and cities and towns in less than half the time now required. We know the actual savings in operating cost to each motorcar owner that could be made if costly traffic stops and congestion could be eliminated.

It has been authoritatively stated that the cost of stopping and starting the average automobile exceeds one cent. We also know that the average automobile stops from ten to twenty times on each trip through or within our American cities because of stop signals and traffic congestion. These penny savings multiplied by the number of stops per trip and again multiplied by the number of trips per day and per year and again multiplied by the millions of motorists operating on the streets of our cities and towns total vast daily sums that would be more than enough to amortize and liquidate large economic expenditures for motorway development. These savings would actually total hundreds of millions of dollars annually and are more than enough to offset the total cost of motorway development without consideration of the still larger benefits that will accrue because of the increased safety and efficiency of the cities and towns of America if motorways are developed.

The economic value of interstate and intercity highways has been definitely demonstrated, and if it has proved economic to build these highways to take intercity and interstate traffic out of the mud would it not be even more economic to anticipate taking the larger intracity traffic out of the congestion in view of the fact that over two-thirds of our people live and work in urban centers and make two or more trips per day through these cities and towns.

Is it not evident that motorways and the development of modern intracity transportation facilities is not only economically justified, but that it is the large reservoir to which we should look for the basic economic solution of our postwar employment problems? Is it not evident that such motorway construction throughout the cities and towns of America would require and generate a tremendous volume of demolition and reconstruction and expanded development on a scale hitherto unconceived?

The Automobile Club of Southern California and the Citizens Transportation Committee of that city after extensive studies have indicated the present need and economic justification for the construction of motorways costing more than one billion dollars based on pre-war costs in that area alone. Robert Moses, who has pioneered motorway development in New York City can prove the economic justification of even larger expenditures in that area in spite of the existing subway facilities. Other metro-

politan areas such as Philadelphia, Chicago, Detroit, San Francisco, etc., realize that the development of modern efficient automotive transportation facilities are of paramount and national importance, as do all other urban centers, including our smallest cities and towns.

The forward looking authorities and leaders of America have for years recognized the need of motorway development throughout America as being the most important and economic need of our people. They have recognized that the solution of our problems of traffic congestion and casualties caused by the development of automotive transportation in the cities, towns and hamlets of America could only be solved by large scale motorway development of a type undreamed of heretofore. These authorities realize that during the last three generations our people have drifted to cities because it was no longer necessary for a large portion of our people to remain in agriculture, but that we have not provided automotive transportation facilities within these expanding cities.

Their studies prove the economic necessity and value of such a nationwide undertaking. Even a casual survey of the reconstruction and construction of factories and homes incident to such a national program will indicate that such related construction activities would exceed in value the large sums that must be expended for proper motorway development. Not only those interested in engineering construction would benefit, but those interested in building construction would also benefit to even a larger degree. After all, as we look backward, have we not as a nation, and particularly as an industry always been principally employed in building and rebuilding America to meet changed and modern developments?

All that is needed is a determined cooperative and intelligent interest on the part of our citizenry and especially those interested in the construction industry. After all are we not manufacturers of homes and plants that go to make what we know as cities? Would not a wise manufacturer looking into the future conceive the opportunity and actively promote the demand for and the sale of his product? Our principal product which we have to sell is the construction and reconstruction of cities and towns and improved transportation facilities to and within them.

What can be done?

Primarily the man on the street throughout America must be made to realize that motorway development and the economic solution of our post-war employment problems must be recognized as a national problem deserving of nationwide support. The federal government could well immediately appropriate and set aside a comparatively few of the tens of millions of dollars now being spent for war for the purposes of federal aid to such a vital and important program. Such federal aid could be contingent upon joint contributions of our states, cities, and towns for the purpose of preparing detailed plans and specifications and the procurement of rights of way for such projects in every city and town in America. Co-operative and aggressive action will crystallize this demand into legislation. This great industry in co-operation with the automotive and petroleum industries can accomplish these objectives, but only if we now take action.

With such a large volume of business available should we not join in actively promoting its development? The problem would only seem to be one of making this vast program and large reservoir of employment instantly available when peace comes, and it is reiterated peace may come sooner than we think.

Would it not be wisdom to realize that the most profitable thing we can do is to face this future problem now and secure its solution, rather than devote our entire attention to present enterprise? If a proper demand is created and made upon our federal and state and county and city officials could it not be anticipated that federal, state, county and municipal legislation could be secured that would permit of proper detailed preparation and the adequate financing of such self-liquidating and economic projects? Would not public officials and legislators generally be compelled to recognize the merit of this solution of our post-war employment problem? What other competent alternative exists?

Such planning need not interfere with the war effort. The completion of cantonments, factories, and other defense projects is releasing the manpower necessary for such planning, including civil and structural engineers and architects, most of whom are only experienced at survey and design work and are over 38 years of age. Deferred construction within our cities will also release manpower. Why should we not employ these increasingly idle technicians immediately?

The time is short—perhaps shorter than we think, because peace may come at any time. If funds are to be made available and detailed surveys and plans commenced and rights of way procured for such projects in order that they will be instantly available for construction by the economic contract method when peace comes, it is evident that no time can be lost in the commencement of such a national, state, county, city, and regional procedure.

The timely address before the American Association of State Highway Officials at St. Louis this December 7th titled "Public Works Planning in War and Peace" by Major General Phillip B. Fleming, Administrator of the Federal Works Agency, definitely illustrates the need of such a program and emphasizes the necessity of immediately proceeding to prepare plans for motorway development in our urban centers as the principal solution of our post-war employment problem.

Such procedure would enjoy the active endorsement and support of the Public Roads Administration, whose chief engineer, Thomas P. MacDonald, has for years publicly urged before Congress the economic necessity of motorway development and secured nominal appropriations for this purpose. Forward looking state highway authorities and public officials, such as Charles Purcell, director of public works of California, would endorse and support such a program.

A new Congress of recently elected men of practical wisdom and vision who face the post-war problem would welcome such a competent and basic solution. Newly elected governors from New York to California who seek an economic solution of post-war adjustment rather than a makeshift boondoggling era of chaos will also support such an economic large scale program.

Should not the construction industry now equip and implement this program by a dynamic effort and create a vehicle or organization underwritten by the construction industry and automotive industry and petroleum industry that will broadcast and popularize this economic solution of the problem that has been conceived by forward looking engineers? Has not it always been our business to promote, interpret, and create the conceptions of such minds?

Could the A.G.C., or the A.I.A., or the A.S.C.E., or any of the kindred organizations and related industries dependent upon construction activities find a more important program more deserving of their most active efforts and support? The promotion of such a program would not only result in self-preservation, but be of definite public service, and provide economic rehabilitation and employment to meet the emergency that will soon confront America.

Unless the leaders of private enterprise in America, and especially those of the construction industry, join in developing intelligent, tangible, and practical programs that will insure the development of detailed plans and specifications and the procurement of sites and rights of way in advance of the coming armistice, the reconstruction of America will not be done by private enterprise and contractors as individuals.

Cannot we of the construction industry, who face the problem of unemployment and stagnation within our industry challenge the imagination of America, and present a constructive solution and new frontiers for the economic employment of our people? Is it not our patriotic duty to devote ourselves to the solution of the coming emergency and thereby prove our fitness to survive and maintain private enterprise? If we do not accept this challenge to our ability to conceive constructive enterprise and assure its development we will again be confronted with leafraking and tree belt schemes, and uneconomic solutions administered by incompetent politicians that will prostrate our depleted treasury and lead to inflation and bankruptcy and forever wreck the republic and our way of life. Must not the construction industry which has practically completed its contribution to winning the war now prepare to win the peace?

Post-War Planning—Highways

Western State Highway Plans

Public Roads Administration

BY AUTHORIZATION of a section of the Defense Highway Act of 1941, the Public Roads Administration received an appropriation of $10,000,000 for advance highway engineering surveys, and apportioned $1,897,995 of this sum to the eleven western states to be matched by the states on the usual established basis. Up to the present time only three western states, California, Washington and Oregon, have received approval of projects, although a number of others are being considered. Additional planning of post-war highway projects has been encouraged through the Public Works Reserve.

Section 9 of the Defense Highway Act of 1941, approved Nov. 19, 1941, authorized the Commissioner of Public Roads to make advance engineering surveys and plans for future development of the strategic network of highways and bypasses around and extensions into and through municipalities and metropolitan areas. The sum of $10,000,000, authorized to be appropriated for this purpose, was to be matched by the individual states on the usual 50-50 pro rata basis including adjustments to public land states.

Western apportionments

The apportionments of this authorization to the eleven western states as approved by the Administrator of the Federal Works Agency on Dec. 1, 1941, are as follows:

Arizona	$143,546
California	398,990
Colorado	179,322
Idaho	123,800
Montana	202,080
Nevada	127,539
New Mexico	162,255
Oregon	164,913
Utah	112,373
Washington	158,578
Wyoming	124,599

The engineering work, extending from the conception of the improvements through surveys and the preparation of detailed plans and specifications ready for the contractors' bids, is only a part of the Federal-aid highway construction and improvement program to be undertaken during the war. Projects to be included under this joint Federal-State program are to be aimed at the solution of major traffic problems on main routes through and around cities and on sections of highway that will form parts of the proposed inter-regional highways.

Only projects of such magnitude as to require considerable time and study in planning are considered eligible for these funds. They are not available to projects that require only normal engineering work in advance of construction. These major road-building undertakings, together with normal extension of the primary and secondary Federal-aid highway systems, plus the extensive repair work that will be necessary as a result of war-time curtailment of highway maintenance, will form an important part of the reserve shelf of necessary public works that the Federal Works Agency is accumulating to help take up the slack of post-war readjustment.

Public Works Reserve projects

In addition to the advance engineering projects carried on under the Defense Highway Act of 1941, state, local, and municipal road projects have been listed with the Public Works Reserve during the past year. In 1941 the Public Works Reserve was established in the Federal Works Agency. It was sponsored by the Federal Works Agency and the National Resources Planning Board with financial assistance from the Work Projects Administration. Its object was to encourage long range planning of public works at all levels of government.

Arrangements were made to clear prospectuses of highway, road, and street improvements through state committees which were staffed by representatives of the Public Roads Administration, the state highway department, and the Public Works Reserve. Committees were appointed in all of the western states. Considerable progress was made in listing state highway projects, and to some extent local road and municipal street projects. Many prospectuses were prepared and submitted.

In April of 1942 the assistance of the Work Projects Administration was withdrawn and the Public Works Reserve was reorganized as a joint unit of the Federal Works Agency and the National Resources Planning Board. It was renamed the Local Public Works Programming Office. Emphasis was shifted from assembling a large reservoir of projects to encourage the preparation of a six-year program work which could be financed by the respective agencies (i.e., state highway departments, cities, counties, etc.) without Federal assistance. Lack of funds caused a sharp curtailment of this activity in August.

Operations of the Public Roads Administration in the eleven western states and Alaska, including advance engineering surveys, is under the direction of Dr. L. I. Hewes, chief of the Western Region.

PUBLIC ROADS Administration attention is focused on the Alaska highway at present, but nearly $2,000,000 is available for post-war planning under its direction by the western state highway departments.

Washington

WHETHER THE WAR continues for another day or another decade, the highway system of the State of Washington will, upon cessation of hostilities, immediately feel the impact of a $50,000,000 plan of highway extensions and improvements. All of the post-war operations are based upon a well planned outline of general highway additions and new construction that is already drawn up.

While completion of the $50,000,000 job entails diversification of operations, and these to be allocated over various parts of Washington State's highway system, if the war should end tomorrow the highway department would be ready to go on a considerable part of the program within sixty days. In all, the plan-

ning embraces a six-year project that will add modern and adequate highway facilities which are covered by the highway department's supervision.

As has been the case of all western states, Washington has been dealt with severely by the war, perhaps most notably in its highway department's operations. These have dwindled during the past twelve months, with highway repairs and access roads as required critical by the federal government for pursuance of the war effort, receiving virtually all of the department's attention.

No breakdown as to specific projects included in the post-war schedule has been announced at this time. The fact that the plans are in shape is taken as a matter of good highway management and tantamount to their completion according to schedule. However, uncertainties of the future are being considered with due regard to the ultimate conclusion of the war and the difficulty of forecasting details of the whole program based upon the economic position of the nation and the state.

Burwell Bantz is state highway director for Washington.

COLUMBIA RIVER HIGHWAY relocation along the Oregon bank between Portland and The Dalles is one of the projects which has already received the approval of the Public Roads Administration for inclusion in the post-war planning program.

Montana

By H. W. HOLMES
State Highway Engineer
Montana

THE MONTANA highway department takes the position that the record of the orderly and progressing development of the nation's highway facilities during the past 20-year period is sufficient justification for the assumption that the post-war highway program will constitute a resumption of the program which was actively advancing prior to the declaration of war, and that that program will be carried forward expeditiously and in the best interests of the nation and states if, in the meantime positive steps be taken toward insuring that control of the program remains a function of the Public Roads Administration, and that the mileage-area-population formula normally controlling the allotment of Federal funds be retained as a means of insuring orderly development of the established primary and secondary systems.

Upon that premise Montana is proceeding with the development of a program of road and bridge work designed to take up all unobligated balances of Federal funds thus far allocated. Accordingly we are retaining those members of our preconstruction staff not subject to call for service with the armed forces and other war activity, in order that a post-war construction program can be developed and placed under contract promptly following the termination of the war. This work, combined with efforts to bring existing road mileage through the war period in as good condition as possible under the limitations imposed by the emergency, constitutes the major activity of the department.

The road and bridge program now scheduled, and involving an expenditure of about $10,000,000, is made up of projects recently approved by the Commission in addition to those already incorporated in the normal annual program that was approved by the Commission and the Public Roads Administration prior to the declaration of war. In the meantime additional projects will be developed in the anticipation of the availability of Federal funds additional to the unobligated balances of previous allotments.

Our program is based on the presumption that normal extensions and betterment of the established primary and secondary Federal-aid highway systems and the elimination of critical deficiencies along the route of the contemplated interregional highway system will combine to form an important part of a public works program designed to take up the slack of post-war adjustment. It is believed, therefore, that we would be neglecting an important phase of overall emergency activity if we failed to prepare for post-war activity before the cessation of hostilities.

Development procedure, as well as the determination of appropriate geometric design standards and surfacing sections, is based largely on conclusions derived from study of comprehensive traffic-flow charts recently compiled by our state planning survey staff. However, in certain questionable instances, plans are worked up to a point where any reasonable modification deemed desirable after the war can be incorporated in the final design without undue delay. A substantial aid in the way of advancing highway work to the contract stage is the newly created procedure authorizing the Federal Works Agency to acquire right-of-way areas and transfer title to such areas to the states. Thus the frequent delays formerly encountered during negotiations by the states need no longer be tolerated, inasmuch as the Federal Government can take possession prior to determination of the value of the property involved.

It is planned to be in a position to place about 40 per cent of the program under contract within 60 days following receipt of authorization to proceed with the program, and to place the balance of the program and subsequent additions thereto under contract at the rate of about one million dollars per month thereafter.

Wyoming

By C. F. SEIFRIED
Chief Highway Engineer
Wyoming State Highway Department

DURING THE PAST several years the Wyoming Highway Department has made a study to determine how much construction work will be required during the next several years to bring the main state highway system and feeder roads on the state highway system up to a satisfactory standard. In order to set up a definite standard to work to, each section of the state highway system was given a rating as to alignment, subgrade width, surface type and traffic. From ratings made on this basis a priority list was made up and a 6-year tentative program determined upon on the basis of the expenditure of $5,000,000 per year. From the study made it was concluded that the expenditure of $5,000,000 per year, which is the amount that had been available to the department during the past several years, would allow an orderly program of reconstruction and rehabilitation without making maintenance costs, due to anticipated traffic, burdensome.

At the present time, with the exception of one construction project which is well along toward completion, all construction work is completed. About 30 construction projects were under way at the beginning of the present fiscal year

but they were all far enough along so that they were not stopped by any of the various governmental orders which have been showered upon most of the states during the past several months.

On the other hand, Wyoming, not being blessed with the necessary climatic or other conditions essential for the training of troops or with conditions necessary for the development of its unlimited material resources, no new highways have been needed. In general, Wyoming's highway system is, fortunately, in fair to excellent condition to take care of wartime traffic which is being thrown upon it. As a consequence, fortunately or unfortunately, of the several factors referred to above, the activities of the Wyoming Highway Department are being rapidly changed from those of a predominantly engineering nature to a strictly maintenance, tax collecting, and accounting nature. In July, 1941, the department had a modest engineering organization consisting of 229 men. The department now finds itself with 203 of this number engaged in military, defense, or other activities. The 26 who are left form a rather scant skeleton on which to build after the war. However, happily, as explained before, a 6-year program, amounting to $5,000,000 of construction work a year, is ahead of them to plan. For all practical purposes the entire engineering force of the Wyoming State Highway Department is now or soon will be engaged in planning post-war projects. The special research section and personnel assigned to these post-war projects is the entire engineering organization.

Surveys have been completed on between 100 and 150 mi. of reconstruction. On a large amount of this mileage plans are fairly well along. These plans are being worked up in full detail so far as grading and minor structures are concerned. The design of the larger drainage structures lags, and an additional force will have to be put on bridge design in order to keep the program moving and to have plans ready to put under construction when the present emergency is over.

While no plans are as yet completed it is expected that this small but efficient engineering force will, during the calendar year of 1943, complete in detail plans so that a normal year's construction program can be put under way. These detail plans will be put on the shelf to wait such time as funds will be available to make use of them. The projects contemplated will provide for high type construction with 80-m.p.h., 2-lane standard highways in prairie country with lower geometrical design standards in the mountainous country. In general these projects will provide for low type bituminous surface.

Arizona

By W. R. HUTCHINS
State Highway Engineer
Arizona State Highway Dept.

THE ARIZONA State Highway Department is making every effort to get as many projects ready for contract immediately after the war as possible. Our engineering personnel, who are responsible for this work, is seriously depleted by those joining the armed forces and those taking more lucrative positions than we can offer; however those left are practically all working on post-war projects.

Arizona is a large state in area but small in population with the United States Government owning or controlling approximately 72 per cent of the land area of the state. In our roadbuilding program we have no income except the road users' taxes which only gives us a building program of some five to seven million dollars of new construction a year.

Our highway system is 3,675 mi., and our policy has been for the last four years to bring this entire system up to standard before taking in any new mileage which is badly needed in a number of places to serve the entire state adequately. This led us to pick out those sections on the system which needed building or rebuilding the worst. Of course, the traffic, necessity of usage, etc., has always been taken into consideration, for some of the lesser important sections must wait although the condition of these lesser important sections need rebuilding far more than some of the more important sections. We were making nice headway under this program until the present emergency practically stopped any building.

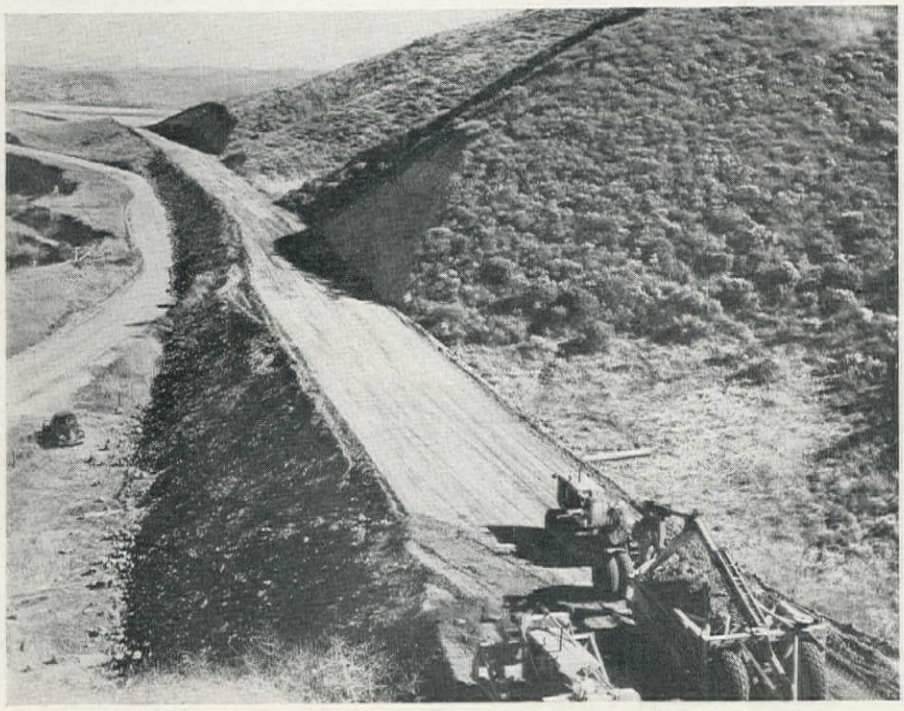
We are now facing a financial future which no one can predict. Our gasoline tax revenue has held up remarkably well to date owing to the enormous government building program in Arizona, but as gasoline rationing only started Dec. 1 and the tire problem is getting more acute we may be faced with lack of necessary funds to carry on this detailed post-war planning. If this point is reached the only solution is that we be allowed to use our federal aid money matched, of course, by the state for these post-war plans and specifications. It seems now that the federal aid allotted must be protected by Congressional action as to lapsing and when this action is taken a provision can be made to allow the use of same on this post-war planning. There are now federal funds available for this purpose, "Advance Engineering" in the 1941 Highway Act, for use on the Strategic System, but the present policy is that this can only be used on special type projects.

The use of these funds only on the Strategic System will not help some states a great deal but in the case of Arizona approximately 50 per cent of the state system of 3,675 mi. are on the Strategic System and a large amount of post-war projects can be worked up if the present policy is changed so that these funds can be used for ordinary planning wherever needed.

We now have about one million dollars worth of projects ready for advertisement and will increase this as time goes on with the small force of engineers we have left. These projects run from $50,000 to $300,000—the larger projects being concrete pavement.

The only large excavation project in the million cubic yard class now being worked up is on the mountain section between Miami and Superior. This was originally figured for a high steel viaduct which, of course, was out after the emergency started and has been changed to a high fill to replace the steel viaduct.

RELOCATION of state highways to eliminate sharp turns and reduce excessive grades, as well as widening older roads to accomodate future heavy and high speed traffic will form a large part of the state highway programs in the post-war period



Post-War Planning—Public Works

Western Cities Plan Work

Survey of major western cities indicates that most are preparing general programs or detailed plans for future construction of necessary facilities—Shortage of skilled engineering personnel hinders planning programs in some instances

Oakland, Calif.

OAKLAND, CALIF., is definitely giving attention to the subject of post-war planning, but the shortage of help in the engineering department has not permitted as much progress as would be liked. Planning is concerned principally with improvement of drainage facilities —both sanitary and storm water—and with additional or expanded main highways. At the present time it is difficult to select those most necessary for first construction, and it, therefore, seems premature to mention specific projects.

There has been a substantial increase of population in Oakland since 1940 because of increased employment in war industries, particularly a shipyard, and Army and Navy establishments on the western waterfront. This has emphasized the necessity of certain special facilities, but has not substantially changed the character of the improvements that should be undertaken for the development of the city.

The problem of sewage disposal for seven of the East Bay cities, of which Oakland is the largest, was placed prominently before the public two or three years ago, culminating in a study and report which was completed about July 1941 (see *Western Construction News*, October 1941). Obviously, nothing could be done at that time in the way of detailed plans or actual construction, and the subject has been dropped temporarily. This project is expected to come up for active consideration after the present emergency. In the meantime, progress could be made by determining what authority should have jurisdiction over the project, except that everyone concerned is engaged on more immediate problems.

In addition to planning now for expanded highway projects, the city is actively engaged in procuring rights-of-way. One example is the project under the jurisdiction of Joint Highway District No. 26—a route following the general location of Mountain Boulevard from Ashby Ave. in Berkeley to MacArthur Blvd. at the Oakland-San Leandro line. The District has virtually completed the acquisition of right-of-way for the first unit to be constructed. The City of Oakland, on behalf of the District, is continuing the acquisition of rights-of-way on the remainder of the project, and within a year will have acquired all but two or three pieces of undeveloped land and those that are occupied by dwellings which should not be disturbed during the present emergency. The city is likewise proceeding with the acquisition of property for the development of Park Boulevard from Excelsior Avenue to Leimert Blvd.

Attention is also being given to the needs of other departments, such as additional library, fire house, park and recreation facilities, but plans have not been developed in sufficient detail to permit reporting now.

Walter N. Frickstad is city engineer and superintendent of streets for Oakland.

San Jose, Calif.

THE ENGINEERING department of the city of San Jose, Calif., in cooperation with the Public Works Reserve, has prepared preliminary estimates on a proposed capital improvement program, amounting to $7,012,000, to be constructed during the post-war period. No definite changes have taken place in the character of the city that would indicate a large demand for an increase in public works facilities after the war. The population growth is following closely a uniform curve showing an increase of about 30 per cent every ten years.

There have been no new large industrial plants established within the city limits, although a great number of the existing manufacturing plants have been converted to war work, and have greatly increased their operating facilities. The Permanente cement and magnesium plants and the Joshua Hendy Iron Works—both large war industries—are located within 15 mi. of San Jose.

The individual project prospectus, prepared in cooperation with the Public Works Reserve, consists of 25 work units, subdivided as follows: drainage and sanitation, $1,258,000; airport, $800,000; street improvements, $938,000; Port of San Jose, $2,520,000; parks and recreation, $636,000; and public buildings, $860,000. These projects have been developed only to the preliminary estimate and plan status. At the present time, engineering help is not available to follow the plans through to completion, and all available personnel is concentrating its time and effort on immediate projects.

H. J. Flannery is city engineer of San Jose.

Seattle, Wash.

SEATTLE, WASH., has post-war public works plans to the tune of some $12,000,000, with a good possibility that some of the projects will be started without waiting for the war to end. While all of the plans have been prepared and compiled, no individual project will be divulged until just prior to the time when work on the job will commence.

The program includes the rehabilitation of Seattle's streets, arterial highways, by-passes, cut-off streets and the like. Another important part of it will be the expansion and reconstruction of the city's water system. Also included in the planning are relief sewers and trunk sewers. Bridge reconstruction for conversion to permanent structures is listed in the city's post-war program.

The bridge projects are classified at the end of the plans, with the streets, water and sewer jobs heading the list. Some of the latter jobs will not necessarily be delayed until after the war.

Charles L. Wartelle is city engineer of Seattle.

Cheyenne, Wyo.

CHEYENNE, WYO., has for several years past been making studies of work which will be needed within comparatively few years although detailed plans have not been made specifically for post-war construction. Among the new facilities needed are expansion of the water distribution system and additional water supply estimated to cost between $1,500,000 and $2,000,000. Construction of a sanitary intercepting sewer and a sewage treatment plant will amount to at least $250,000.

Ordinary extensions to the water distribution system and the sewage collection system normally run about $50,000 per year, and if work is held up for several years because of the war effort may amount to a considerable sum, depending upon developments which may be under way. Water and sewer line expansions are normally kept ahead of new developments as funds are available, but a suspension of these activities may result in increased expenditures for a short time.

The same condition applies to street improvements including sidewalk, curb and gutters, grading and surfacing. From $100,000 to $150,000 would cover an ac-

cumulation of such projects over a period of 2 or 3 years. Work of this type within the city is nearly completed and it does not appear feasible to plan extensions at the present time. Construction of an adequate storm sewer to serve the eastern part of the city has been given consideration and some sewers have been installed with temporary outlets. Extension of this work together with outfalls may run from $100,000 to $150,000.

Due to a large expansion at Ft. Warren, which the city supplies with water, and the consequent increase in population water is being supplied to about twice as many people as in 1940. Through careful planning and prevention of waste of water this has been possible but the water supply source has been increased by the use of deep wells.

H. G. Watson is city engineer of Cheyenne.

Tacoma, Wash.

TACOMA, WASH., has developed a post-war planning program that will involve an expenditure of about $7,000,000 for various municipal improvements—streets, bridges, boulevards, buildings and, last, but most important, a trunk sewer system. First among the projects to receive early consideration in Tacoma's construction and reconstruction program following the war will be a sorely needed system of trunk sewers that is listed to cost $3,000,000.

Downtown bridges, carrying greatly increased traffic from the city's highly developed industrial districts, trestles, overpasses, pedestrian tunnels, intercommunity highways, street resurfacing, a railroad track relocation, and a new building to house the City Hall, all are on the post-war record of Tacoma, requiring an outlay of approximately $4,000,000.

The projects to be undertaken in the hoped for near distant future are as follows:

The east approach to the City Waterway bridge on East 11th Street will be made into a permanent structure at a cost of $400,000. The job will entail the removal of the present 1,000-ft. wooden approach and its replacement with a permanent approach of steel and concrete. This bridge is an important traffic link connecting the business section with the industrial section of Tacoma. Traffic over this structure has increased four fold since the United States entered the war and serves some of Tacoma's 27,000 workers in war industries.

Another contemplated structure is the East 34th Street bridge which will span 400 ft. over the Tacoma-Eastern gulch. Completed plans include a concrete arch with several approaches, grade changes, paving and drainage at a cost of $250,000.

Reconstruction of five wooden trestles in the city at a total cost of about $200,000, converting them into permanent structures. When these are completed Tacoma will have permanent bridges with an estimated value of more than $1,000,000.

Another vitally needed improvement will be 3 mi. of four-lane highway over Sixth Avenue, the connection between downtown Tacoma and the road that leads to the Bremerton-Navy Yard ferry approaches. The project will eliminate the difficult curves now present at the west end of Sixth Avenue with a new roadway, including an underpass and grading. Its completion will involve an expenditure of $240,000.

While it may be a considerable time before completion, Tacoma has planned resurfacing of some 30 mi. of streets representing a $300,000 project. Facilities for the convenience and safety of pedestrian traffic with the construction of eight underpasses are on the list for more final consideration at a cost of $75,000.

Also scheduled is the extension of Milwaukee Way, from Lincoln Avenue to the east end of the State Highway bridge over the Puyallup River, with a grade separation structure, and at the west end another underpass facilitating traffic movement from Portland Avenue and Bay Street, relieving congestion presently arising from new housing areas. Traffic also will be relieved from River Street with a viaduct over the Northern Pacific tracks. Total cost of these jobs will approximate $150,000.

Three hundred thousand dollars will be spent on paving of 15 mi. of streets to connect the business district with outlying sections of Tacoma.

While no estimates are involved, studies are being made on another major program—that of railroad track relocation and elimination of a grade crossing, with a grade separation of the Northern Pacific right-of-way.

From the business section of Tacoma to Point Defiance Park will be built 8 mi. of new Marine View Boulevard, interconnected with residential areas, at a cost of $400,000.

The contemplated new City Hall is estimated to cost $1,500,000.

C. D. Forsbeck is city engineer for Tacoma.

Berkeley, Calif.

BERKELEY, CALIF., has carried on considerable planning for the post-war period, listing the city's needs under five classifications: 1—greater development of off-street parking areas; 2—completion of major street plan by openings, extensions, and widenings; 3—reconstruction of old redwood culverts; 4—filling of deep gutters to permit parking of cars closer to curbs without inconvenience; and 5—further extension of storm and sanitary sewer system, including possible installation of a sewage disposal plant.

To meet the first need, off-street parking will be encouraged, but since the work will necessarily be on private property it will be necessary for the expense to be borne by some other agency than the city. To complete the major street plan, Sacramento Street will be extended, widened and improved at an estimated cost of $80,000 and state highway route 206 will be widened and paved at a cost of about $895,000. Reconstruction of culverts is estimated to cost $159,000 and filling in of gutters to cost $60,000.

Extensions of sewers is expected to cost about $37,000 and construction of a sewage disposal plant about $500,000. All of the improvements are contingent upon the ability to secure funds. A portion of the street improvements will be constructed with state gas tax funds. If a sewage disposal plant is to be constructed, money will have to be raised through a bond issue.

Harry Goodridge is city engineer and superintendent of streets for Berkeley.

Santa Monica, Calif.

SANTA MONICA, CALIF., has plans completed or projects under preliminary consideration for construction in the post-war period amounting to more than $9,345,000, including nearly every municipal classification of construction such as sewers, streets, harbor, parks, airport and buildings.

Sewerage systems, water mains for fire protection, and traffic facilities have become wholly inadequate because of the increase in the size of the Douglas Aircraft Co. and the accompanying tremendous increase in personnel. Population of the city has increased from 53,500 in the 1940 census to an estimated 62,500. Several small new war plants have been established as subsidiaries to the larger war industries.

Post-war planning has been given considerable attention, and many projects are completely planned and designed, ready for start of work in periods ranging from 30 to 90 days. Definite projects have been considered, all of which are considered necessary. Priority will be given to those which affect the health and welfare of the citizens, but some of the projects will not be attempted until sufficient money is available to finance them.

Some of the larger projects and their present status of planning are as follows: street widening, opening, extensions and improvements, various stages from preliminary to completed plans; grade separation, completed plans; combination groin and quay system for beach protection, plans in preparation, and breakwater extension and enlargement, plans completed.

Howard B. Carter is city engineer of Santa Monica.

Spokane, Wash.

SPOKANE, WASH., has not as yet given special attention to post-war planning, but preliminary plans have been prepared for a number of definite projects which will probably be included in a post-war construction program. Among these projects are a sewage disposal plant estimated to cost $696,000; about 10 mi. of intercepting sewers at $1,180,000; and a number of access roads, street widening and improvement for increased traffic to and from various new industrial plants at $428,000.

Because a number of war plants are at present under construction near the city, the population has increased considerably. These plants will soon be in operation and most of them are expected to develop into permanent industries which will make the increase in population permanent. In addition to the few projects listed in the previous paragraph, there will be an accumulation of street and sewer projects which ordinarily would be done from year to year, but which are being held up because of the war.

Charles E. Davis is city engineer of Spokane.

Glendale, Calif.

GLENDALE, CALIF., public works department has carried on an extensive post-war planning program during past months, and has set up about $10,000,000 in projects that could be accomplished under a 10-year plan. Plans have been prepared for an estimated $1,000,000 in construction projects on which work can be initiated at any time that funds, labor, and materials are made available. The general type of these projects is along the lines of storm drains, street paving, recreational facilities and water lines.

The City of Glendale has experienced a gradual growth in population during the past 10 or 15 years, and a number of war production plants have been established there in the past year.

J. C. Albers is city engineer and street superintendent for Glendale.

San Diego, Calif.

SAN DIEGO, CALIF., is giving definite consideration to post-war planning through its City Planning Commission. The water system will have to be further enlarged; many transmission mains in the sewer system will be completed; and cross-town highways are contemplated. A Hall of Justice and an additional wing on the Civic Center building will be given consideration.

The influx of population from 203,000 in 1940 to an estimated 340,000 at the present time has created a demand for public works that could not be postponed until the post-war period. Millions have already been spent in improving the highways, sewer and water systems, and housing facilities. The City Planning Commission has prepared a detailed list of public works requirements covering the entire city.

F. A. Rhodes is director of public works for San Diego.

Pasadena, Calif.

PASADENA, CALIF., is engaged in careful planning for post-war construction in the way of street openings and widenings, street improvements, bridge construction, storm drains, realignment and enlargement of sanitary sewers, and extension and synchronization of the present traffic signals. The program under consideration is expected to extend over a 10-year period.

There has been a moderate increase in population during the past few years, and a great many war industries have sprung up to manufacture much needed parts in connection with the war effort. It is expected that the greater part of these will be terminated, however, after the war is over.

J. H. Allin is city engineer and superintendent of streets for Pasadena.

Long Beach, Calif.

LONG BEACH, CALIF., public service department expects to undertake the development of a post-war construction program in the future. Plans for this work are indefinite at the present time, and exact information as to possible projects is not available.

George E. Baker is city engineer and director of public service for Long Beach.

Colorado Budget Allots $150,000 for Planning

THE COLORADO State Highway Department has been alloted $150,000 in the 1943 budget for engineering work on post-war projects. The total budget for this year has been set at $4,787,485, as compared with $9,266,733 for 1942. Of the total amount of the 1943 budget, $2,187,770 has been allocated for federal aid projects to match $1,793,222 which, it is estimated, will be received from federal aid during the year.

The budget allows $1,061,452 for maintenance. This is approximately $700,000 less than the amount set up for maintenance in the 1942 budget, but a carryover of $500,000 from 1942 will be used this year. Although funds were approved for both federal aid primary and secondary roads and for grade crossings, it is not anticipated that any new construction will be begun in 1943 except at the request of the War Department. No specific projects were set up for the new year and no attempt was made to allocate funds among the various state districts.

Chief reason for the decrease in the budget from the 1942 figure of $9,266,733 is an estimated decrease in gasoline revenue of more than two million dollars.

Items of the $4,787,485 budget are as follows:

Federal Aid Primary Roads	$2,187,700.00
Federal Aid Secondary Roads	318,814.00
Federal Aid Grade Crossings	255,449.00
Interest and Principal Payment on Bonds	1,975,000.00
Maintenance	1,061,452.00
Courtesy Patrol	300,000.00
Administration	175,000.00
Engineering	150,000.00
Traffic Division	65,000.00
Employee's Retirement Fund	45,000.00
Property and Equipment	25,000.00
Insurance—Compensation	25,000.00
Office Rental	16,000.00

Parker Dam Generators Went Into Operation Last Month

GENERATION OF POWER at Parker Dam on the Colorado River between California and Arizona began last month when two 30,000-kw. generators were placed in operation following test runs. A third generator is nearly ready for operation, and a fourth is expected to be ready in May of this year. This will complete the plant's ultimate capacity of 120,000 kw. Completion of the Parker Dam power plant makes the 29th hydroelectric development to be placed in operation by the Bureau of Reclamation during its 40 years' history.

COLORADO HIGHWAY Department has nearly completed a 5,418-ft. pioneer tunnel under Loveland Pass as a preliminary to a 21 x 32-ft. highway tunnel that will eliminate this hairpin turn and 7 per cent grade on U. S. highway 6. Completion of the full tunnel can be undertaken early in the post-war period.

First Year of War Construction

Federal Agencies Show High Performance in Emergency

Additional reports of construction during the first year of war, received too late for inclusion in the December issue, which was devoted entirely to that subject, are presented supplementally on this page.

Defense Plant Corporation

DURING THE FIRST ten and a half months of 1942, Defense Plant Corp., a subsidiary of Reconstruction Finance Corp., completed about $147,419,000 of industrial plant facilities in the eleven western states. Of the total amount, $41,580,000 was spent for the construction of magnesium reduction facilities, $35,849,000 for aircraft and aircraft parts plants, $33,341,000 for aluminum reduction and metal production plants, $12,145,000 for mining facilities, $11,370,000 for steel and pig iron production plants, $10,584,000 for shipbuilding facilities and related plants, and $2,550,000 for miscellaneous war production facilities.

Defense Plant Corp. was created in 1940 to assist in the production of war materials by the development of new production facilities and the enlargement of existing manufacturing plants. In the West its principal activities have consisted of making loans to active production organizations in order to construct new plants or enlarge existing plants such as the aircraft and shipbuilding plants on the West Coast, steel plants, magnesium plants, and aluminum plants. In addition, Defense Plant Corp. officials approve construction plans and supervise construction activities.

Jesse Jones, Secretary of Commerce, is chairman of the board of Defense Plant Corp., Sam H. Husbands is president, and John W. Snyder is executive vice-president. Walter L. Drager is chief engineer.

Army-Mountain Division

UNDER SUPERVISION of Colonel E. M. George, division engineer, Mountain Division, and in charge of Colonel E. G. Thomas, district engineer of the Salt Lake District, and Colonel C. H. Jabelonsky, district engineer of the Denver District, construction has been completed during the past eleven months or is still under way at thirty-five different project locations within this Division. These projects include many Army Air Force installations, Ground Troop facilities, storage and shipping depots, C.A.A. airports, and a relocation center.

The total dollar value of work on all jobs completed 100 per cent from Dec. 7, 1941, to Oct. 31, 1942, plus part of the estimated cost of construction work still under way as being completed within the period as given above would give a grand total dollar value of work placed during the period of approximately $247,000,000.

In addition to the regular War Construction work carried on by the Mountain Division, the Real Estate, Repairs and Utilities Branch of this Office, under the supervision of Colonel L. V. Sheridan as the officer in charge, handles maintenance and repair work at roughly one hundred twenty-five or more posts, camps, and stations in the eight western states and Alaska comprising the Ninth Service Command. This work is accomplished by post engineers assigned to and located at each particular post.

National Housing Agency

IN THE FOUR STATES of the Pacific Northwest, Washington, Oregon, Montana, and Idaho, and in Alaska, the Federal Public Housing Authority of the National Housing Agency, reported progress either in preconstruction, construction, or completion, on 58,706 units of war housing projects since the first of last year. Of the total number of units, 14,694 were completed for occupancy between Jan. 1, 1942, and Nov. 20, 1942; 26,297 units were still under construction as of the latter date, and 17,715 units were in the preconstruction status. The accompanying tabulation gives the breakdown as to the location, type of units and status.

The largest volume of construction has been in the vicinity of Portland, Ore. - Vancouver, Wash., and Seattle - Bremerton, Wash. In the Portland-Vancouver area the housing program contemplates about 35,000 units which will house an estimated 105,000 persons with about 49,000 war workers. In the Seattle-Bremerton area the program calls for about 22,000 units which are estimated to house 66,000 persons.

The outstanding housing project in the Pacific Northwest has been the development of housing accommodations and community facilities on the Oregon bank of the Columbia River between Portland and Vancouver. Known as Vanport City, this project, when completed, will be a city in itself covering 647 acres with 718 family apartment buildings, 182 service buildings, more than 23 community facility buildings, and 17 playfields. The 718 buildings of housing accommodations contain 9,914 family apartments and are supplemented by the 182 service buildings providing facilities for heating, laundry and storage. Community buildings include two commercial centers, three fire stations, five recreational buildings, five school buildings with 65 classrooms each, and a 200-bed hospital.

Progress Report of War Housing Projects

Units for Calendar Year Jan. 1, 1942, through Nov. 20, 1942
Federal Public Housing Authority

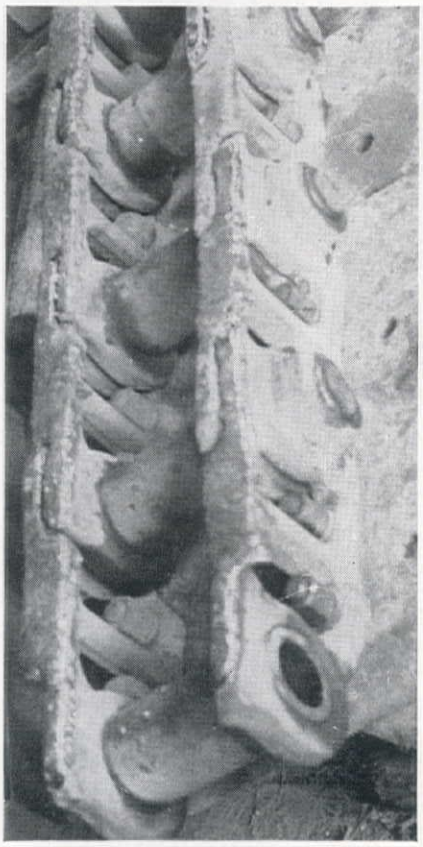
(Excludes projects under direction of Army, Navy and other Federal Agencies)

State and Type	Total Unit	In Preconstruction	In Construction	Completed for Occupancy
Alaska	55	.....	55	.....
Permanent Family	55	.....	.....	.....
Idaho	286	202	.....	84
Permanent Family	84	.....	.....	84
Temporary Family	170	170	.....	.....
Dormitory Apts.	32	32	.....	.....
Montana	380	.....	300	80
Permanent Family	80	.....	.....	80
Temporary Family	300	.....	300	.....
Oregon	19,037	3,107	12,734	3,196
Permanent Family	826	.....	198	628
Temporary Family	12,957	3,043	9,914	.....
Demountable Family	3,090	.....	2,622	468
Dormitory Apts.	2,064	64	.....	2,000
Trailers	100	.....	.....	100
Washington	38,948	14,406	13,208	11,334
Permanent Family	6,983	.....	3,028	3,995
Temporary Family	11,022	10,772	250	.....
Demountable Family	10,750	400	9,271	1,079
Dormitory Apts.	3,864	1,664	200	2,000
Trailers	400	.....	.....	400
Dormitories	5,929	1,570	459	3,900
Grand Total	58,706	17,715	26,297	14,694

HOW IT WAS DONE

JOB AND SHOP TIPS FROM THE FIELD EDITOR'S NOTEBOOK

Tractor Rails Economically Renewed by Hard-Facing



ABOUT 60 POUNDS of rod were required to rebuild this complete set of tractor rails, and the time required was a little over 20 hours. Sketch below shows the steps involved in rebuilding segments of worn tractor rails, three separate applications being necessary. Both the sketch and photo are from the Stoody Co., Whittier, Calif.

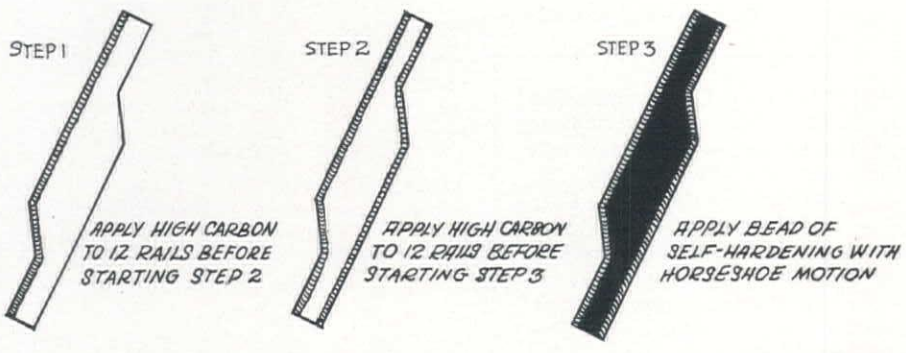
TRACTOR TRACK, worn thin by excessive use, may be hard-faced at the same time the rollers are rebuilt, at a cost of about one-fourth that of a new set of rails. The process is limited, however, to track that can be rebuilt to size with one layer of metal.

The usual procedure is to lay the tracks on the floor or across a set of sawhorses, then to apply a bead of high carbon metal on one side of approximately twelve of the rails. A second bead is then applied to the opposite side of the same rails. The final operation is to make a weaving pass of the hard-facing material between the two high carbon guide beads. When completed, rail ends must be checked for the proper clearance, and any excess metal removed with a cutting torch.

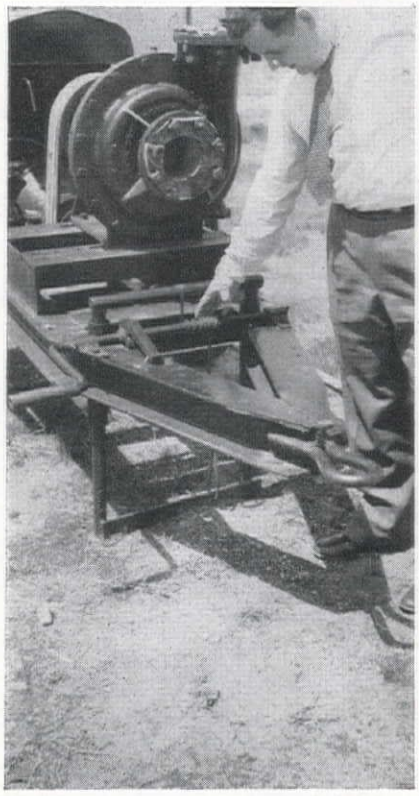
Great importance is attached to the peening of the deposit while still red hot. It may be done with a hammer, but the use of an air hammer is preferable. The purpose of the peening is to perfect the impact resistance of the metal and to relieve internal stresses, thus preventing chipping and spalling off.

A set of worn tracks carefully hard-faced by this method will generally last from 25 to 50 per cent longer than a new set of rails. Welding time usually varies from 18 to 25 hours, depending upon the size of the track and the experience of the welder.

This is the second of a series of "How It Was Done" articles on the restoration of worn tractor parts. Another will appear next month.



DEPOSIT OF EACH ROD MUST BE PEENED WHILE STILL RED HOT TO RELIEVE STRESSES.



Crank Raises Hitch of Trailer to Any Height

A LIFTING DEVICE, to be used instead of a jack, and made almost entirely of salvaged materials, has been developed by Byron Powell, mechanic for Blanchard Bros., contractors of Cheyenne, Wyo., for lifting the end of a heavily-loaded two-wheel trailer to any desired position for attaching the hitch to the motive vehicle.

The uprights and top cross-arm are made from broken Ford axles, the crank of 1-in. rod. The uprights operate in sleeves welded to the trailer frame.

A ⅜-in. hemp center cable winds around the crank, goes over the top cross-arm, and is anchored on the lower cross member. A ratchet holds the crank at any position found desirable for fastening the hitch or for use of the equipment in the bed of the trailer.

While a similar device can be constructed for any trailer, the one pictured above has a vertical height of 24 in. and the cross members are 14 in. in length. All the materials are of salvage except the cable, which was new. It can be constructed by a mechanic in a few hours.

NEWS OF WESTERN CONSTRUCTION

JANUARY, 1943

Limited Work Permitted on Eight Reclamation Jobs

LIMITED CONSTRUCTION will be permitted to continue on eight Bureau of Reclamation projects in addition to those listed in the December issue of *Western Construction News* under a recent decision by the War Production Board. Irrigation facilities may be constructed for war relocation centers on the Klamath project in Oregon and California; the Minidoka project in Idaho; and the Heart Mountain Division of the Shoshone project in Wyoming. Work will be continued on the Altus project in Oklahoma and the Provo River project in Utah to provide water for municipal, military and industrial purposes. Construction of irrigation facilities on the Gila project in Arizona will be permitted to make available 30,000 ac. of irrigated land for the production of guayule rubber in 1944. Completion of a housing project comprising 140 family units at Boulder City, Nev., will be permitted, and work on the Mancos project in Colorado will be continued to the extent necessary to provide work for a conscientious objector group. All work on the Colorado-Big Thompson project in Colorado, including the driving of the 13-mi. Continental Divide tunnel, was ordered stopped except for the minimum amount of work necessary to protect public health and safety and prevent the deterioration of materials already incorporated in the work. This does not include Green Mountain Dam and power plant which are nearly completed, and which were excepted from the order.

Decline in Rural Traffic in West

TRAFFIC on rural roads in the eleven western states was expected to decline 35 to 40 per cent during the first month of mileage organization, according to an estimate prepared by the Public Roads Administration. Automatic - traffic - recorder records from states where rationing has been in existence for several months indicated a decrease of 38 to 49 per cent, but the same decline is not expected in the West, because rationing in the East was begun during the season of the year when unessential travel is normally at its highest peak. Counts have not been widely made on city streets, but total gasoline consumption indicates that city traffic has not declined as much as rural traffic. Traffic figures for December are not yet available, but data from automatic-traffic-recorders in ten of the eleven western states, for the month of October 1942, indicate a less-than-average decrease in highway use. The average decrease in 42 of the 48 states from Oct. 1941 to Oct. 1942 was 29.8 per cent; whereas, the eleven western states, excepting only California, showed an average decrease in the same monthly period of 16.3 per cent. The greatest decrease occurred in Wyoming, where it was 24.9 per cent, and ranged to as low as 10.5 per cent in Washington, where gasoline consumption has been restricted for several months.

Collection Drive Piles Scrap In Pacific Coast Yards

METALS RESERVE CO. has been asked to purchase 35,000 tons of prepared iron and steel scrap on the Pacific Coast within the next 30 days in order to remove accumulated scrap from dealers' yards and permit them to accelerate their operations. The request made by the War Production Board was instigated by relative abundance of scrap in the Pacific area. During the past year, nearly 6½ million pounds of scrap metal was collected in the National Parks, with the largest amount — 578,000 pounds — coming from Yosemite National Park in California. Yellowstone National Park turned in the second largest amount with a total of 440,000 pounds.

TEN-MILE LOCK, on The Dalles-Celilo Canal, has not been abandoned, as was erroneously stated on Page 498 of the November 1942 issue of Western Construction News. The lock is used to safeguard the canal system during high stages of the Columbia River, and consequently, the steel gates are not available as a source of scrap.—Editor.

Pier Construction Wins "E" Award for Gerwick

BEN C. GERWICK, Inc., contractor of San Francisco, Calif., has been awarded the joint Army and Navy "E" for excellence in war production work. The award was made in recognition of the organization's accomplishments in constructing piers at the Oakland sub-port of the San Francisco port of embarkation. Despite advanced completion date, the Gerwick organization completed on schedule the construction of concrete wharves and bulkheads, working under congested conditions with newly trained personnel, and utilizing new procedures.

Arc Weld Construction Papers May Win Award

TO ENCOURAGE engineering students to study arc welded construction so that they may have an opportunity to extend their knowledge of this procedure and aid in the reconstruction during the post-war period, The James F. Lincoln Arc Welding Foundation of Cleveland, Ohio, has announced a new project in the form of a $6,750 Annual Engineering Undergraduate Award and Scholarship Progam. Any resident engineering undergraduate student registered in any school, college or university in the United States giving a course in any branch of engineering or architecture, leading to a degree, is eligible to submit a paper in the award program.

Awards will be made for papers describing the conversion of other methods to arc welded construction of parts of machines, complete machines, trusses, girders, or structural parts. The subject may be something which the student has

observed in school shops, magazines, books, or elsewhere; or he may conceive of a subject which has never been built. It will not be necessary that the machine or structure be actually built, but the method of construction or design must be described.

Papers must be completed before April 1, 1943. The program offers $5,000 in student awards, and $1,750 in scholarships for the departments of the institutions in which the award-winning students are registered. There are 77 student awards, with a first award of $1,000, and seven scholarships of $250.00 each.

WPB Halts Construction on Colorado and Idaho Roads

FIVE HIGHWAY construction projects in Idaho and Colorado were ordered stopped last month by the War Production Board. The projects closed included one between Tabernash and Granby, and 10.8 mi. near Grand Junction in Colorado; between Glenns Ferry and King Hill, and between Burley and Paul, and between Bliss and Tuttle, in Idaho. In the meantime, the War Production Board approved the construction of a highway providing access to the Horseshoe Mine in Custer County, Idaho.

Contractors Win Award For Navy Construction

BARRETT & HILP, general contractors of San Francisco, were awarded the joint Army and Navy "E" for speed, efficiency and co-operation in constructing facilities at the Mare Island Navy Yard at ceremonies held at the yard on December 5. The award was made by Rear Admiral W. L. Friedell, commandant of the yard, with Col. Stuart M. Hall representing the Army. Frank Barrett and Harry Hilp accepted the award for the organization and their associated subcontractors. O. F. Hughes, carpenter for Barrett & Hilp, accepted the individual pins on behalf of the employees. At a dinner, in the evening following the award, Barrett & Hilp were hosts to nearly 2,000 employees and subcontractors and their employees.

PARTICIPATING in the award of an "E" burgee to Barrett & Hilp, contractors, at Mare Island Navy Yard were, left to right: C. W. BAILEY, construction engineer; LT. COM. F. W. PHIPPS; LT. COM. A. J. WAGNER; ENS. B. L. RAFFIN; R. I. INGRAHAM, assistant construction superintendent; LT. E. E. CLARRIDGE; CAPT. GEORGE D. WETSEL, public works officer; LT. COM. W. M. JOHNSON; FRANK BARRETT; LT. C. H. DARBY; Carpenter O. S. HUGHES; Yoeman JOHN F. BARRETT; HARRY HILP; and DICK BARRETT.

Letters to the Editor . . .

Sir:

It is indeed surprising to us that a reputable technical magazine such as yours, supposed to be precise and authoritative in all its statements, would allow its writers to resort to such snide and shoddy journalistic tricks as sniping from behind a flimsy ambush of "competent engineers say," "authoritative sources reveal," "we are told," and, of all things, "responsible gossip."

We have reference to the statement of your Mr. Arnold Kruckman on page 506 of your November issue, in which he attempts to discuss the WPB order stopping much private and public construction in order to save critical materials for our armed forces. Mr. Kruckman writes:

> "We are told that the chief cause that exploded this order was the TVA. It serenely went along building its social betterment projects in the Tennessee Valley at the expense of considerable metal."

Who is the anonymous little bird that whispered in Mr. Kruckman's ear? And where did this engineering-wise sparrow pick up the dirt?

The Authority was aware of the impending shortage of metals long ago, while the steel industry was still holding out against expansion and the railroads, which are now demanding new equipment, were blithely undisturbed by the coming job of war transportation. TVA is making the most of every bit of equipment it has and it is salvaging every possible scrap of metal. One of the reasons TVA recommended construction of Douglas Dam, now nearing closure after only ten months of construction, was that project would produce the largest amount of power in the shortest possible time and with the least possible expenditure of equipment and metals of any power development in the country.

We don't know what Mr. Kruckman's definition of "social betterment" would be, but if it means operating a power system turning 70 per cent of nine billion kwh. a year into war production; providing new power supplies for war industry at the rate of nearly half a million kw. of installed capacity a year; producing ammonium nitrate and elemental phosphorus for the armed forces; making calcium carbide for synthetic rubber, and half a dozen other war jobs, then we proudly plead guilty.

Very truly yours,

Tennessee Valley Authority
W. L. Sturdevant
Director of Information

Tennessee Valley Authority
Knoxville, Tennessee
December 5, 1942

OBITUARIES . . .

Hercules S. Shorey, 78, died Dec. 8 at Aberdeen, Wash., after a long illness. He had been county engineer of Grays Harbor County, Montesano city engineer, and deputy county engineer of King County. In addition he did much of the early surveying of the Seattle harbor entrance and inner harbor, as well as other engineering work throughout the state of Washington.

* * *

Claude I. Grimm, supervising engineer on design and construction of the Bonneville power and navigation project and other northwest projects, died Dec. 1, in Portland, Ore. He was 56 years of age.

* * *

Knight T. Bennett, member of the heavy construction contracting firm of Bennett & Taylor, Los Angeles, Calif., was killed Dec. 15 in an airplane accident near Fairfield, Utah.

* * *

Frank P. McGowan, district regional safety engineer of the Los Angeles office of the U. S. E. D., died suddenly at Phoenix, Ariz., on Dec. 11.

* * *

Ray A. Kallam, contractor of Salinas, Calif., died Dec. 15 in that city, at the age of 45.

WASHINGTON NEWS

. . . for the Construction West

By ARNOLD KRUCKMAN

Washington, D. C.— Fifteen major Federal agencies are working on post-war planning programs, and a number of governmental-nongovernment committees are working with Government on similar programs. All naturally would affect the West slope. Your friends here are not very enthusiastic about discussing post-war plans, for two reasons: first, the Office of War Information suggests the planning creates far too much optimism and points out that Germany alone still has 14,000,000 men under arms; second, no one here knows exactly how to plan either in the social or economic sense.

There is a well-defined idea that post-war existence will be under a highly controlled social economy; but at the same time there is a fervent hope in most quarters (that are inarticulate) that a maximum of individuality and private enterprise will survive. Sub rosa, there also is considerable speculation as to whether it will be a British post-war world or an American post-war world, or if they will be able to work out some compromise. Apparently no one takes into the account very much what the Asiatic partner may have in mind.

Irrigation for agriculture

Department of Agriculture has an Inter-Bureau Committee on Post-War Planning which takes under its wing all agricultural and food problems, national as well as international. There is considerable unpublished literature about the livestock and the irrigation aspect of post-war planning on your side of the Rockies. After the war, the students in agriculture apparently think your area must contribute great quantities of everything your soil can produce or support.

The Board of Economic Warfare, headed by Milo Perkins, has made large post-war plans for our commerce and trade with the rest of the world. He has particularly detailed plans for development of business of all kinds, including heavy construction, with the countries on the other side of the Pacific. Perkins probably is the spearhead of the group that is thinking of our post-war foreign trade in terms of world dominance.

It may surprise you to learn the Federal Reserve System also has a very active section which is making post-war plans. They call it the Division of Research and Statistics. It has a program for monetary policies, Government taxation, and also thinks in global terms by developing a plan for American-British Economic Collaboration. Department of Commerce tackles the post-war plan from an international and national angle with two separate units. Commerce should be your special interest because the Department thinks solely and almost unconsciously in terms of private enterprise.

The Office of the Coordinator of International Affairs, usually known as the Rockefeller agency, has a post-war organization which has planned the future of other American republics with great particularity. Federal Security Agency, the catchall for the New Deal projects which have weathered the rigors of war, has a full-time post-war planning unit under direction of Dr. T. J. Woofter, one of the original group of reformers who came here in 1932. This unit plans for every social problem human imagination can picture.

FWA activity

Your special interest obviously focuses in the Federal Works Agency headed by Gen. Fleming. FWA has gradually lost most of its major civilian jobs, and apparently Gen. Fleming very properly thinks he can give the best service by planning for the future. The General does not make his plans with any specific regard to political and social policies. He simply plans good, sound public works to be made by good, sound engineers, architects and contractors. Most of the post-war planning focuses in the Public Roads Administration. This part of FWA has over $10,000,000 to spend upon post-war plans. It will probably receive more funds when this Congress gets going; and it is likely that another $10,000,000 or $12,000,000 may be provided for post-war planning of public buildings, and various other kinds of public works.

Gen. Fleming is holding his present FWA organization together, has virtually promised there will be no diminution of the personnel, and apparently expects to use the organization chiefly for post-war planning. Fleming has a vivid consciousness of the need for these preparations to take care of the 10,000,000 or 12,000,000 men who may be turned loose when the war is over.

National Resources Planning Board

The National Resources Planning Board also has made a very meticulous and detailed program for post-war work in communities, States, regions, of every possible description. It has probably the finest master file of roads, buildings, bridges, irrigation projects, power dams and many other public works, to be found in Washington. Its general counsel has under way a study of the methods by which conversion can be accomplished from the war economy to peacetime public works.

The U. S. Maritime Commission is very conscious that we control the world's commercial fleets, and that we are building ships to be rented to Canada, England, and other nations. Apparently the Maritime Commission is doing some post-war planning to hold tightly to this control of the world's commercial shipping. Its post-war planning covers your shipyards as well as the ships that base on Pacific ports.

The National Housing Agency plans a large use of prefabricated, factory-made houses, after the war. It estimates from 900,000 to 2,000,000 houses will be built annually for at least ten years after the close of the war. The Labor Department also has a unit working for post-war plans, but does not discuss its plans. The Selective Service System, now a part of the Manpower Commission, has a special post-war unit which has made plans for re-employment of soldiers who return from the war. It may surprise you to learn that both Army and Navy have a unit which plans for post-war re-employment of soldiers and sailors with technological training and skills. It is hoped many of them may be placed in decent jobs connected with public works, such as flood control and harbor work. The Department of State maintains a Special Research and Geographer Section where plans are made for boundaries and economic unities after the war. Treasury has a rather extensive post-war unit which studies tax problems and various fiscal puzzles anticipated after the war.

Post-war legislation

In November Congressman Alfred F. Beiter, New York, introduced HR 7782 known as "First Post-War Planning Act of 1942." It provides $25,000,000 to be spent by Federal agencies and $75,000,000 to be spent by States, cities, counties and other local subdivisions to prepare the program. Non-Federal expenditures must be matched by non-Federal governmental agencies in sums not less than 25 per cent of the Federal allocations. Federal moneys eventually are to be repaid to the national Treasury. The non-Federal investigations and studies are to be made by local staffs. Allocations for local work and State projects must pass review of the Federal Works Agency, National Housing Agency, and similar parts of Federal Government.

Planning may not conflict with civil functions of the Corps of Engineers. It is estimated the $100,000,000 expenditure, 3½ per cent of the total cost of the projects, will produce plans for $3,000,000,000 worth of nation-wide public works. The fate of this bill depends largely upon the impression made by those who sponsor it in the next Congress. There is a feeling here that too much publicity might interfere with the adoption of the bill.

Population increase forecast

Agricultural planners here say within 25 years your existing and prospective irrigation projects will bring over 5,000,000 ac. fully productive new land under

cultivation on the West slope. They predict over 3,000,000 ac. new land will come under cultivation. They conservatively estimate your present population will permanently increase over 25 per cent the next 25 years.

The Orient is regarded as a good post-war food market. It may interest you to learn that post-war planners here assume the War will end in Europe from 6 months to a year before it ends in the Pacific. They divide the post-war period into three parts: from now to the end of hostilities, for theoretical planning; from the end of hostilities until the accumulated demand for durable, semi-durable, and consumer needs has been met; and the post-war period proper. By the time you read this you will probably have heard directly from the President his proposal to Congress to adopt an Americanized version of the British "Beveridge" Plan, which is further socialization along the lines started in pre-War New Deal years.

Construction limitations

Unofficially we continue to have the impression here that WPB orders blocking full development of West slope irrigation and power projects will gradually be modified. The President publicly said recently that he was giving much attention to the problem of expansion of western reclamation, and the general idea here is that he may personally take a hand in securing the necessary modification. It also is known that the entire Western production-land problem has actively been placed in the lap of Food Production Administrator Parisius, of Food Administrator Wickard's staff.

Wickard himself already has definitely told WPB he wants the Western lands under cultivation. Director Page himself told a Congressional Committee if they would give him the green light he would bring 2,000,000 ac. into productive condition within 2 years and these 2,000,000 ac. would be capable of producing foods and fibers in a volume normally obtained from 6,000,000 ac. An organized effort will be made immediately to secure action from the new Congress to provide legislation that will make certain reclamation and power projects mandatory. If you wish to maintain an understanding connection with the activities here that affect reclamation and irrigation, get in touch with F. O. Hagie, National Reclamation Association, National Press Building, Washington, D. C.

Alaska highway continues

We hear that Public Roads Administration work on the Alaska Highway goes forward despite the intense cold in some sectors. Where the highway crosses streams, bridges are being built as swiftly as lumber is available. The engineers are said to report that the cold is so great in some areas that it is necessary to place the trucks in heated buildings before it is possible to get the engines to start. Public Roads Administration personnel also is building cofferdams and other works that may be constructed with lumber. Meanwhile the OPA has placed all used and second-hand materials shipped into Alaska under the General Maximum Price Regulation, meaning that unless specific price regulations apply the highest maximum levels at highest March, 1942, prices govern.

We have also been told here that the railway-line survey from Prince George in British Columbia through Yukon Territory to Kobi, 80 mi. south of Fairbanks, has been finished by the Army Engineers. Prince George is on the Canadian National Railway and Kobi is on the Alaska Railway. One route would cross the Alaska Highway near Lower Post into Yukon Territory and then continue via Dawson, and Big Delta, to Fairbanks. The other route might cross the White Pass & Yukon Railroad, and run along the Alaska Highway from White Horse to Big Delta. Army engineers proposed to build a highway from Prince George to the southern end of the Alaska Highway at Dawson Creek. Surveys have been made.

Contractors complimented

Labor Secretary Perkins announced late in December that employment in new construction in 1943 will drop below 1,000,000 workers, about half the average employed in 1942. It is hoped the million released may be able to go into Shipbuilding which is desperately short of help, according to Washington officials. The Associated General Contractors spread broadcast the words recently uttered by Lieutenant General Brehon B. Somervell, Commanding General, Services of Supply, who spoke strongly of the construction industry as having done a magnificent job in executing the ten billion-dollar construction program which made possible the training of the combat troops.

Navy also went out of its way to compliment the contractors in Hawaii for their extraordinary work in repairing the damage at Pearl Harbor. One contractor was mentioned in particular, the Turner Construction Co., which mobilized all its equipment and 1,200 men for various emergency work while the bombs were still dropping.

Contractors also come in for much praise from the Secretary of War. He points out that they readily co-operated in renegotiating contracts, the total saving from all processed contracts aggregating over a billion. Approximately $200,000,000 were returned in cash. A revised statement issued by the Price Adjustment Board of the War Department is practically unchanged except for the eliminations made necessary by the new Revenue Act. Construction contracts may now be renegotiated under a special procedure. They may be renegotiated on an individual basis, and the Chief of Engineers is authorized to make a final agreement. A copy of the sixty-page mimeographed pamphlet may be obtained by writing the Board at the War Department in Washington.

Women engineers

Women have been invited by the Government to qualify as junior engineers. Those who have college degrees in any field have been urged by the Civil Service to take a short tuition-free course in any college offering engineering training. The course has been developed by the Civil Service and the U. S. Office of Education. Women who qualify will be employed by the Government at a minimum salary of $2,000 a year.

War Manpower Commission also urged all graduate and undergraduate students in approved engineering curricula to remain in school to complete their studies. They will be deferred until the end of the term in progress on March 1, 1943. The Government has arranged with Peru to bestow scholarships upon Peruvian youths who wish to qualify as mechanical engineers, industrial chemists, electrical engineers, city planning, and port works construction. Peru pays their subsistence.

Personnel changes

W. K. M. Slavik, one of the veteran workers in the information section of the Bureau of Reclamation, transferred to the War Department in January. He takes over the job of educating civilian workers in the War Department in their various responsibilities. Gordon Lineweaver, another veteran in Bureau of Reclamation, becomes the head of its information service, while "Bill" Warren, who occupied the job for several years and then went to WPB, goes to work in the Power Division of the Interior Department. Texas Goldschmidt is the new head of the Power Division.

Commissioner Page of the Bureau of Reclamation ordered 24 new studies on the economics of the Central Valley project in preparation for further War demands. Studies embrace problems connected with the War; post-war adjustment problems; and constant problems of the project. Dr. Harlan H. Barrows will be in charge. He formerly was head of the department of geography at the University of Chicago. The headquarters will be located at Sacramento. Upwards of 40 Federal, State, city, county and other agencies will help. Commissioner Basil Manly has been re-elected Vice-Chairman of the Federal Power Commission.

The President approved the law benefiting contractors' employees caught in the war zones by signing it on December 2nd. It is known as Public Law 784. It provides benefits for injuries, detention, or death, and provides for the dependents of those who come under its scope. Total compensation is $7,500 exclusive of medical costs, funeral and burial expenses. HR 7844 introduced by Congressman Izac in December provides continued pay and allowances for those who are held in captivity by enemies, whether they are military, naval, or civilian personnel of the Government.

Herman Stabler, chief, conservation branch, U. S. Geological Survey, hydraulic and sanitary engineer, formerly in the Reclamation Service, died here at the age of 63 late in November. He was well known in the West.

PERSONALLY SPEAKING

Charles H. Purcell, chief engineer of the San Francisco-Oakland Bay bridge, and State Highway Engineer of California since 1928, has been appointed State Director of Public Works by California's governor-elect, Earl Warren. In his new position, he will be in charge of all engineering and construction activities of the state. Nationally known for his work on the Bay bridge, he has a long record of engineering accomplishments in the highway and bridge field, having been northwest district engineer of the Bureau of Public Roads for 8 years, and holder of various positions in the state highway departments of Oregon and Washington during a 15-year period.

* * *

Col. Peter P. Goerz, formerly district engineer for the U. S. E. D. at Seattle, Wash., has been appointed executive officer of the Engineer Board at Fort Belvoir, Va., supervising development of engineer equipment, experimental work in camouflage, and numerous special studies in the work of the department. He was succeeded at Seattle by **Col. Richard Park,** formerly division engineer at Portland, Ore.

* * *

M. C. Hinderlider, State Engineer of Colorado, has taken a temporary leave of absence from that office to accept an assignment in the office of the Missouri River division of the Corps of Engineers, as head of the Price Adjustment section set up for the purpose of investigating profits of contractors in the huge defense construction program.

* * *

Charles R. Blood, assistant city engineer of Sacramento, Calif., has been granted a leave of absence to accept a commission of major in the Corps of Engineers. He is serving with the equipment division, gathering surplus construction equipment for the use of the armed forces.

* * *

Lt. Col. R. E. M. DesIslets, area engineer of the U. S. E. D., who supervised construction of Bonneville dam, Camp Adair, and various northwest airports, has been transferred to Kansas City, Mo., were he will become district engineer.

* * *

Charles R. Schwanenberg, city manager of Alameda, Calif., for the past six years, has resigned that post to accept a similar position at Oakland, Calif. **John F. Hassler,** who has been in the Oakland position, has been appointed to a post in the cabinet of the newly-elected governor of California, Earl Warren. Alameda city engineer, **George Sperbeck,** has been named acting manager of that city.

CHARLES H. PURCELL

Samuel B. Morris, head of the civil engineering department at Stanford University, was elected 1943 president of the San Francisco section of the American Society of Civil Engineers. Vice-presidents are **Thor J. Corwin, Jr.,** and **George D. Whittle,** and secretary-treasurer is **Edward M. Knapik.**

* * *

Col. Richard Park, made district engineer of the U. S. E. D. at Seattle, Wash., in the reorganization of the division offices in the west, has appointed the following assistants: **Col. H. J. Wild,** executive officer; **Maj. William H. Baker,** chief of the control division; **Maj. W. E. Church,** chief of the camouflage division; **Maj. Cecil C. Templeton,** recently promoted from the rank of captain, assistant to the chief of the administrative division; and **Lt. Arthur C. Satre,** assistant to the chief of the control division.

* * *

R. McC. Beanfield, past president of the Southern California Structural Engineers Association, and a consulting engineer in the southwest for the past 25 years, has been commissioned a major in the Corps of Engineers, and assigned to active duty with the District Engineer at Tucson, Ariz.

* * *

J. Henry Baird, general superintendent in charge of the construction division of Summerbell Roof Structures of Northern California at Oakland, is currently building a new plant at Stockton, Calif., to handle all types of trusses, glued arches, and glued structural members.

Officers of the Seattle, Wash., chapter of the Associated General Contractors of America for 1943 are **Nobel White** of the firm bearing his own name, president; **A. L. Atherton** of Atherton Construction Co., vice-president; **George Johnson** of Western Construction Co., secretary; and **Don Mowat** of Mowat Construction Co., treasurer. **C. F. Sanborn** of Warrack Construction Co., and **J. C. Boespflug** of J. C. Boespflug Construction Co., were re-elected to the executive committee.

* * *

Col. E. M. George, Mountain division engineer of the U. S. E. D. at Salt Lake City, Utah, until the recent reorganization of the divisions, has been named assistant division engineer of the new Pacific division, in charge of the subdivision office at San Francisco, Calif.

* * *

Fred W. Roberts has been named regional director of the WPB for the Denver region, and **James A. Whiteside** for the San Francisco region. Their duty is to handle the business of the Governmental division with public officials and public institutions in each area.

* * *

Charles M. Mardel, formerly in the engineering department of the Pacific Gas & Electric Co., San Francisco, Calif., has resigned to accept appointment as plant engineer at the San Andreas, Calif., plant of the Calaveras Cement Co.

* * *

W. N. Kelly was recently elected chairman of the Vancouver, B. C., branch of the Engineering Institute of Canada. **T. V. Berry** is vice-chairman, and **P. B. Stroyan** is secretary-treasurer. The Institute medal for the year was awarded to **C. Gordon Rogers** of the University of British Columbia.

* * *

Joe D. Wood has been named by Governor-elect Bottolfsen of Idaho as his selection for the double post of Director of Highways, now held by **T. Matt Hally,** and Commissioner of Public Works, now filled by **Allen C. Merritt.**

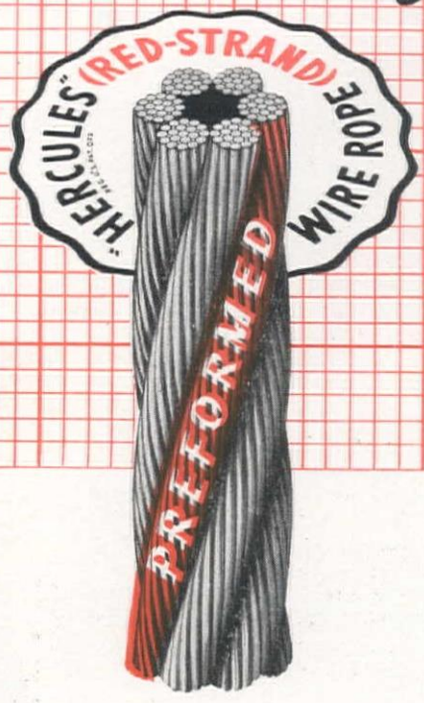
* * *

H. B. Foote of the Montana State Board of Health has been elected president of the Helena, Mont., Engineers Association. **Fred V. Munro** was chosen vice-president and **A. C. Hedkenlaible** was made secretary-treasurer.

* * *

Maj. George L. Barkhurst, area engineer at Everett, Wash., has been transferred to duties at Miami, Fla.

Designed for Saving Steel Time Money



IF YOU will chart the service record of Preformed "HERCULES" *(Red-Strand)* Wire Rope—as so many have done—you, too, will have definite proof of the savings that its use provides.

You will find a saving in steel because of its longer life; by the same token you also save time, as replacements are less frequent. And the sum of the two savings is greater economy.

The consistent top-flight performance of Preformed "HERCULES" *(Red-Strand)* Wire Rope is not a matter of chance. Like all wire rope bearing this well-known name, it is made of acid open-hearth steel wire . . . selected by rigid tests to make sure that it meets our exacting requirements. It is then carefully manufactured according to sound fundamental principles.

The more hours of work you can get out of every pound of wire rope you use, the more steel you save for other vital war purposes. Regardless of the kind or make of wire rope you now have, it will not be able to give you the full service of which it is actually capable unless it is handled correctly and operated under proper working conditions. For further information on the proper use, care and application of wire rope, feel free to consult our Engineering Department.

Advantages of Preformed Wire Rope

1

As broken wires lie practically flat, they are not so apt to injure hands of the men handling it. Also, there is less possibility of an "out of place" wire causing damage to adjacent wires in the rope.

2

It is not so easily kinked.

3

Its inert qualities make for smoother spooling and easier handling.

4

The preforming process minimizes the tendency of Lang's Lay wire rope to loop or squirm.

5

There is less turning and twisting of the rope in the grooves, and less internal movement of the wires and strands—all of which tends to reduce both external and internal wear, thereby insuring longer service.

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

WIRE ROPE MAKERS — ESTABLISHED 1857

5909 KENNERLY AVENUE — ST. LOUIS, MISSOURI, U. S. A.

NEW YORK . . . 90 West Street
CHICAGO . . 810 W. Washington Blvd.
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SAN FRANCISCO . . 520 Fourth Street
PORTLAND . . 914 N. W. 14th Avenue
SEATTLE . . 3410 First Avenue South

SUPERVISING THE JOBS

Jess Weaver will be general superintendent and **Ed Rath** will be building superintendent on construction of two elementary schools and a junior high school at McLoughlin Heights, Vancouver, Wash. This $346,319 contract was awarded to the Haddock Construction Co., of Pasadena, Calif., who have also appointed **W. R. McCaslin** as engineer and **B. T. Cook** as office manager on the project.

* * *

C. E. Jones, superintendent for Robert E. McKee, Los Angeles, Calif., contractor, on various construction contracts at Hickam Field and elsewhere in the Hawaiian Islands, has been named to direct the erection of hangars in Davis Co., Utah, a contract valued at slightly less than $400,000. **Charles Kistenmacher** is project manager and **O. H. Nolte** is office manager for the work.

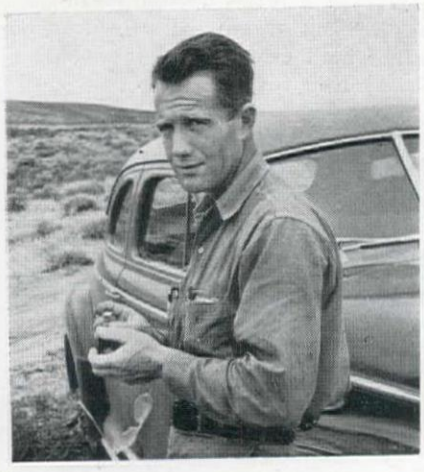
* * *

Harold W. (Tiny) Purser has been appointed superintendent for Chas. L. Harney, San Francisco contractor, to direct construction on the contract he secured at $437,949 to grade and pave with portland cement concrete and asphaltic concrete on crusher run base 2.1 mi. of highway between Orinda Corners and 1½ mi. west of Lafayette. **Alfred (Pete) Peterson** will be office manager on the project.

* * *

Dewey J. Murrow, grading superintendent, and **Dick Hewett,** ballasting and surfacing superintendent, are in charge of the $337,029 contract awarded to F. R. Hewett, Spokane contractor, for construction of a flight strip and access road in Okanogan Co., Wash. The crushing plants will be in charge of **Emil Weist.**

DEWEY J. MURROW



* * *

Al Biasotti is in charge of the contract awarded to Louis Biasotti & Son, Stockton, Calif., at $76,686, for 2.4 mi. of grading and plantmix surfacing in San Joaquin Co., Calif. His assistant is **J. W. Hess,** a veteran with the firm. Foreman on the job is **Cliff Berry,** and **Ed J. Salyer** is office manager.

M. S. (BUD) NOTLEY, left, superintendent for Dresser Engineering Co., Tulsa, Okla., on construction of a 100-octane refinery at Parco, Wyo., and R. C. LANEVILLE, engineer on the project formerly with Dupont Engineering Co.

* * *

A. E. Hullin, superintendent for A. Teichert & Son, Inc., Sacramento, Calif., on the $120,141 contract to grade and place plantmix surfacing on Washington St. and Fresno Ave. between the San Joaquin River and Route 75 in San Joaquin Co., Calif., will be assisted by **Schuetz** and **Brierly,** respectively grading and paving foremen.

* * *

George Mashon, superintendent for Haddock Construction Co., of Pasadena, Calif., on many of its bridge and grade separation contracts, has been named by the company to supervise construction of a "more than $1,000,000" project to construct houses, utilities and a hospital group in Nye Co., Nevada. His assistant will be **Tom O'Shea.**

* * *

J. J. Miller will supervise construction for J. M. Sumsion, Springville, Utah, on the latter's $115,700 contract to construct 33 mi. of crushed rock surfacing between St. John and the Dugway Proving Grounds in Tooele Co., Utah. Assisting Miller in direction of the work will be **B. J. Obye, Clarence Larson, Glen Holt,** and **Ivan Argyle.**

* * *

H. D. Carlson has been made project manager of a $500,000 contract secured by Ford J. Twaits Co., Los Angeles, Calif., to erect civilian housing in Tooele Co., Utah. Job superintendent is **Herb Ball.** As on most Twaits jobs in Utah, **Clyde Jenkins** is chief engineer, and **W. W. Price, Jr.,** is construction manager.

* * *

D. A. Williams, superintendent; **G. S. Raborn,** assistant superintendent; **D. W. Pickard,** office manager; and **H. L. Eddy,** resident engineer, is the supervisory staff appointed by Calowell Construction Co., Long Beach, Calif., to direct its less than $500,000 contract to construct roads and parking areas at a camp in Riverside Co., Calif.

* * *

Frank B. Saxton is superintendent of two contracts obtained by Vincent K. Jones, contractor of Denver, Colo., to install utilities at the new townsite of Drager, Utah. The water distribution system is to cost $143,000, and the sewage disposal system $178,000. **Ted Cullen** is assisting Saxton as general foreman and master mechanic on both contracts. Drager is the town being constructed at the site of the coal mines which will furnish fuel to the new steel mills at Provo, Utah.

* * *

John Falconer is construction superintendent for W. C. Beggs Contracting Co., Los Angeles, Calif., and **Wm. V. Beggs** is assistant superintendent on its over $100,000 contract with the U. S. Engineer Dept. to construct additional buildings at an air corps ferrying command depot in Los Angeles County.

* * *

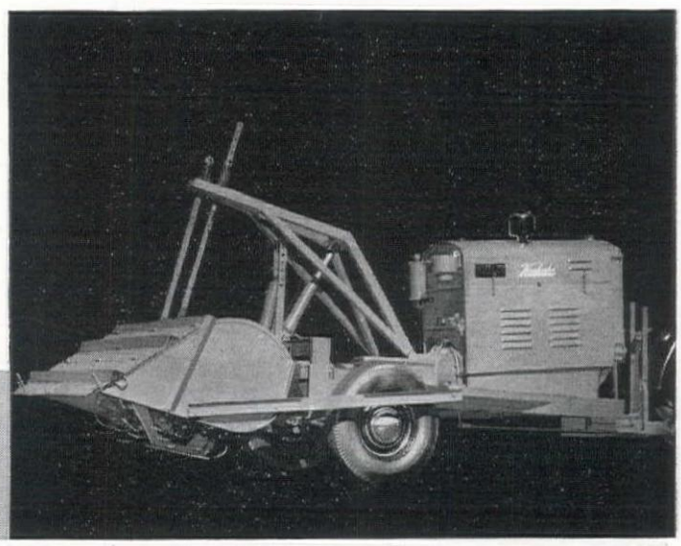
B. W. Porter, formerly with the Gaasland Construction Co., is acting as superintendent for the Anderson Building Co., of Spokane, Wash., on the contract it secured at between $100,000 and $500,000 for a sewage treatment plant in Spokane County.

* * *

Frank H. Dunn, veteran superintendent for Dodge Construction Co., Fallon, Nev., has been appointed by the company to direct construction of a

IN WHAT COUNTRIES IS THE SEAMAN PULVI-MIXER *Doing Its* BETTER, FASTER, MORE ECONOMICAL *Job of* STABILIZATION ?

Frankly, we don't know every land in which the SEAMAN PULVI-MIXER is doing its job . . . but we are certain of one fact: where speed and thoroughness in stabilization or in-place mixing are essential, you'll generally find a SEAMAN! The rotary principle in pulverizing and mixing materials as pioneered by SEAMAN is the keynote to the success of the PULVI-MIXER. Revolving tines operating at high speed mix the materials with remarkable uniformity to the full depth of treatment. Speed and economy go hand-in-hand with thoroughness. In square yards of finished stabilization per hour of work . . . in low investment and operating cost, the SEAMAN PULVI-MIXER puts many dollars of *extra* profit into the contractor's pocket. . . . For any stabilization process — investigate the SEAMAN.



SEAMAN MOTORS

305 N. 25th STREET • MILWAUKEE, WIS.

landing field in Kern Co., Calif., for which it was awarded a more than $100,000 contract. **Willis Balgoyen** will be timekeeper on the job.

* * *

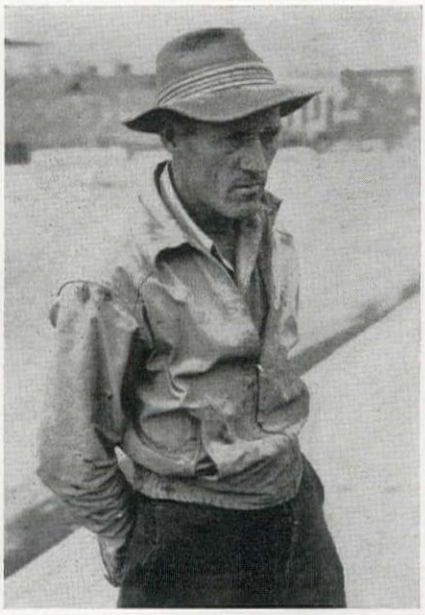
Eric Ostman has been named superintendent, and **Otis Buzard** labor foreman, by M. P. Butler, Seattle, Wash., contractor on his contract valued at $52,614, to construct a steel girder bridge on Secondary State highway 9-A between Twin and Clallam Bay Junction.

* * *

Charles Newell, who was superintendent of construction of a reception center at Parker, Ariz., for Del E. Webb Construction Co., of Phoenix, Ariz., has been made superintendent for the same company on its contract to construct hangar buildings at an air force flexible gunnery school in Mohave Co., Ariz. **Kemper Goodwin** will be job engineer on the contract, which is valued at more than $100,000.

* * *

E. M. Pray will be superintendent, and **Lewis McKee** will be his assistant, on a contract to construct 60 units of dormitory type homes near Barstow, Calif. This contract was awarded to Gordon Donald, contractor of Redlands, Calif., at $167,735.



R. W. MUNSON, superintendent for Edlefsen-Weygandt Co., contractors on a portion of the huge Front Ave. project in Portland, Oregon.

J. A. Casson, Hayward, Calif., is both contractor and project manager on the paving of runways at an airport in Alameda Co., Calif., for the U. S. Army **"Red" Bennett** is general superintendent, and plant foremen are **A. H. Obert** and **E. R. Wade.**

* * *

Joseph T. Pemberton is superintending a paving project in Kitsap Co., Wash., for A. C. Goerig Construction Co., contractor of Seattle, Wash. **H. E. Cooley** is grade foreman and **H. Coon** is engineer for the contractor on the job.

* * *

John Cassidy has been appointed to superintend construction of a one-story reinforced concrete machine shop at Battery and Union Sts., in San Francisco, by Carrico & Gautier, of San Francisco, contractors on the $150,000 job.

* * *

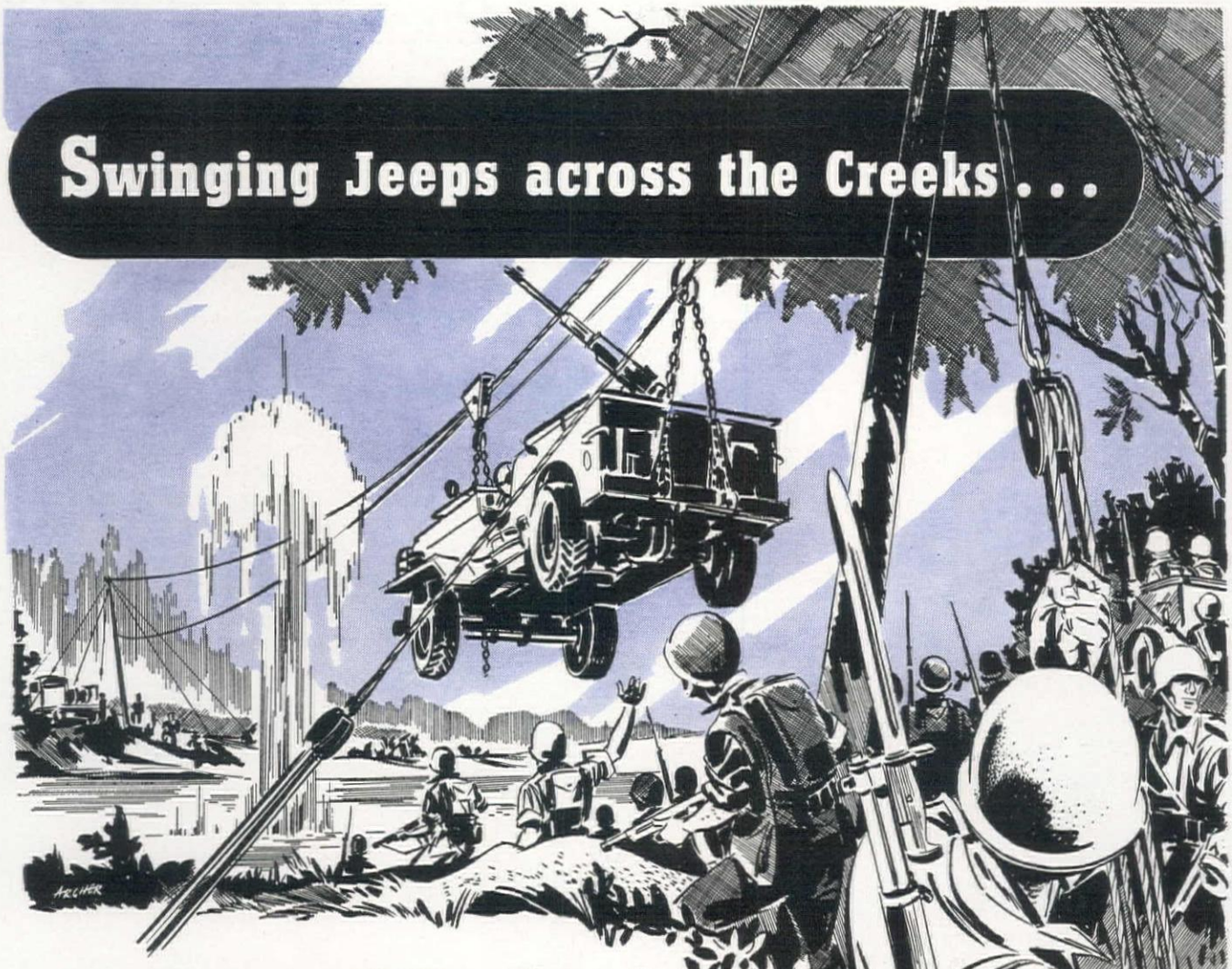
Joe Logozo is in charge of construction of sanitary sewers at Fort Lewis, Wash., the contract for the work being awarded to Thorburn & Logozo, contractors of Seattle. **R. E. Burns** and **Tony Natermasso** are other key men on the job.

* * *

Robert G. Fleming will be job superintendent, and **Ed Shaver** will be office manager on the Del E. Webb Construction Co. contract to build 20 dormitory apartments and 130 family units at Ajo, Ariz. The company's headquarters are in Phoenix, Ariz.

* * *

Axel Carlson is construction superintendent on a $330,000 residential development in the View Ridge section of Seattle, Wash., embracing 55 new homes.



ROEBLING "Blue Center" won't let them down!

It's a fast-flowing stream. A pontoon bridge won't do... So watch the Engineers swing one of their mobile cableways into action. A soldier swims across and a boat follows the line that was lashed to his body. Then comes the Roebling guy lines, bridge cable and anchorage tackle. In no time at all, the motorized winches are hauling jeeps and trucks across the 700 foot span.

It's another of those wartime miracles where the Corps of Engineers wrote the ticket and Roebling supplied the wire-making experience and the wire rope.

Experience from a hundred industries . . . and steel that exactly meets the needs of each. Wire rope . . . right for factory cranes or power shovels or bulldozers . . . right for victory ships or oil well lines or mine hoists. Experience that is woven into every inch of Blue Center, giving it the stamina to withstand unusual loads on the battle or production line.

JOHN A. ROEBLING'S SONS COMPANY
OF CALIFORNIA

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WIRE ROPE IS INDISPENSABLE TO WAR

You can do your part to speed output and conserve steel for all America by getting the most out of the wire ropes you have. Faulty sheaves, for example, may be killing your ropes... preventing them from delivering the full service life that has been built into them. Here are a few things to look for:

1 **See that no sheaves are out of alignment.**

2 **Check with a gauge for deeply worn or cut grooves.**

3 **Watch out for broken rims.**

4 **Check for worn or damaged journals that cause sheaves to stick or wobble.**

5 **Check for bent shafts that cause whipping or vibrations.**

To help you inspect wire rope sheaves systematically and easily, we have prepared the helpful pamphlet shown left. Our nearest office will furnish as many copies as you need.

The project is being sponsored by the Wedgewood Corp., Seattle.

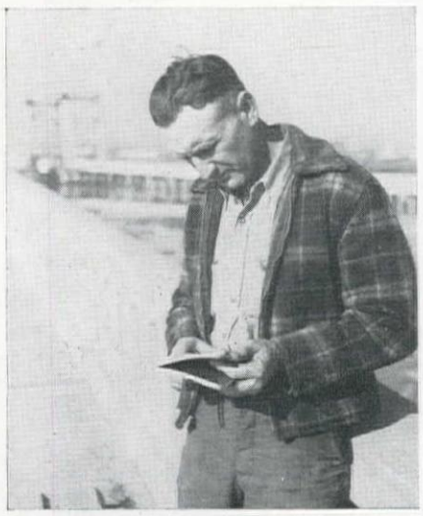
* * *

I. W. Breunsbach is project manager for Peter Kiewit Sons' Co., Omaha, Nebr., on the building and operation of a repair shop in which government-owned equipment will be overhauled on a fixed-fee basis.

* * *

Jack Kent will direct construction of vitrified clay pipe sewers in various streets in Benicia, Calif., for Phil R. Jones, Vallejo, Calif., to whom was awarded the $81,568 contract.

* * *



L. W. MILLER, superintendent for Ralph Bell, contractor, on the long Eureka Slough bridge, near Eureka, Calif., pictured on the first day the bridge was opened to passage of trucks.

O. D. Cowart, superintendent for Walter L. Denison, Las Vegas, N. Mex., contractor, is in charge of the latter's "over $50,000" contract to construct landing field facilities at an airfield in Lubbock Co., Tex.

* * *

Larcy Carlin is general superintendent for G. A. and F. L. Froley, Los Angeles, Calif., building contractors, on various construction projects. He was formerly general foreman with the Ford J. Twaits Co.

* * *

H. J. Sester, Jr., is assistant superintendent for Guerin Bros. Construction Co., South San Francisco, Calif., in charge of grading and airport paving at the Merced, Calif., municipal airport.

* * *

Byron Wittorff, recently on defense construction in Utah, has been transferred to Culver City, Calif., by Ford J. Twaits Co., and is now assistant superintendent on erection of the Hughes-Kaiser aeroplane factory in that city.

UNIT BID SUMMARY

Highway and Street . . .

Colorado—Jefferson County—State—Surf.

Lowdermilk Bros., Denver, were low bidders to the Colorado State Highway Dept. at $231,381, for 1.4 mi. of gravel surfacing on west 6th Ave., west to the Denver Ordnance plant, an access road, and received the award of the contract. The bids submitted were as follows:

(1) Lowdermilk Bros. $231,381
(2) Hamilton & Gleason 235,326
(3) Dominic Leone Co. $237,550
(4) Engineer's Estimate 205,778

		(1)	(2)	(3)	(4)
	Lump sum, clear and grub 1st section	$1,000	$1,000	$1,500	$500.00
	Lump sum, clear and grub 2nd section	$1,000	$1,500	$1,500	$1,000
	Lump sum, remove 23 structures	$500.00	$500.00	$600.00	$300.00
38	ea. remove and reset mail boxes	10.00	5.00	5.00	3.00
17	ea. adj. manhole ring and cover	25.00	25.00	25.00	5.00
	Lump sum, remove 28 structures	560.00	550.00	700.00	300.00
4,900	lin. ft. remove fence	.08	.05	.03	.03
5,500	lin. ft. remove and rebuild fence	.15	.12	.10	.10
71	ea. line posts, treated timber	1.75	1.00	1.20	1.00
78,000	cu. yd. unclassified excavation	.45	.45	.45	.40
1,800	cu. yd. unclassified ditch excavation	.85	1.00	1.00	.80
65,100	T. selected material	.50	.50	.42	.45
470	cu. yd. dry rock excavation, structural	2.25	3.00	2.25	2.00
4,100	cu. yd. dry common excavation, structural	2.00	1.75	1.50	1.50
60	cu. yd. wet rock excavation, structural	2.50	5.00	3.00	3.00
470	cu. yd. wet common excavation, structural	2.25	3.00	2.50	2.50
470	hrs. mechanical tamping	3.50	3.50	3.50	3.50
750	hrs. rolling fills	3.00	3.50	3.00	3.00
8	ea. furnish roller	25.00	50.00	50.00	60.00
1,550	M. gal wetting fills	2.00	3.00	2.00	2.00
253,000	sta. yd. overhaul	.015	.02	.02	.015
400	yd. mi. overhaul	.20	.15	.15	.15
35,700	T. gravel surfacing	1.30	1.35	1.45	1.16
271,000	T. mi. overhaul, selected material	.10	.08	.10	.10
80	cu. yd. sand cushion	3.00	2.50	2.00	2.00
0.2	M.F.B.M. miscellaneous untreated timber	200.00	100.00	200.00	170.00
10.1	M.F.B.M. miscellaneous treated timber	200.00	200.00	200.00	170.00
446	cu. yd. Class "A" concrete	27.50	30.00	30.00	28.00
37	cu. yd. Class "B" concrete	30.00	30.00	30.00	28.00
17,800	lb. reinforcing steel	.08	.10	.09	.10
542	lin. ft. 18-in. concrete culvert pipe	3.50	3.00	3.00	2.50
1,746	lin. ft. 24-in. concrete culvert pipe	4.25	4.50	5.00	3.50
11	lin. ft. 18-in. vitrified clay culvert pipe	4.50	4.00	2.50	3.00
1,504	lin. ft. treated timber piling	2.15	2.00	2.30	1.60
5	cu. yd. riprap	5.00	15.00	7.00	3.00
3,542	lin. ft. 6-in. vitrified tile under drain	2.50	2.50	3.00	1.00
852	lin. ft. 8-in. vitrified tile under drain	2.70	2.70	2.50	1.10
460	lin. ft. 6-in. clay pipe drain	1.00	2.00	1.00	1.00
1	ea. driveway gate, wood	25.00	25.00	25.00	25.00
24	ea. right-of-way markers	6.00	7.00	5.00	5.00
2	ea. project markers, untreated timber	25.00	30.00	25.00	15.00
11,582	lin. ft. concrete curb, double faced	1.50	1.70	1.65	1.50
4	ea. treated wood 24-in. siphon	10.00	10.00	15.00	10.00
223	ea. timber guide posts	3.50	3.00	3.00	2.50
21	ea. 8-in. timber guide posts	5.00	4.00	4.00	4.00
409	lin. ft. 24-in. reinforced concrete siphon pipe	4.75	5.00	5.00	5.00
2	ea. 6-in. standard cast iron valves	75.00	75.00	50.00	70.00

Washington—Lewis County—State—Grade and Surf.

C. W. Thomas & Son, Winlock, Wash., submitted the only bid at $52,379, to the Washington Director of Highways, Olympia, and were awarded the contract, to clear, grade, drain, and surface with selected roadway borrow, 5.9 mi. of Secondary State Highway No. 12-E, between Napavine and Winlock. The unit bid follows:

	Lump sum clear and grubbing	$2,000.00
2,290	cu. yds. unclass. excav. (incl. all haul)	1.10
10	cu. yds. comm. trench excav. (incl. all haul)	2.00
130	cu. yds. structure excavation	2.00
313.0	sta. finishing roadway	8.00
24,320	cu. yds. selected roadway borrow (incl. all haul)	1.75
10,580	lin. ft. remove and reset railway r/w fence	.20
264	lin. ft. relay conc. pipe 12-in. diam.	.70
153	lin. ft. plain conc. or V.C. pipe 12-in. diam. in place	1.25
6	lin. ft. plain conc. or V.C. culv. pipe 18-in. diam. in place	4.00

Wyoming—Sheridan County—State—Grade & Surf.

Etlin E. Peterson, Casper, was low bidder at $38,506, to the Wyoming Highway Department, Cheyenne, for grading, draining, base course surfacing, roadmix oil treatment, a treated timber bridge, and miscellaneous work on 0.6 mi. of the Clearmont-Ucross road. All items in the contract are part of a federal aid project, except the last one. The bids submitted were as follows:

(1) Etlin E. Peterson $38,506
(2) Chas. M. Smith $39,797

		(1)	(2)
13,500	cu. yds. excavation	$ .45	$ .50
9,000	cu. yds. overhaul	.015	.015
100	M. gals watering (emb.)	4.00	4.00
90	hr. sheepsfoot roller operation	4.00	4.00
25	cu. yds. excav. for pipe culverts	1.00	1.00
100	hr. mechanical tamping	4.00	4.00
78	lin. ft. relaying pipe	2.00	2.00
2,900	lin. ft. removing and resetting r/w fence	.10	.10
75	ea. fence posts	.30	.30
8	ea. end panels	8.00	8.00
6	ea. brace panels	8.00	8.00
2	ea. timber project markers	10.00	5.00
59.904	M.B.M. treated timber	190.00	200.00
3.906	M.B.M. untreated timber	200.00	200.00
1,832	lin. ft. treated timber piling	1.90	2.00
245	cu. yds. Class 1 riprap	5.00	5.00
50	cu. yds. Class 2 riprap	5.00	5.00
90	cu. yds. structure excavation	2.00	1.50

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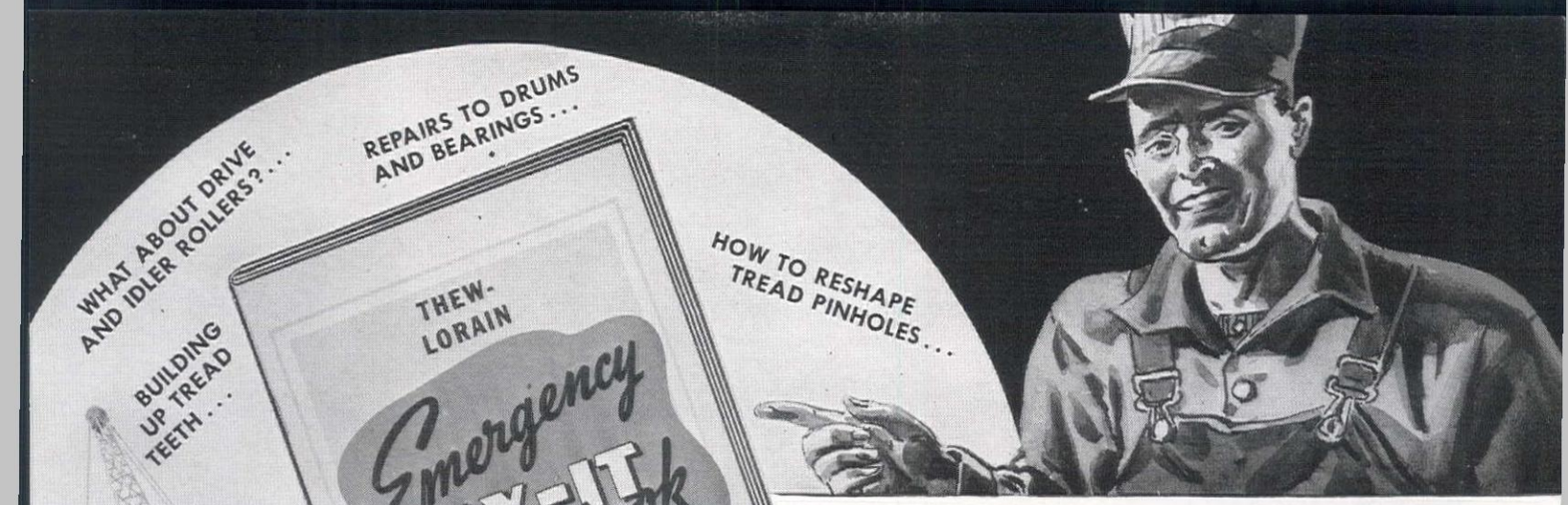

24 PAGES of How to Keep 'Em On-the-Job IDEAS

HERE'S a brand new handbook for all Lorain owners and operators, full of practical ideas on how to make quick, emergency repairs that will keep your machine going. It will tell you how to temporarily substitute for critical, hard-to-get parts and materials—*how to do more with what you've got.*

Many of the suggestions are temporary expedients only, but they will keep your machine on the job—they will help to salvage and conserve worn parts, and will save you time and money, too. Write for your free copy of the Fix-It Handbook now or clip and mail the pledge form below if you want both the Handbook and a Conservation Emblem.

HOW TO GET THIS CONSERVATION EMBLEM

If you want to show others that you are helping to make your equipment last longer, sign and mail the pledge form below. Regardless of the type or make of your equipment, we will send you a colorful red, white and blue emblem (actual size 5" diameter).

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CONSTRUCTION EQUIPMENT CONSERVATION

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THE THEW SHOVEL COMPANY, Lorain, Ohio

I hereby pledge that I shall do all in my power to prolong the life of any construction equipment in my ownership or care regardless of type or make.

I realize that it is my responsibility to avoid time-consuming delays caused by mechanical breakdowns and will see that frequent inspections are made and that necessary adjustments and repairs are promptly taken care of.

I will avoid waste of parts and materials and will eliminate any abuse of my equipment due to non-recommended operation.

Signed _____

Street Address _____

City _____ State _____

FIX-IT Handbook Wanted..... Lorain Model No..... Serial No.....

10	cu. yds. grouted riprap	15.00	15.00
2,500	ton crushed gravel base course (1-in. max.)	1.50	1.50
1,000	ton crushed gravel surfacing (¾-in. max.)	1.50	1.50
100	ton stone chips	6.00	6.00
18	ton base treatment MC-0	40.00	40.00
18	ton seal coat RC-4	40.00	40.00
45	ton M. C. Liq. Asp. Dist. MC-3	40.00	40.00
10,100	sq. yd. processing roadway	.12	.15
40	M. gal. watering (base)	5.00	5.00
30	hr. roller operation (base)	5.00	5.00
Lump sum	removing existing structures	400.00	150.00
Lump sum	flume installation	400.00	300.00
13	unit pole bents	20.00	15.00
250	cu. yds. binder	1.00	1.00
	NON-PARTICIPATING IN FEDERAL AID		
1,100	cu. yds. salvaging and stockpiling gravel	1.00	1.00

Idaho—Ada County—State—Surfacing

Quinn-Robbins Co., Inc., Boise, submitted a bid of $228,415, which was low, to the Idaho Bureau of Highways, for the construction of the roadbed, drainage structures, and crushed gravel surface on 6.1 mi. of the Franklin Highway from Boise to Joplin Corner. The contract was awarded to the low bidder. The following bids were submitted:

(1) Quinn-Robbins Co., Inc. $228,415
(2) W. C. Burns 242,876
(3) Engineer's estimate $235,390

		(1)	(2)	(3)
910	lin. ft. remove curb	$ .10	.30	.50
425	sq. yds. remove concrete sidewalk	.25	.50	.25
1	ea. remove concrete headgate	25.00	50.00	50.00
128,000	cu. yds. unclassified excavation	.30	.32	.35
1,350	cu. yds. excavation for structures	3.00	2.00	1.50
101,000	cu. yds. borrow	.25	.32	.30
18,000	sta. yds. overhaul	.04	.03	.05
188,000	M. yds. haul	.19	.17	.20
25,500	lin. ft. small ditches	.10	.05	.10
125	days rolling, power roller	35.00	40.00	25.00
85	days rolling, tamping roller	50.00	30.00	30.00
4,100	M.G. watering embankments	1.50	1.50	1.50
560	M.G. watering base and surface course	1.50	2.00	1.50
1,700	cu. yds. binder	.40	.30	.35
47,000	tons crushed gravel surface course 1 in. max.	.90	1.05	.90
24,000	tons crushed gravel 1 in. max. in stockpiles	.80	.90	.75
3,400	tons cover coat material Type "B" in stockpiles	2.50	3.00	2.25
470	cu. yds. concrete Class "A"	30.00	40.00	30.00
1,960	lbs. place metal reinforcement	.05	.05	.06
200	sq. yds. membrane waterproofing	1.50	.75	2.00
19.0	M.F.B.M. select structural grade timber, creosote treated	175.00	150.00	200.00
2,100	lin. ft. concrete curb, Type 1	1.25	1.00	1.00
320	lin. ft. concrete curb, Type 2	1.25	1.00	1.25
230	lin. ft. concrete curb, Type 3	1.25	1.00	1.50
680	sq. yds. concrete sidewalk	1.80	3.00	2.50
40	cu. yds. gravel backfill, Class "A"	1.00	2.00	1.50
1	ea. project markers	10.00	15.00	15.00
60	ea. right-of-way markers	4.00	5.00	4.00
10,000	cu. yds. placing salvaged top soil	.40	.15	.35
0.9	M.F.B.M. No. 1 common lumber, untreated	125.00	100.00	125.00
24	lin. ft. 6-in. cast iron pipe	2.00	2.00	1.00
12	stas. obliterate old ditch	3.00	10.00	8.00
0.5	M.F.B.M. No. 1 common lumber, creosote treated	135.00	150.00	180.00
360	lin. ft. 12-in. plain concrete pipe	2.00	2.00	2.00
2,010	lin. ft. 18-in. plain concrete pipe	3.00	2.50	3.00
386	lin. ft. 24-in. plain concrete pipe	4.00	4.00	4.00

California—Los Angeles County—State—Grade & Surf.

Griffith Co., Los Angeles, was low bidder to the Division of Highways, Sacramento, at $39,839, for grading and plantmix surfacing on 0.5 mi. of Chavez Ravine Rd., Coronel St., and connections between Figueroa St. and Lilac Terrace. They were awarded the contract. The bids submitted were as follows:

(1) Griffith Co. $39,839
(2) West & Sommer $45,085

		(1)	(2)
10	cu. yds. removing concrete	$ 25.00	$ 20.00
29	stas. clearing and grubbing	11.00	40.00
15,000	cu. yds. roadway excavation	.89	.75
300	cu. yds. structure excavation	3.50	3.00
25	cu. yds. ditch and channel excav.	3.50	5.00
3,800	cu. yds. imported borrow	1.48	1.25
	Dev. water sup. and furn. water equip.	500.00	1,000.00
200	M. gals applying water	4.00	5.00
29	sta. finishing roadway	10.00	40.00
4,500	sq. yds. prep., mix. and shape surface	.25	.30
53	tons liq. asph., MC-2 (bit. surf. tr.)	17.00	20.00
8	tons liq. asph., MC-2 (prime coat)	21.00	40.00
1,800	tons plantmixed surfacing	4.30	4.50
4	tons asph. emlsn. (pt. bdr. and sl. ct.)	30.00	55.00
4	ea. timber cov's. for catch basins	10.00	25.00
25	cu. yds. Class "A" P.C.C. (structures)	32.00	60.00
25	cu. yds. Class "C" P.C.C. (structures)	31.00	60.00
220	cu. yds. Class "A" P.C.C. (cur. gut. S.W. and dep.)	20.00	25.00
34	lin. ft. laminated guard railing	2.50	10.00
220	lin. ft. 18-in. unreinf. C. pipe (2000 D)	5.00	10.00
200	lbs. bar reinf. steel	.13	1.00
950	lbs. misc. iron and steel	.24	1.00
4	ea. adjusting M.H. to grade	15.00	50.00

Colorado—Adams & Denver Counties—State—Surf.

Lowdermilk Bros., Denver, at $109,920, submitted the lowest bid on construction of two access roads in the vicinity of Denver, for the Colorado State Highway Department, and received the contract for the work. The first road is 2.1 mi. in length, being an extension of Havana St. in Denver; the second project is the widening of State Highway No. 72 between Sand Creek bridge and Havana St., a length of 1.2 mi. The low bid was slightly less than the engineer's estimate. The following bids were submitted:

(1) Lowdermilg Bros., Denver $109,920
(2) C. L. Hubner & Co., Denver 120,574
(3) Ed. Seelander Co., Denver 123,940
(4) Hamilton-Gleason Co., Denver $138,401
(5) Engineer's Estimate 110,014

		(1)	(2)	(3)	(4)	(5)
Lump sum	clear and grub both units	$500.00	$500.00	$200.00	$1,000	$200.00
1,100	lin. ft. remove fence	.05	.05	.08	.03	.03
11,000	lin. ft. remove and rebuild fence	.10	.15	.10	.10	.10
60	ea. line posts	1.75	1.00	1.50	1.00	1.00
89,200	cu. yd. unclassified excavation	.36	.40	.40	.51	.40

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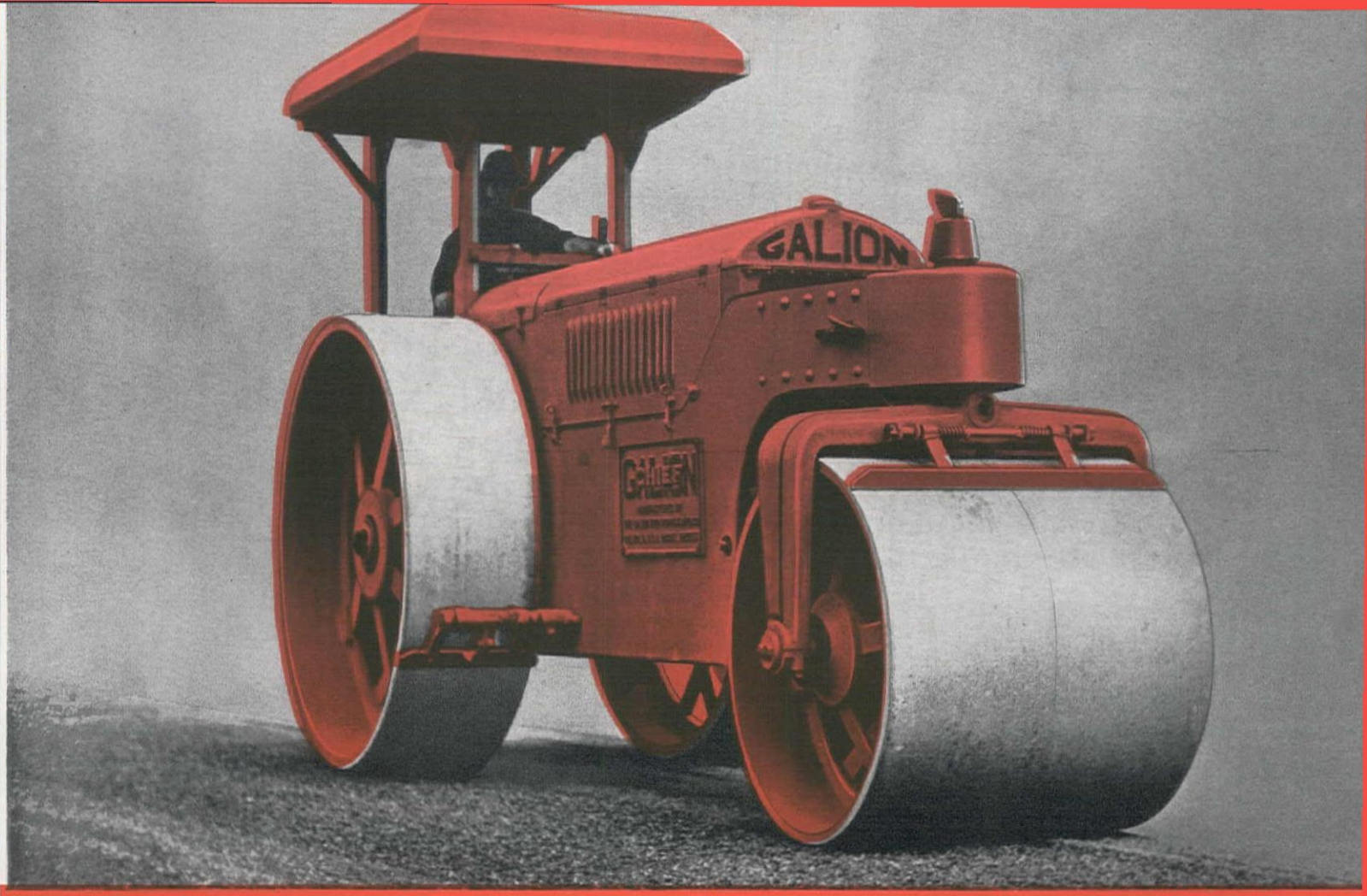

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15	cu. yd. dry rock excavation, structural	2.40	2.00	3.00	3.00	2.50
135	cu. yd. dry common excavation, structural	2.25	1.50	1.50	1.50	1.50
5	cu. yd. wet rock excavation, structural	2.45	4.00	5.00	5.00	5.00
15	cu. yd. wet common excavation, structural	2.40	3.00	3.50	4.00	4.00
120	hr. mechanical tamping	4.00	4.00	4.50	4.00	4.00
582	unit hr. rolling fill	3.00	3.00	3.00	3.50	3.50
8	R. unit furnishing roller	50.00	50.00	50.00	50.00	60.00
1,358	M. gal. wetting fills	2.25	1.50	2.50	3.50	2.00
208	M. gal. wetting surfacing	2.25	1.50	2.50	3.50	2.00
305,900	sta. yd. overhaul	.015	.02	.02	.02	.02
3,700	yd. mi. overhaul	.02	.20	.20	.15	.15
30,200	T. gravel surfacing	1.38	1.40	1.65	1.62	1.40
11,800	gal. asphaltic road material, RC-4	.12	.14	.14	.15	.11
16,500	gal. asphaltic road material, MC-0	.12	.13	.13	.15	.10
70,300	gal. asphaltic road material, MC-3	.11	.13	.11	.15	.09
46,900	sq. yd. roadmix oil proc. surfacing	.10	.19	.10	.12	.05
104	hr. rolling surfacing	7.00	6.00	5.00	5.00	3.00
Lump sum,	furnish roller for surfacing	200.00	50.00	100.00	50.00	400.00
468	T. stone screenings	4.50	4.00	4.50	2.50	3.00
19	cu. yd. Class "B" concrete	35.00	30.00	32.00	30.00	30.00
776	lin. ft. 24-in. concrete culvert pipe	4.50	4.00	4.50	4.50	4.00
4	ea. project marker, untreated timber	25.00	25.00	10.00	25.00	15.00
7	ea. right-of-way markers	6.00	6.00	10.00	7.00	7.50
4	ea. timber guide posts	5.00	2.50	3.00	5.00	3.00

Washington—Clark County—State—Roadbed

H. B. Klineline, Vancouver, Wash., at $34,128, submitted the low bid to the Director of Highways, Olympia, and was awarded the contract to place selected roadway borrow on 2.6 mi. of Primary State Highway No. 1 between Salmon Creek and Kozy Kamp. There was no additional work involved in the contract except for one small culvert. The bids submitted were as follows:

(1) H. B. Klineline ..... $34,128 (2) Porter W. Yett $37,806

		(1)	(2)
20	cu. yd. structural excavation	$2.50	$3.00
24,290	cu. yd. selected roadway borrow in place, incl. haul	1.40	1.55
48	lin. ft. plain conc. or VC culv. pipe 12-in. diam., in place	1.50	2.00

Building . . .

California—San Diego County—Federal—Farm Camp

Midstate Construction Co., Fresno, Calif., was low bidder at $68,928, to the U. S. Dept. of Agriculture, Emergency Rubber Project, Los Angeles, for construction of an industrial farm camp 3 mi. east of San Clemente, and was awarded the contract. Bids were submitted by the following (unit bids shown for the first three bidders only):

(1)	Midstate Construction Co.	$68,928	
(2)	J. M. Roth Construction Co.	69,092	
(3)	L. D. Richardson	69,819	
(4)	E. E. Wikholm	70,578	
(5)	J. S. Metzger & Son	74,980	
(6)	E. A. Kaiser & Co.	$76,449	
(7)	Wm. Rohrbacher	89,350	
(8)	A-1 Plumbing Co.	104,397	
(9)	Sierra Construction Co.	112,849	

		(1)	(2)	(3)
4	ea. barracks	$ 5,736	$ 5,259	$ 5,385
1	ea. utility building	7,289	7,789	8,305
1	ea. mess hall	14,671	13,787	14,822
1	ea. foremen's barracks	6,410	6,446	6,330
1	ea. administration building	6,312	5,763	6,274
1	ea. water system, complete	5,231	6,477	5,631
1	ea. sewer system, complete	8,552	6,920	6,272
1	ea. electric distribution system, complete	440	875	645

Bridge and Grade Separation . . .

Washington—Clallam County—State—Steel Girder

M. P. Butler, Seattle, submitted the lowest bid, $52,614, to the Washington Director of Highways, Olympia, for construction of a steel girder bridge on Secondary State Highway No. 9-A, between Twin and Clallam Bay Junction, and received the award of the contract. Both timber and steel piles were used. The following submitted bids:

(1) M. P. Butler ..... $52,614 (2) David Nygren $56,978

		(1)	(2)
220	cu. yds. structure excavation	$25.00	$ 17.00
300	cu. yds. concrete Class "G" in place	35.00	37.00
60	cu. yds. concrete Class "H" in place	35.00	37.00
41	M.B.M. timber and lumber (untreated) in place	90.00	130.00
750	lin. ft. furnishing timber piling (untreated) at site	.30	.40
26	only driving timber piles in place	20.00	50.00
830	lbs. cast iron in place	.30	.25
225,000	lbs. structural steel in place	.12	.13
30	only driving and capping steel piles in place	80.00	100.00
25	only splicing steel piles	16.00	20.00
2	only standard conc. fed. aid markers in place	15.00	15.00

Sewerage . . .

California—Monterey County—City—Outfall

V. C. K. Construction Co., Los Angeles, Calif., with a proposal of $204,506, was the only bidder to the City of Salinas, for construction of an intercepting outfall sewer from Alisal St. to the city sewer plant. The unit bids were as follows:

5,400	lin. ft. furnish and lay 18-in. VC sewer pipe	$6.00
8,425	lin. ft. furnish and lay 21-in. VC sewer pipe	5.00
6	ea. furnish and lay 6-in. on 18-in. VC wyes and stoppers	30.00
3,930	lin. ft. 14 to 16-ft. trench for 18-in. pipe	8.28
1,275	lin. ft. 12 to 14-ft. trench for 18-in. pipe	7.28

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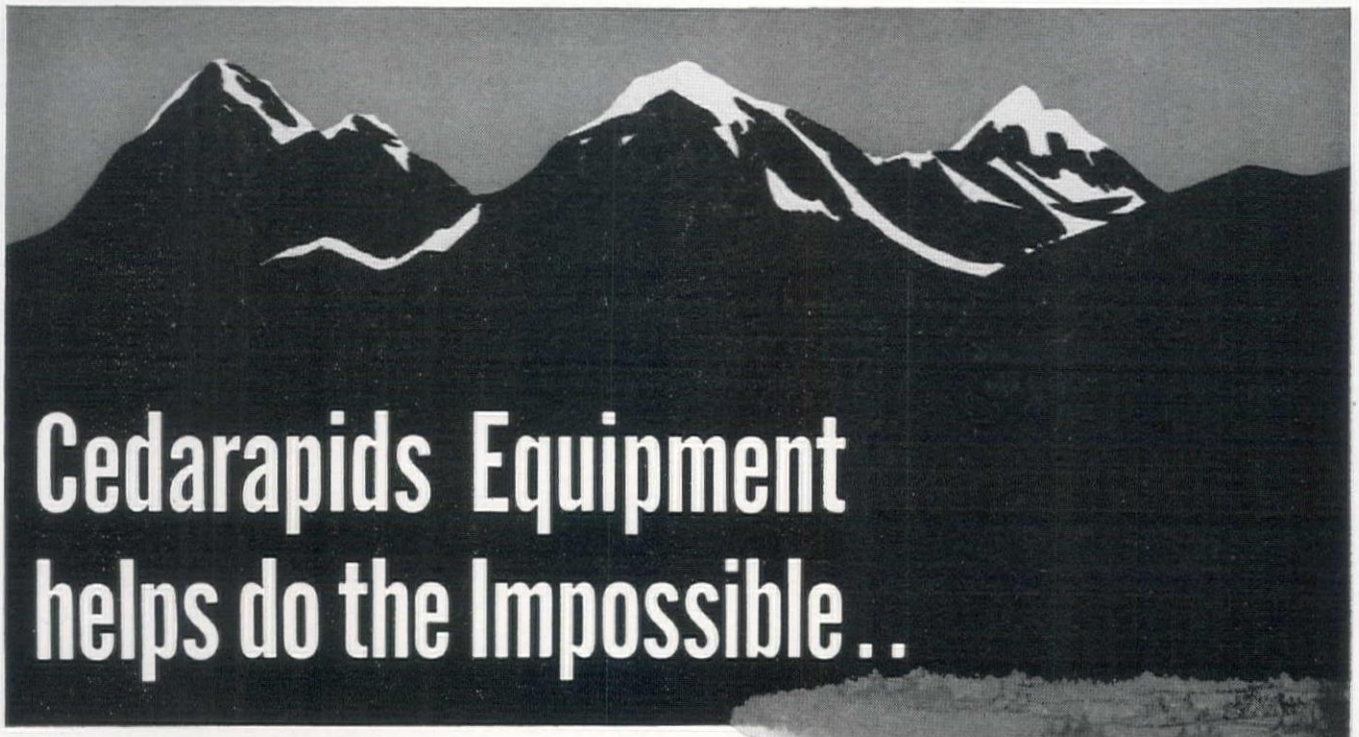

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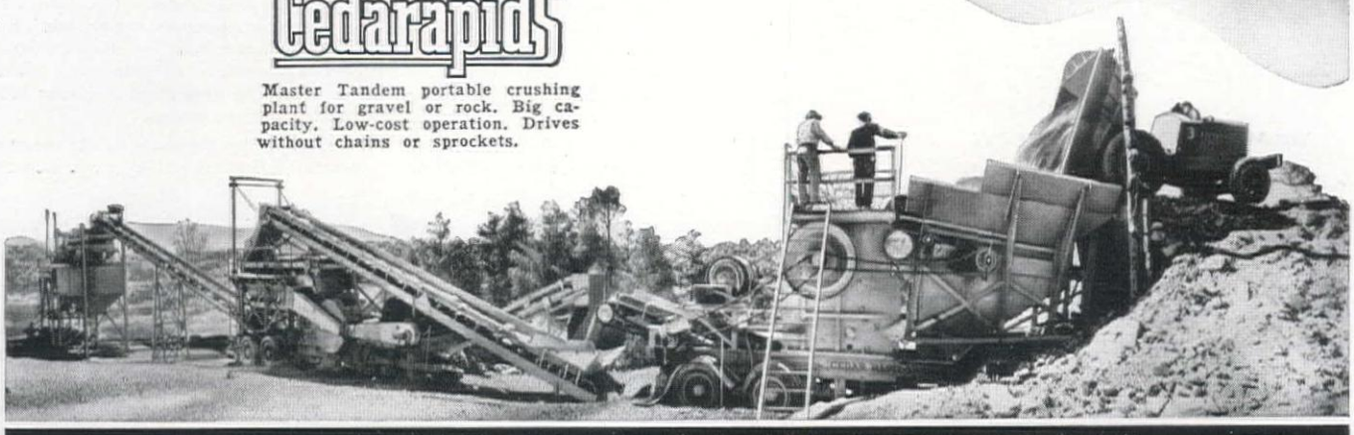

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220	lin. ft. 10 to 12-ft. trench for 18-in. pipe	6.28
140	lin. ft. 14 to 16-ft. trench for 21-in. pipe	7.82
1,390	lin. ft. 12 to 14-ft. trench for 21-in. pipe	6.82
3,600	lin. ft. 10 to 12-ft. trench for 21-in. pipe	6.32
3,300	lin. ft. 8 to 10-ft. trench for 21-in. pipe	6.00
25	ea. standard manholes including castings	200.00
1,880	lin. ft. 8-in. water bound base with Class "C-fine" seal coat top	1.50
3,150	lin. ft. P.C.C. pavement 4 or 5 in. thick to be cut and replaced with P.C.C. pavement 6 in. thick	3.00
2,320	lin. ft. 8-in. water bound base with 2-in. asph. conc. top	2.50
120	lin. ft. P.C.C. pavement 4 or 5 in. thick with 1-in. asph. conc. top to be cut and replaced with 6-in. P.C.C. pave. and 2-in. asph. conc. top	3.50
1,940	tons furnish and place 1½-in. x ¾-in. rock	4.50
Lump sum	make necessary sewer line connections and alterations	500.00

California—Los Angeles County—F. W. A.—Storm Drain

Werner & Webb, Los Angeles, Calif., submitted low bid at $54,417, to Defense Public Works, Los Angeles, for construction of the fourth section of Lockheed storm drain, a lateral of the Burbank-Western flood control system, and were awarded the contract. Those submitting bids were as follows:

(A)	Werner & Webb	$54,417	
(B)	Vido Kovacevich	54,551	
(C)	P. & J. Artukovich	69,435	
(D)	Geo. A. Bock Co. and Byerts & Dunn	76,851	
(E)	Oberg Bros.	77,879	
(F)	Baruch Corp.	$83,348	
(G)	Bongiovanni Construction Co.	86,754	
(H)	United Concrete Pipe Corp.	87,728	
(I)	V C K Construction Co.	95,344	
(J)	Edward Green	98,764	

		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
Lump sum	remove exist. struc.	$3,140	$1,976	$2,800	$5,000	$2,000	$ 800	$4,300	$2,000	$5,200	$3,000
Lump sum	barricades and detour	2,000	1,300	1,100	3,000	4,000	3,200	4,073	1,700	4,000	2,500
180	lin. ft. remove conc. curb	1.00	.25	1.50	.50	.50	2.50	1.00	.50	.60	1.00
700	sq. yds. remove asphalt conc. paving	1.20	1.20	1.35	.70	1.00	1.60	2.00	.40	5.00	2.00
140	cu. yds. structural conc.	40.00	63.00	42.50	50.00	50.00	97.00	43.00	40.00	32.00	42.00
150	lin. ft. conc. curb	1.00	1.00	2.00	1.50	1.00	2.40	1.00	2.00	2.00	2.00
1,070	cu. yds. conc. pipe cradle	15.00	12.80	13.50	15.00	17.00	9.80	12.60	14.00	12.00	22.00
2,000	lbs. steel reinf. bars	.08	.08	.085	.10	.10	.08	.10	.10	.10	.10
150	tons 2-in. asphaltic conc. base	4.00	5.75	7.00	6.00	5.00	8.00	12.00	6.00	8.00	7.00
110	tons 2-in. asph. conc wearing surf.	4.00	5.75	7.00	6.20	5.00	8.00	12.00	6.00	8.00	7.00
1,900	lin. ft. 60-in. modified conc. pipe	5.50	6.30	11.00	10.50	9.40	14.50	13.50	18.00	16.00	14.00
1,260	lin. ft. 54-in. mod. conc. pipe	5.20	5.50	8.00	9.00	9.20	8.70	11.70	13.00	13.50	13.00
822	lin. ft. 48-in. mod. conc. pipe	4.90	4.30	7.50	8.00	9.00	8.30	8.60	7.00	10.00	12.00
88	lin. ft. 42-in. mod. conc. pipe	4.60	5.00	7.00	7.50	8.80	9.40	6.90	7.00	10.00	12.00
468	lin. ft. 30-in. mod. conc. pipe	4.30	3.75	5.50	6.00	8.60	5.30	7.00	6.00	7.00	8.00
8,000	sq. ft. 1½-in. asph. slope surfacing	.12	.12	.20	.16	.25	.24	.22	.07	.30	.20
2,500	lbs. misc. metal	.30	.15	.20	.20	.20	.16	.25	.20	.12	.20
2	ea. furn. & erect project signs	50.00	52.00	50.00	50.00	50.00	75.00	50.00	100.00	75.00	100.00

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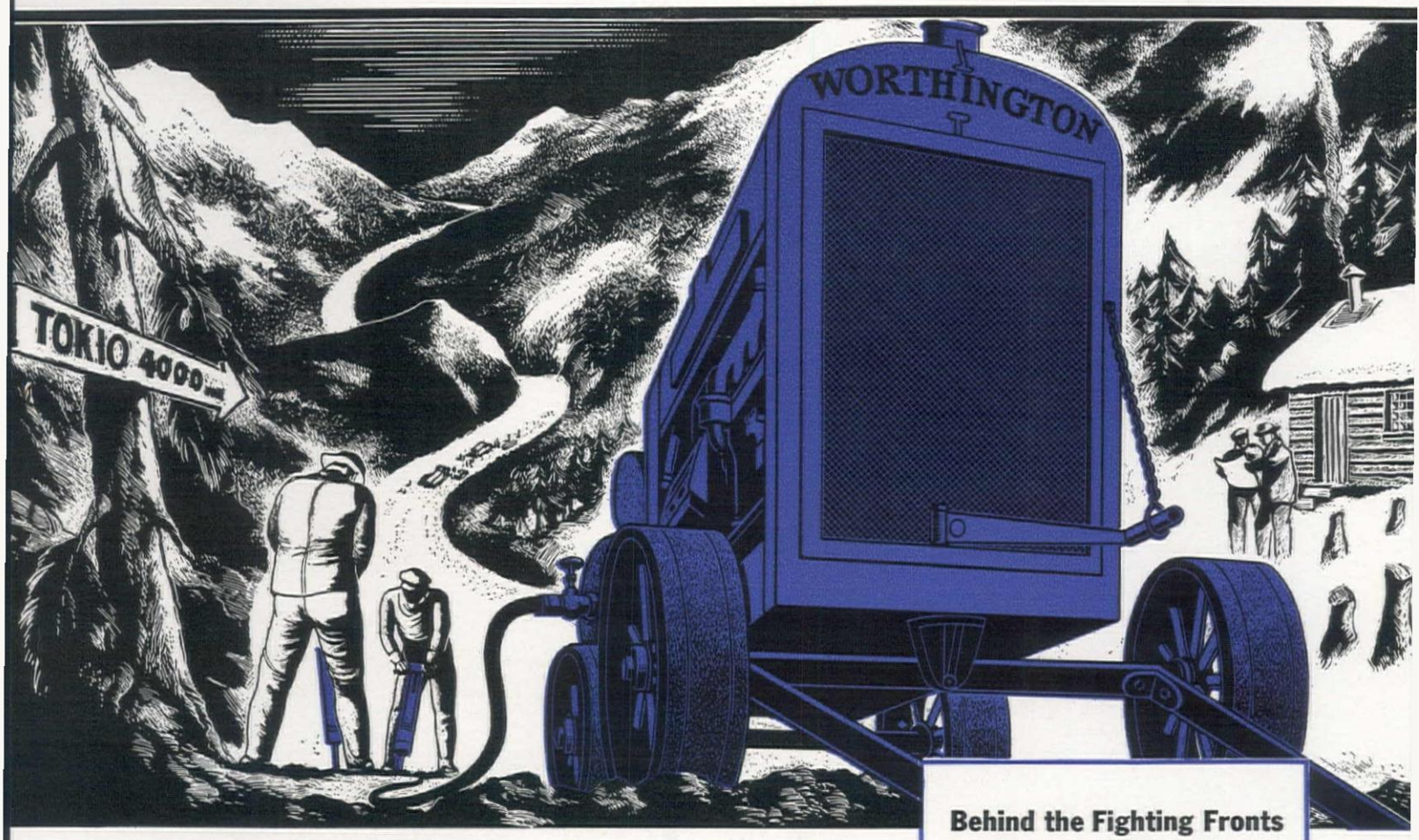
AIR-POWER NORTH TO TOKIO...



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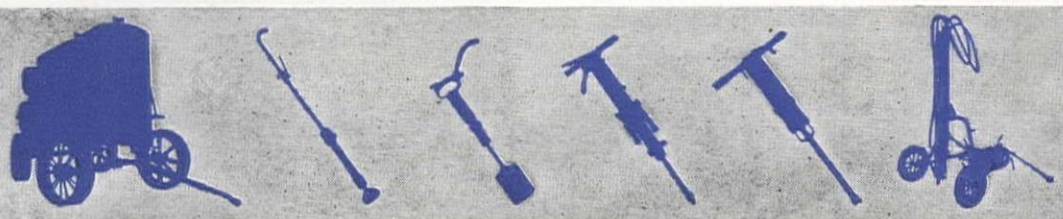

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California—San Diego County—F. W. A.—Pumping Plant

M. F. Kemper Construction Co., Los Angeles, Calif., at $103,466, was low bidder to Defense Public Works, a Federal Works Agency subsidiary, Los Angeles, for a sewage pumping plant and appurtenances and a discharge line, in National City. The following bids were submitted:

(1) M. F. Kemper Construction Co. $103,466
(2) Werner & Webb 127,940
(3) V. R. Dennis Construction Co. 148,640
(4) Carlo Bongiovanni $155,314
(5) Contracting Engineers Co. 257,515

	(1)	(2)	(3)	(4)	(5)
Lump sum pump house compl., incl. dischg. & overflow lines	$39,256	$37,206	$40,400	$25,000	$40,000
Lump sum Parshall flume complete	2,800	6,700	4,700	6,000	7,000
160 lin. ft. conc. encasement on 24-in. VC pipe	10.00	10.42	9.80	9.25	14.00
200 lin. ft. 6x4-in. conc. mat under pipe	6.36	6.70	4.20	4.85	10.00
285 lin. ft. 12-in. VC pipe (in 6th and Wilson Sts.)	3.85	13.40	13.80	18.50	20.00
900 lin. ft. 24-in. VC pipe (in 6th St.)	12.70	20.10	44.00	33.13	85.00
1,400 lin. ft. 24-in. VC pipe (pumphouse to Sta. 14)	6.25	10.72	11.00	22.80	30.00
1,242 lin. ft. 24-in. VC pipe (Sta. 14 to end)	7.35	20.10	15.00	22.69	35.00
13 ea. standard manholes, 12-ft. depth	500	402	400	505	500
723 lin. ft. 18-in. VC pipe (in Wilson Ave.)	8.55	8.00	9.50	19.50	35.00
2 ea. standard manholes, 9-ft. depth	400	268	250	480	400
Lump sum track support for S. D. A. & E. crossing at 6th St.	4,500	1,500	3,800	1,000	2,000
Lump sum track support for A. T. & S. F. crossing at 6th St.	4,500	3,000	3,800	1,200	2,000
Lump sum track support for A. T. & S. F. spur near Vesta St.	4,500	2,000	2,800	1,200	1,500
Lump sum furnish and erect field office, complete	650	1,000	500	1,500	500
2 ea. furnish and erect project signs	250	50	50	75	100

Water Supply . . .

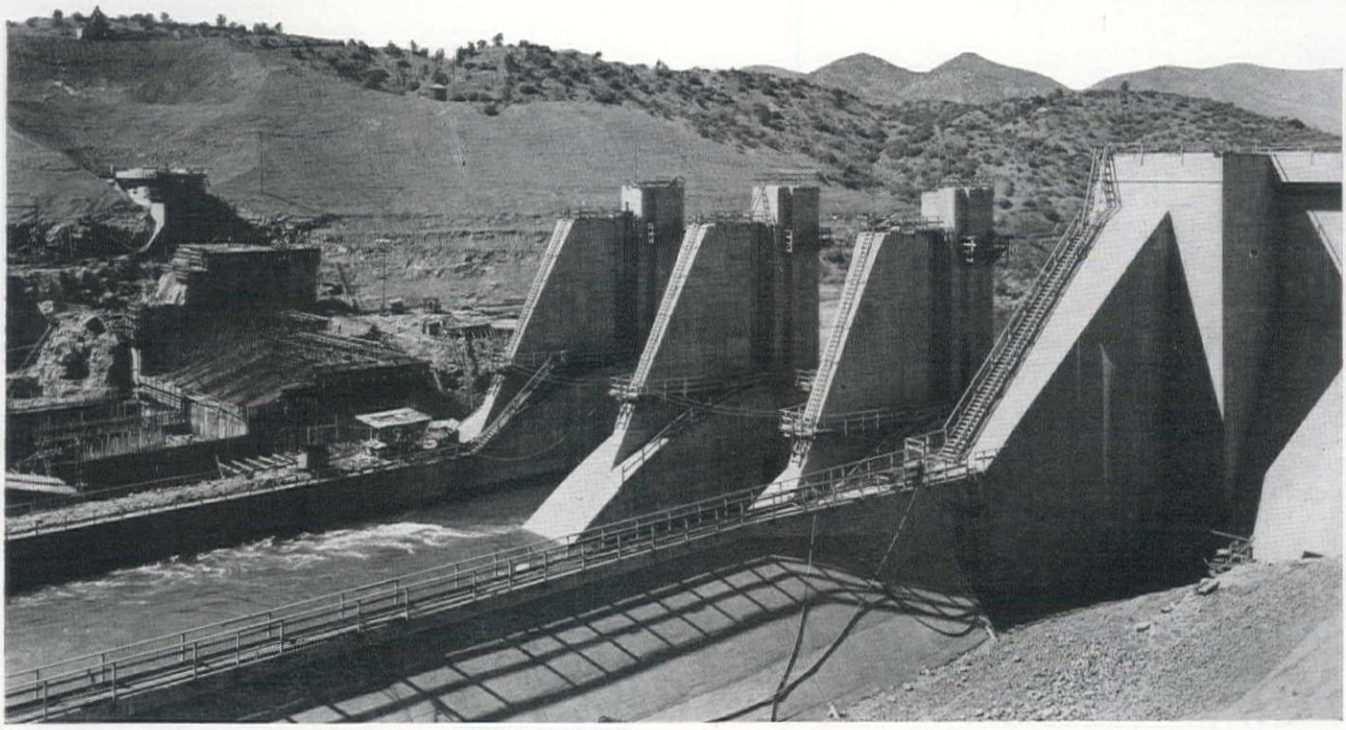
California—Los Angeles County—District—Feeder Lines

American Pipe & Construction Co., Los Angeles, bidding a total of $798,033 on two schedules, was low to the Metropolitan Water District of Southern California, Los Angeles, and was awarded the contract for the following work: On Schedule 42R, about 10.1 mi. of 36-in. steel pipe line underground, and 0.8 mi. of the same pipe in tunnel, together with all appurtenances, comprising a part of the City of Pasadena's main line from Morris Dam in San Gabriel Canyon, are to be removed; and on Schedule 42S, about 12.6 mi. of pipe line, using mostly the pipe salvaged in the preceding schedule, and a regulating reservoir of 15 ac. ft. capacity, are to be built. This line will extend from the end of the existing Orange County feeder in Santa Ana, to the city of Newport Beach, which recently voted to affiliate with the District. The bids submitted were as follows:

	Sched. 42R	Sched. 42S	Total
(1) American Pipe & Construction Co.	$296,819	$501,214	$798,033
(2) Pacific Pipeline Construction Co.	306,165	591,180	897,345
(3) United Concrete Pipe Corp.	323,545	669,281	992,826
(4) Macco-Robertson Co. and Artukovich Bros.	449,144	818,215	1,267,359
(5) Morrison-Knudsen Co., Inc.	348,325	941,605	1,289,930

	SCHEDULE 42R—Removal of Pasadena Pipe Line	(1)	(2)	(3)	(4)	(5)
64,000	cu. yd. trench excavation for pipe removal	$ 1.97	$ 1.50	$ 2.00	$ 2.00	$ 2.00
340	cu. yd. structure excavation	4.90	3.00	3.00	4.00	2.50
79,000	cu. yd. backfill	.80	.75	.40	1.00	.80
22,100	lin. ft. removing 36x$\frac{5}{16}$-in. steel pipe from trench	.72	1.75	1.95	2.67	1.75
30,600	lin. ft. removing 36x¼-in. steel pipe from trench	.98	1.65	2.00	2.67	1.70
4,200	lin. ft. removing 36x¼-in. steel pipe from tunnel	1.89	4.50	2.00	5.00	3.40
600	lin. ft. removing 36-in. shop-fabricated bends from trench	5.09	4.00	1.20	10.00	3.30
250	cuts Circumferential cuts of 36-in. steel pipe—sections shorter than 30 ft.	7.00	5.00	6.00	6.00	9.00
30,000	lbs. removing appurtenant piping, fittings, and valves	.07	.10	.07	.05	.14
150	tons removing concrete vaults	17.50	8.00	10.00	10.00	14.00
2,200	sections facing ends of pipe sections and refitting bells	9.44	8.00	10.00	10.00	5.20
250	lin. ft. removing and replacing 8-in. sewer mains	7.00	3.00	6.00	4.00	2.50
25	lin. ft. removing and replacing 10-in. sewer mains	7.28	4.00	6.00	5.00	4.00
350	lin. ft. hemoving and replacing house connection sewers	7.00	3.00	4.00	3.00	1.50
100	cu. yds. concrete in structures	28.00	35.00	30.00	35.00	40.00
20	tons haul'g pipe & appurt. metal parts to yd. at La Verne	7.00	5.00	2.00	5.00	14.00
13,600	lin. ft. resurfacing trench in Monrovia with premix pav.	1.06	.80	1.20	3.00	1.75
	SCHEDULE 42S—Construction of the Orange County Feeder Extension					
91,000	cu. yd. trench excavation	1.50	.85	2.74	1.05	3.00
900	cu. yd. structure excavation	4.20	3.00	2.60	2.00	2.50
28,000	cu. yd. reservoir excavation	.95	1.00	.90	1.25	.60
73,000	cu. yd. backfill sluiced or flooded	.67	.50	.30	.60	.70
450	cu. yd. backfill compacted	6.35	1.00	1.50	1.00	3.00
250	tons rock refill	4.90	7.00	3.00	3.00	4.00
500	cu. yd. concrete in structures	32.90	25.00	40.00	35.00	40.00
64,600	sq. ft. concrete pavement in reservoir	.20	.20	.26	.40	.28
400	cu. yd. concrete in cradle and pipe incasement	16.80	15.00	15.00	16.00	12.00
12,000	lbs. fabricating and placing reinforcement steel	.06	.10	.08	.06	.04
120	tons erecting concrete vaults from Pasadena line	16.80	10.00	20.00	15.00	14.00
10,600	lin. ft. installing 36x$\frac{5}{16}$-in. steel pipe with field joints welded inside and outside	2.24	1.75	1.60	5.40	2.10
12,400	lin. ft. installing 36x$\frac{5}{16}$-in. steel pipe with field joints welded outide only	1.57	1.65	1.30	4.90	1.90
34,800	lin. ft. installing 36x¼-in. steel pipe with field joints welded outside only	1.63	1.65	1.30	4.90	1.70
200	lin. ft. installing 30-in. x No. 10 gauge steel pipe for reservoir spillway	2.10	3.00	.70	2.00	2.70
40	joints Circumferential field joints with double fillet weld in 36x$\frac{5}{16}$-in. steel pipe—sect's. shorter than 30 ft.	84.00	25.00	25.00	50.00	28.00
60	joints Circumferential field joints with single fillet weld in 36x$\frac{5}{16}$-in. steel pipe—sect's. shorter than 30 ft.	63.00	20.00	15.00	35.00	23.00
110	joints Circumferential field joints with single fillet weld in 36x¼-in. steel pipe—sect's. shorter than 30 ft.	63.00	20.00	15.00	35.00	19.00
20	welds Circumferential butt-welds in 36x$\frac{5}{16}$-in. steel pipe	98.00	25.00	15.00	60.00	42.00
20	welds Circumferential butt-welds in 36x¼-in. steel pipe	78.00	25.00	15.00	60.00	37.00
Lump sum	fabricating and erecting reducers for insulat'g sectn.	1,043	1,200	500.00	750.00	1,350
Lump sum	fabricating and erecting manifolds and fittings for valve structure	287.00	1,200	1,000	1,750	3,150
Lump sum	fabricating and erecting reducer for reservoir outlet valve structure	119.00	1,000	500.00	350.00	800.00
Lump sum	fabricating and erecting fittings for meter structure	84.00	1,000	400.00	100.00	420.00
500	lbs. fabricat'g and instal'g 6-in. welded fit'gs and piping	.28	.50	.20	.25	.20
800	lbs. fabricat'g and instal'g 12-in. welded fit'gs and pip'g	.28	.50	.20	.25	.20
6,500	lin. ft. installing 21-in. precast concrete pipe	.62	2.00	1.00	2.00	2.00
2,400	lin. ft. installing 12-in. precast concrete pipe	.42	2.00	.70	1.50	1.50
51	lin. ft. encasement under railway tracks	25.90	30.00	60.00	40.00	72.00
57,800	lin. ft. coating 36-in. diameter steel pipe with coal-tar and gunite	1.86	4.75	3.80	4.50	7.00
20,000	lbs. installing miscel. metalwork from Pasadena line	.11	.20	.10	.15	.20
20,000	lbs. installing miscel. metalwork furnished by District	.07	.15	.08	.10	.14
80	lin. ft. removing and replacing 6-in. sewer mains	7.00	3.00	5.00	3.00	2.00
20	lin. ft. removing and replacing 8-in. sewer mains	7.28	3.00	6.00	4.00	2.75
600	lin. ft. removing and replacing house connection sewers	7.00	3.00	4.00	3.00	1.50
50	lin. ft. remodeling house connection sewers	6.00	3.00	5.00	4.00	12.00

Post-War Plans for DAM CONSTRUCTION



ACCORDING to the latest reports from the Bureau of Reclamation, there will be a tremendous amount of dam construction in the West during the post-war period: irrigation dams, flood control dams, water supply dams and power dams—all to supply the many needs of the tremendously increased population in the West.

Wherever there is dam construction, WILLIAMS "SUPER-HIGH" TENSILE TIE RODS come in for important consideration. No job is too large—none too small to warrant WILLIAMS economy and speed in dam construction. WILLIAMS Clamps and quick service leads on multi-million dollar rush projects everywhere today. Economical Forming of Keswick Dam, California, pictured above, is but one of the many achievements of WILLIAMS FORM ENGINEERING CORPORATION.

Post-war planning will incorporate all of the proven advancements which made possible the rush war construction of the past year. If you are considering plans for dam construction, write to WILLIAMS FORM ENGINEERING CORPORATION today for complete details on WILLIAMS products.

A Good Clamp Is a Good Insurance Policy!

10 Important Advantages of WILLIAMS Tie Rods!

1. **Light weight, super-strength steel.**
2. **She-bolt clamps may be used over and over for both spacing and tieing.**
3. **Easily installed and removed, light to handle.**
4. **Will not slip, stretch or creep.**
5. **Leave no exposed ties nor rust streaks on finished surface.**
6. **Angularly adjustable for alignment.**
7. **Forms are held rigidly with a known *factor of safety*.**
8. **Time and material saved handling less steel.**
9. **The pigtail anchor rod saves steel and positively will not creep.**
10. **Pigtail anchors can be placed into concrete *after* pouring, within an hour's time, eliminating elaborate line-up and tieing before pouring. This also makes it much easier to gauge centers.**

PATENT RIGHTS

Date	Number	Date	Number
6- 1-27	1,586,991	8-14-28	1,680,923
4-24-28	1,667,253	6-11-29	1,716,872
3-29-32	1,851,339	2-11-30	1,746,570
4-24-28	1,667,252	4- 7-31	1,799,269
10- 7-29	Re. 17,452	11-10-31	1,831,153
7-21-36	2,048,151	2-20-40	2,190,748

Other Patents Pending • Also Foreign Patents

WILLIAMS FORM ENGINEERING CORP.

BOX 925 MADISON SQUARE STATION — GRAND RAPIDS, MICHIGAN

CONSTRUCTION SUMMARY

The following pages contain the most complete available tabulation of construction contracts awarded in the eleven western states during the past month. Except for certain instances, contracts amounting to less than $10,000 are not listed. Space is not available to list more than a small proportion of the proposed projects. For your convenience, all items are prepared in an identical manner to provide the following information: County of job location (capital letters); name and address of contractor (bold face); bid price; brief description of work; awarding agency; and approximate date of award. More detailed information on many of these projects is often available, and will gladly be furnished upon your request to the Editor, WESTERN CONSTRUCTION NEWS, 503 Market Street, San Francisco.

Large Western Projects...

CONTRACTS AWARDED

Northwestern Engineering Co., Rapid City, S. Dak., was awarded the contract at $265,247 by the Colorado State Highway Dept., Denver, for 1.8 mi. of 4-lane access highway between the Denver city limits and the Denver ordnance plant.

Carl E. Nelson, Logan, Utah, at $320,407, received the contract to grade and plantmix surf. 11.1 mi. of highway betw. Knolls and Wendover, from the Utah State Road Commission.

The Austin Co., Seattle, Wash., at $1,500,000, was awarded the contract for completion of an airport at North Bend, Ore., by the Bureau of Yards and Docks, Washington, D. C.

E. C. Hall, Eugene, and **J. C. Compton,** McMinnville, at $290,785, secured the contract to construct a flight strip in Morrow Co., Oregon, from the Oregon State Highway Commission.

Minnis & Moody, Los Angeles; **Johnson, Inc.,** Alhambra; and **Vista Construction & Financing Co.,** San Bernardino, California, was awarded the contract at $2,418,744 (Schedule I) to construct the Seattle-Tacoma Airport at Bow Lake, Wash., by the Civil Aeronautics Administration, Seattle.

F. R. Hewett, Spokane, $337,049, for a flight strip and access road in Okanogan Co., Wash., by Director of Highways, Olympia.

American Pipe & Construction Co., South Gate, Calif., with proposals of $296,819 and $501,214, respectively, was awarded a contract for removal of pipe and appurtenances from a City of Pasadena pipe line, and the construction of the new Orange Co. feeder extension to the Colorado River aqueduct, by the Metropolitan Water District, Los Angeles.

Vincent Jones, Denver, Colo., received two contracts from the Federal Housing Authority, Salt Lake City, Utah: $143,000 for a water distribution system at the new townsite of Drager, Utah, and another at $178,000 for a sewer system at the same place.

Gorelnik Co., Los Angeles, Calif., between $500,000 and $1,000,000 for bldgs. and utilities at an operating base in Yuma Co., Ariz., by U. S. Engineer Office, Los Angeles.

G. W. Williams Co., Burlingame, Calif., at $1,310,475, was awarded the contract to construct 800 war apartment units at Richmond, Calif., by the Richmond Housing Authorilty.

Guy F. Atkinson Co., and **George Pollock Co.,** San Francisco, were jointly awarded a contract at $14,131,008 to construct a fleet operating base at San Pedro, Calif., by the Bureau of Yards and Docks, Washington, D. C.

Zoss Construction Co., Los Angeles, over $1,000,000 for housing for anti-aircraft battalions at a camp in Riverside Co., Calif., by U. S. Engineer Office, Los Angeles.

MacDonald & Kahn, Inc., San Francisco, at approx. $1,000,000, was awarded a contract to build 500 dormitory units at Hunter's Point on San Francisco Bay, by San Francisco Housing Authority.

Mead & Mount Construction Co., Denver, Colo., received three contracts: $505,000 for 190-unit housing project at La Junta, Colo., and $642,000 for a 325-unit housing project at Cheyenne, Wyo., from the Federal Housing Authority, Kansas City, Mo.; and over $100,000 for a theatre in Denver Co., Colo., from the U. S. Engineer Office, Denver.

Haddock Construction Co., Pasadena, Calif., over $1,000,000 for

Next to the Stars and Stripes . . .

AS PROUD A FLAG AS INDUSTRY CAN FLY

Signifying 90 Percent or More Employee Participation in the Pay-Roll Savings Plan

IT doesn't go into the smoke of battle, but wherever you see this flag you know that it spells Victory for our boys on the fighting fronts. To everyone, it means that the firm which flies it has attained 90 percent or more employee participation in the Pay-Roll Savings Plan . . . that their employees are turning a part of their earnings into tanks and planes and guns *regularly,* every pay day, through the systematic purchase of U. S. War Bonds.

You don't need to be engaged in war production activity to fly this flag. Any patriotic firm can qualify and make a vital contribution to Victory by making the Pay-Roll Savings Plan available to its employees, and by securing 90 percent or more employee participation. Then notify your State Defense Savings Staff Administrator that you have reached the goal. He will tell you how you may obtain your flag.

If your firm has already installed the Pay-Roll Savings Plan, now is the time to increase your efforts: (1) To secure wider participation and reach the 90-percent goal; (2) to encourage employees to increase their allotments until 10 percent or more of your gross pay roll is subscribed for Bonds. "Token" allotments will not win this war any more than "token" resistance will keep our enemies from our shores, our homes. If your firm has yet to install the Plan, remember, TIME IS SHORT.

Write or wire for full facts and literature on installing your Pay-Roll Savings Plan now. Address Treasury Department, Section D, 709 12th St., NW., Washington, D. C.

Make Every Pay Day "Bond Day"

U. S. WAR Bonds ★ Stamps

WESTERN CONSTRUCTION NEWS — 503 Market Street, San Francisco

The Following is a List of Leading Companies Who Have Advertised in WCN During the Past 6 Months

Adams, J. D., Company
Air Reduction Sales Company
Allis-Chalmers Manufacturing Co.
Alloy Steel & Metals Company
American Chain & Cable Company
Athey Truss Wheel Company
Atlas Powder Company
Austin Western Road Machinery Co.
Automatic Nut Company, Inc.
Baker Manufacturing Company
Barber-Greene Company
Beall Pipe & Tank Company
Beebe Bros., Incorporated
Bethlehem Steel Company
Betts Spring Company
Broderick & Bascom Rope Company
Buckeye Traction Ditcher Company
Bucyrus-Erie Company
Buda Company
Buffalo-Springfield Roller Company
Bullard, E. D., Company
Byers Machine Company
Calaveras Cement Company
California Corrugated Culvert Co.
Caterpillar Tractor Company
Chain Belt Company
Chapman Valve Manufacturing Co.
Chevrolet Motor Division, GMSC.
Chicago Bridge & Iron Company
Chicago Pneumatic Tool Company
Cleveland Rock Drill Company
Cleveland Trencher Company
Concrete Surfacing Machinery Co.
Concrete Transport Mixer Company
Crocker First National Bank
Cummins Engine Company
Diamond Iron Works, Incorporated
du Pont de Nemours, E. I., & Co.
Electric Tamper & Equipment Co.
Euclid Road Machinery Company
Fir-Tex Insulating Board Company
Fiske Bros., Refining Company
Foote Company
Four Wheel Drive Auto Company
Freuhauf Trailer Company
Galion Iron Works & Mfg. Company
Gardner-Denver Company
Garlinghouse Bros.
Gatke Corporation
General Electric Company
Goodall Rubber Company
Goodyear Tire & Rubber Company
Gorman-Rupp Company
Gray Company
Gruendler Crusher & Pulverizer Co.
H. & L. Company
Harnischfeger Corporation
Harrison, R. L., Company
Heil Company, The
Hercules Equipment & Rubber Co.
Hercules Powder Company
Hercules Steel Products Company
Howe-Simpson, Inc.
Independent Pneumatic Tool Co.
Ingersoll-Rand Company
Ingersoll Steel & Disc Div., Borg-Warner Corporation
International Harvester Company
Jaeger Machine Company
Johns-Manville Corporation
Johnson Gear & Manufacturing Co.
Kay-Brunner Steel Products Co.
Keisler, Joseph F., Company
Koehring Company
Leschen, A., & Sons Company
LeTourneau, R. G., Company
Lidgerwood Manufacturing Co.
Lima Locomotive Works
Lincoln Electric Company
Linde-Air Products Company
Link-Belt Speeder Corporation
McDonald, B. F., Company
Mack Manufacturing Company
Macmillan Petroleum Company
Macwhyte Company
Mall Tool Company
Marion Steam Shovel Company
Marmon-Herrington Company
Master Vibrator Company
Metzgar Company
Michigan Power Shovel Company
Mine Safety Appliances Company
Mines Engineering & Equipment Co.
Missouri Valley Bridge & Iron Shipbuilding Corporation
Northwest Engineering Company
Novo Engine Company
Owen Bucket Company
Pacific Portland Cement Company
Page Engineering Company
Parsons Company
Pelton Water Wheel Company
Pioneer Engineering Works, Inc.
Pioneer Rubber Mills
Pittsburgh-Des Moines Steel Co.
Pleasantville Constructors, Inc.
Porter, S. J., Company
Portland Cement Association
Ransome Concrete Machinery Co.
Raymond Concrete Pile Company
Richmond Screw Anchor Company
Roebling's John A., Sons Company
Sasgen Derrick Company
Seaman Motors Company
Security-First National Bank
Servicised Products Company
Shell Oil Company
Simplicity Engineering Company
Sisalkraft Company
Skilsaw, Inc.
Smith Engineering Works
Smith, T. L., Company
Standard Oil Co. of California
Sterling Machinery Company
Stewart-Warner Corporation
Stoody Company
Texas Company, The
Thew Shovel Company
Timber Engineering Company
Timken Roller Bearing Company
Union Iron Works, Inc.
Union Metal Manufacturing Co.
Union Oil Company
Union Wire Rope Corporation
U. S. Pipe & Foundry
U. S. Spring & Bumper Company
U. S. Steel Corporation
Universal Crusher Company
Vagabond Coach Manufacturing Co.
Victor Equipment Company
Western Machinery Company
White Motor Company
Wickwire Spencer Steel Company
Willamette-Hyster Company
Wood Manufacturing Company
Wooldridge Company
Worthington Pump & Machinery Co.

144 SMART COMPANIES PROVE THAT IT'S SOUND BUSINESS TO ADVERTISE NOW

- Sure, the majority of the advertisers listed above have a business story that reads: "We're oversold . . . can't fill present orders . . . priorities have cut manufacturing, etc., etc." But they still have the foresight and good business sense to tell a *sound advertising* story!
- What is a *sound advertising* story? Just read through the ads of the leaders in the construction business—they'll tell you: "How to get the most out of present equipment . . . how to protect it and operate it with maximum efficiency . . . how to save time and speed production . . . job short-cuts . . . safety hints . . . replacements, etc."
- All this constitutes a *sound advertising* story—the kind of advertising that will continue to build identity for your company among the thousands of new buying influences coming into the market today! Rush war construction needs this information. The 144 smart companies above are giving it—and they're the ones who will have the big jump on the market when the war boom is over!
- Tell your story in the magazine where it will receive the most attention. Tell it in WESTERN CONSTRUCTION NEWS—it covers *all the West!*

WESTERN CONSTRUCTION NEWS

503 Market Street **San Francisco, California**

bldgs., utilities, and a hospital in Nye Co., Nev., by U. S. Engineer Office, Sacramento, Calif.

W. C. Smith and **L. H. Hoffman,** both of Portland, Ore., and **Howard S. Wright Co.,** Seattle, Wash., jointly, were awarded a $4,000,000 contract to build a 9,000-man cantonment at Bend, Ore., by U. S. Engineer Office, Portland.

Moore & Roberts, San Francisco, Calif., $2,499,777, for 500 temp. dwellings, 200 dormitory accommodations for men, and 600 war apartments at Seattle, Wash., by King Co. Housing Authority, Seattle.

Austin Co., Los Angeles, Calif., over $500,000 for protective concealment at an aircraft mfg. plant, by U. S. Engineer Office, Los Angeles.

Highway and Street . . .

CONTRACTS AWARDED

California

KERN CO. — **Bonadiman-McCain, Inc.,** 1709 W. 8th St., Los Angeles—less than $50,000 for access roads and grading at a bombing range—by U. S. Engineer Office, Los Angeles. 12-5

LOS ANGELES CO.—**Ansco Construction Co.,** 2725 Atlantic Blvd., Long Beach—less than $50,000, for street improvements at a sub-depot and an air corps ferrying command base—by U. S. Engineer Office, Los Angeles. 12-15

LOS ANGELES CO.—**Goode & Schroeder,** 3033 Treadwell St., Los Angeles—less than $50,000, for roadway and walks—by U. S. Engineer Office, Los Angeles. 12-22

LOS ANGELES CO.—**Claude L. Murphy,** 1046 S. Olive St., Los Angeles—less than $50,000, for base for service roads—by U. S. Engineer Office, Los Angeles. 12-15

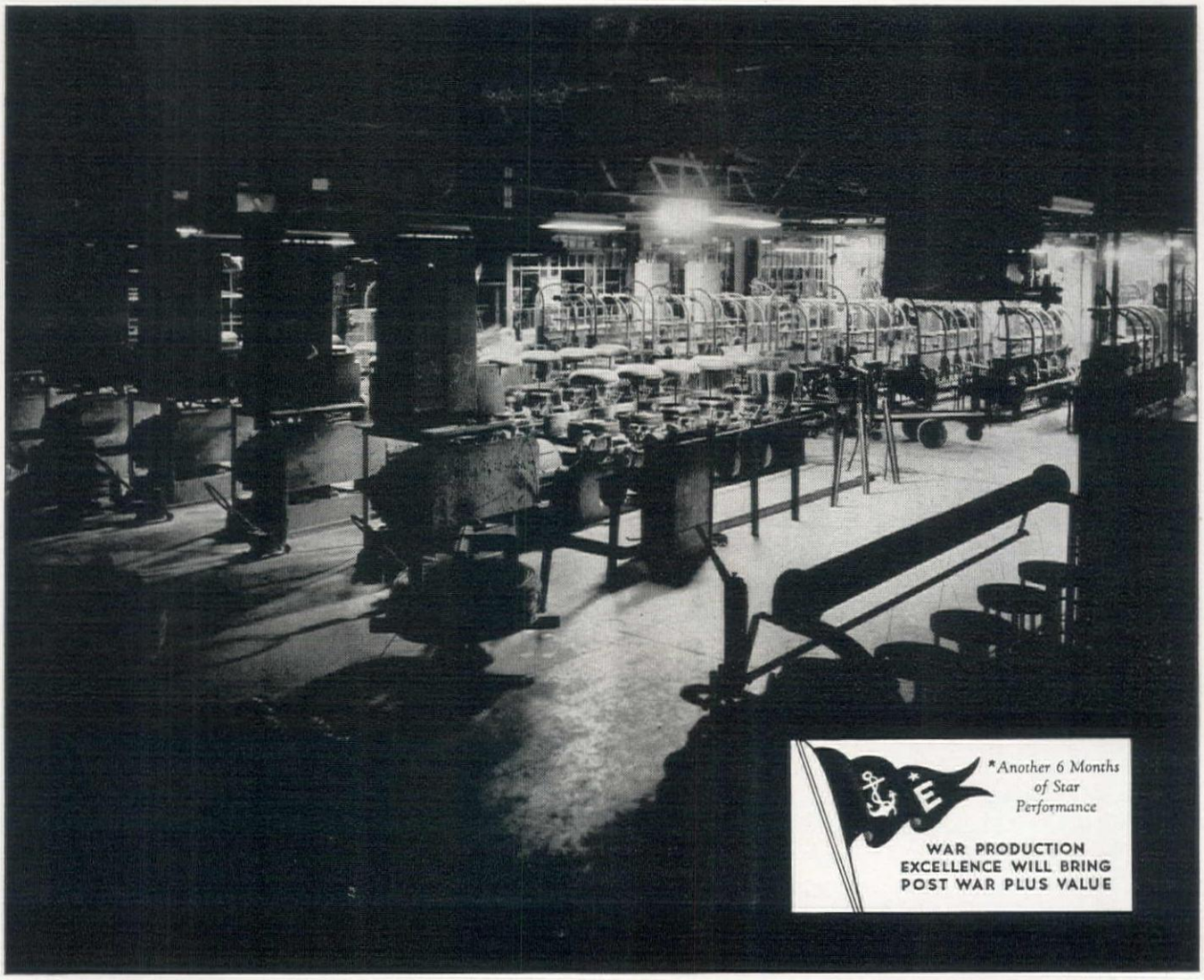
LOS ANGELES CO.—**T. E. Sherlock,** 1103 W. 40th Pl., Los Angeles—$48,833 for widening Unit 4 of Victory Blvd. in Burbank—by City Council, Burbank. 12-28

LOS ANGELES CO.—**C. O. Sparks** and **Mundo Engineering Co.,** 1601 S. Soto St., Los Angeles—less than $50,000 for service roads—by U. S. Engineer Office, Los Angeles. 12-24

RIVERSIDE CO.—**Calowell Construction Co.,** 1835 E. Wardlow Road, Long Beach—over $100,000, for asph. conc. roads and parking area at a camp—by U. S. Engineer Office, Riverside. 12-1

SAN BERNARDINO CO. — **Haddock Construction Co.,** 3578 E. Foothill Blvd., Pasadena—less than $50,000 for street improvements—by U. S. Engineer Office, Los Angeles. 12-10

SAN BERNARDINO CO.—**O'Neal & Hedberg,** 852 S. Robertson Blvd., Los Angeles—less than $50,000, for roads and grading at a hospital area—by U. S. Engineer Office, San Bernardino. 12-17



PULLING WIRES FOR PEACE!

Mile after mile of wires are being processed to speed the war effort and to hasten peace.

Day and night, the finest of steel passes through scientifically-controlled patenting furnaces, steaming vats that clean and coat, and baking ovens that dry and degasify. With unrivalled skill, through dies of jewel-like precision, it is drawn down to wire.

With scarcely a pause, spools of it in great numbers are cradled in the awesome whirr of robot-like stranding and laying machines. There, just as steadily as they were drawn down, wires are laid up again, first into strands and then into rope. In each process, strength is gained to supply tough, flexing sinews for machines which multiply and quicken man's capacity ten thousandfold.

As never before, with ever-increasing skill, our craftsmen are producing tough steel tendons for fighting machines. Before there can be war machines, however, ores, oil, coal and stone must be mined. Steel and metals must be made, lumber logged, war plants constructed and fitted. Then there must be highways, seaports and airports hewn out of the earth around the globe.

Think! Try to imagine what a limitless, hopeless, man-killing job it would be without modern wire rope to do the digging, shoveling, hoisting and countless other burdensome tasks. Then resolve to use your wire rope with great care.

UNION WIRE ROPE CORPORATION
2146 Manchester Ave., KANSAS CITY, MO.
Tulsa • Houston • Chicago • Salt Lake City • New Orleans Monahans • Portland Ashland, Ky. • Atlanta

C-43

SEND FOR ROPE DOPE • Tells how to make wire rope last longer—how to handle and install it—how to socket or splice—and a wealth of other helpful information. Engineering information supplied without obligation.

WHEN YOU NEED PREFORMED WIRE ROPE
SPECIFY **union-formed**

union *Wire Rope*

"THE ULTIMATE LOW COST WIRE ROPE"

SAN BERNARDINO CO.—**Tomei Construction Co.,** 4737 Orion St., Van Nuys—less than $50,000, for access roads at an ammunition back-up storage depot—by U. S. Engineer Office, San Bernardino. 12-3

SAN DIEGO CO.—**V. R. Dennis Construction Co.,** Box F, Hillcrest Sta., San Diego—less than $50,000 for access roads—by U. S. Engineer Office, Los Angeles. 12-16

SAN JOAQUIN CO.—**Louis Biasotti & Son,** Box 587, Stockton—$21,590, for 1 mi. grade and bitum. surf. treatment on Chrisman Rd. betw. Kellogg Rd. and Ludwig Rd.—by California Division of Highways, Sacramento. 12-7

SANTA BARBARA & VENTURA COS.—**Dinsmore & McCoy,** 909 Carpenteria St., Santa Barbara—less than $50,000, for access roads—by U. S. Engineer Office, Santa Maria. 12-14

UNANNOUNCED CO.—**Case Construction Co.,** Box 6, San Pedro—over $100,000, for realigning, grading and surf. 7.5 mi. road and const. reinf. conc. underground shelters and troop barracks on an island off southern California—by U. S. Engineer Office, Los Angeles.

Colorado

DENVER CO.—**Lowdermilk Brothers,** 140 S. Elati St., Denver—$109,920, for extending Havana St., 2.1 mi. and widening 1.2 mi. of Route 72 from San Creek Bridge to Havana St.—by State Highway Department, Denver. 12-7

DENVER CO.—**Northwestern Engineering Co.,** Rapid City, South Dakota—$265,247, for 1.8 mi. of four-lane military access hwy. betw. the Denver city limits and the Denver ordnance plant—by State Highway Department, Denver. 12-12

LAS ANIMAS CO.—**Warrington Construction Co.,** Cheyenne, Wyo.—less than $50,000, for roads—by U. S. Engineer Office, Denver. 12-16

Idaho

BOISE & CANYON COS.—**Tony Marrazzo,** Box 876, Boise—$29,050, for stockpiling cr. gravel and cover coat matl. near Horseshoe Bend, Notus & Roswell—by Commissioner of Public Works, Boise. 12-18

PAYETTE & WASHINGTON COS.—**Hoops Construction Co.,** Twin Falls—$42,675, for stockpiling cr. gravel and cover coat matl. betw. Payette and Midvale on the Old Oregon Trail—by Commissioner of Public Works, Boise. 12-18

Oregon

HARNEY CO.—**Oscar E. Joelson,** Eugene—$23,500 for 7,000 cu. yd. of crushed rock in stockpiles at the Buchanan rock production project—by State Highway Commission, Portland. 12-28

JACKSON CO.—**Tru-Mix Concrete Co.,** McAndrews Rd., Medford—$133,416, for 8.3 mi. grade and surf. on Evans Creek-Sams Valley access road—by State Highway Commission, Portland. 12-28

JACKSON CO.—**Tru-Mix Concrete Co.,** McAndrews Rd., Medford—$49,025, for 2.7 mi. grade, surf. and oil, and a 57-ft. timber trestle on Tolo-Camp White access road—by State Highway Commission, Portland. 12-28

UMATILLA CO.—**O. C. Slocum,** McMinnville—$71,115, for 23,900 cu. yd. of cr. rock in stockpiles, Nye Junction-Grant County line section of Pendleton-John Day Hwy.—by State Highway Commission, Portland. 12-28

Utah

TOOELE CO.—**Carl E. Nelson,** Box 397, Logan—$320,407, for 11.1 mi. grading and plantmix surf. betw. Knolls and Wendover—by State Road Commission, Salt Lake City. 12-14

Washington

KING CO.—**Associated Sand & Gravel Co.,** 3124 Paine St., Everett—less than $50,000, for an access road—by U. S. Engineer Office, Seattle. 12-21

PROPOSED PROJECTS

Idaho

KOOTENAI CO.—The Commissioner of Public Works, Boise, received no bids for crushed gravel surf. on 7.8 mi. of the road betw. Spirit Lake and Athol. 12-1

Bridge & Grade Separation...

CONTRACTS AWARDED

Arizona

MOHAVE CO.—**A. T. & S. F. Ry. Co.,** 560 S. Main St., Los Angeles, Calif.—less than $50,000, for extending trestle at a flexible gunnery school—by U. S. Engineer Office, Los Angeles, Calif. 12-21

Montana

STILLWATER CO.—**Walter Mackin,** Billings—$25,954, for untreated timber bridge across the Yellowstone River near Columbus—by State Highway Commission, Helena. 12-23

PROPOSED PROJECTS

California

SAN FRANCISCO CO.—Dept. of Public Works, San Francisco, rejected all bids received for new timber deck, painting steel work, and traffic control on the 3rd St. bridge. (Award had been granted to Eaton & Smith, San Francisco.) 12-23

Airport . . .

CONTRACTS AWARDED

Arizona

COCHISE CO.—**Walter L. Denison,** Albuquerque, New Mexico—over $50,000, for oil surf. and dust palliative treatment at an airfield—by U. S. Engineer Office, Albuquerque, New Mexico. 12-29

MOHAVE CO.—**Morrison-Knudsen Co.,** and **M. H. Hasler,** 810 Title Guarantee Bldg., Los Angeles—less than $50,000, for taxiways at a flexible gunnery school—by U. S. Engineer Office, Los Angeles, Calif. 12-21

YUMA CO.—**Silver State Construction Co.,** Fallon, Nevada; and **Nathan A. Moore,** 2455 Sherwood Rd., San Marino, Calif.—over $100,000, for landing field and roads at an operating base—by U. S. Engineer Office, Los Angeles, Calif. 12-16

VARIOUS COS.—**R. A. Stokes Co.,** Corpus Christi, Texas—over $50,000, for airfield markings at airfields in Arizona and Texas—by U. S. Engineer Office, Albuquerque, New Mexico. 12-15

California

INYO CO.—**Basich Bros.,** 20530 Normandie Ave., Torrance—over $50,000, for paving NW-SE landing strip at an airport—by U. S. Engineer Office, Los Angeles. 12-1

KERN CO.—**Dodge Construction Co.,** Fallon, Nevada—over $100,000, for a landing field at an airport—by U. S. Engineer Office, Los Angeles. 12-11

VENTURA CO.—**Frank West** and **H. C. Sommers,** 2401 Beverly Blvd., Los Angeles—over $100,000, for taxiways and hardstandings for army air force flight strip—by U. S. Engineer Office, Los Angeles. 12-2

Idaho

ELMORE CO.—**J. A. Terteling & Sons,** 2223 Fairview Ave., Boise—for grading at the site of a new army airbase near Mountain Home—by U. S. Engineer Office, Portland, Ore. 12-11

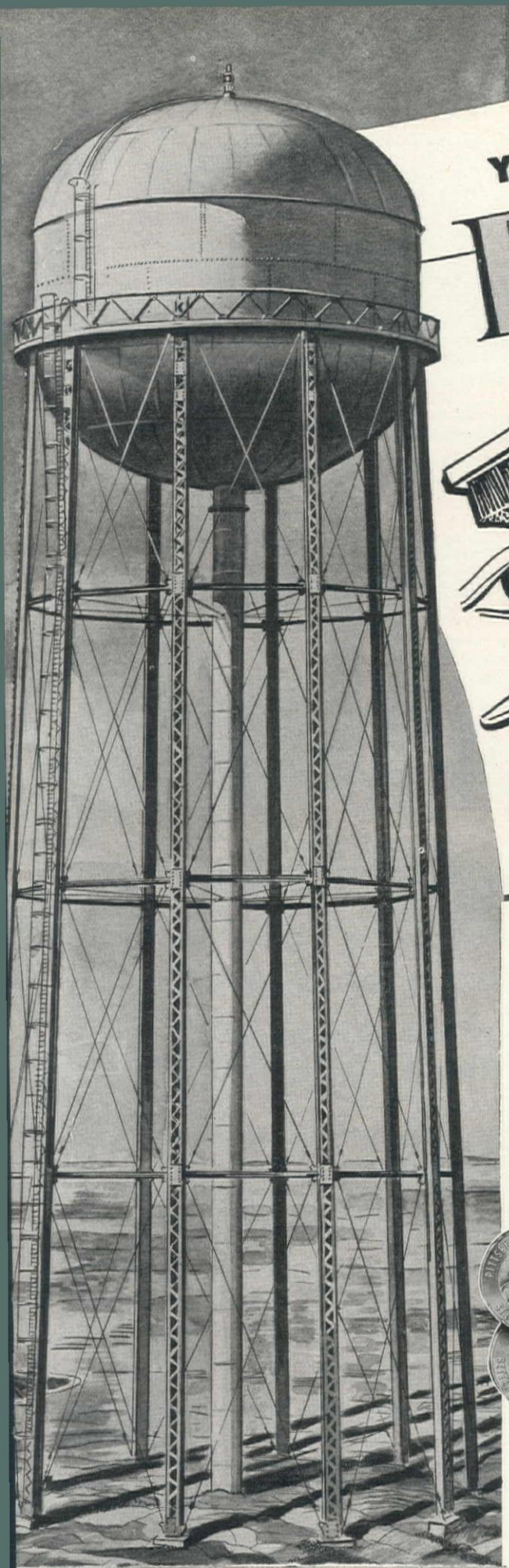
New Mexico

VARIOUS COS.—**Couch & Philippi,** 215 San Fernando Rd., Los Angeles, Calif.—over $50,000, for airfield markings—by U. S. Engineer Office, Albuquerque. 12-15

Oregon

COOS CO.—**The Austin Co.,** Dexter Horton Bldg., Seattle, Wash.—$1,500,000 for completion of airport at North Bend—by Bureau of Yards & Docks, Washington, D. C. 12-14

MORROW CO.—**E. C. Hall,** First National Bank Bldg., Eugene, and **J. C. Compton,** McMinnville—$290,785, for flight strip—by State Highway Commission, Portland. 12-28



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PITTSBURGH, 3420 NEVILLE ISLAND . . . . . NEW YORK, ROOM 919, 270 BROADWAY

Texas

LUBBOCK CO.—**A. O. Peabody,** Santa Fe, New Mexico—over $100,000, for flying field facilities at an airfield—by U. S. Engineer Office, Albuquerque, New Mexico. 12-7

Washington

KING & PIERCE COS.—**Minnis & Moody,** 1116 N. Mansfield Ave., Los Angeles; **Johnson, Inc.,** Box 387, Alhambra, and **Vista Construction & Financing Co.,** San Bernardino, Calif.—$2,418,744, for the Seattle-Tacoma Airport at Bow Lake — by Civil Aeronautics Administration, Seattle. 12-21

OKANOGAN CO.—**F. R. Hewett,** 420 W. 22nd St., Spokane—$337,049, for a flight strip and access road—by Director of Highways, Olympia. 12-14

PIERCE CO.—**Washington Asphalt Co.,** 309 W. 39th St., Seattle—over $50,000, for paving at a military site—by U. S. Engineer Office, Seattle. 12-18

THURSTON CO.—**C. H. Wheeler,** 612 Pittock Block, Portland, Ore.—over $100,000 for grading and surf. at an airport—by U. S. Engineer Office, Seattle. 12-10

WHATCOM CO.—**A. W. Stevens,** 711 2nd St., Mt. Vernon—over $100,000 for grade and surf. at a military site—by U. S. Engineer Office, Seattle. 12-9

Wyoming

NATRONA CO.—**Peter Kiewit Sons' Co.,** 1024 Omaha National Bank Bldg., Omaha, Nebr.—over $1,000,000 for extensions to runways and taxiways—by U. S. Engineer Office, Omaha, Nebr. 12-16

PROPOSED PROJECTS

Idaho

ELMORE CO.—The War Department, Washington, D. C., announced authorization of air force instal. 10 mi. south of Mountain Home, to cost over $5,000,000. 12-2

Water Supply . . .

CONTRACTS AWARDED

Arizona

MARICOPA CO.—**Midland Construction Co.,** 8677 Otis St., South Gate, Calif.—less than $50,000, for water line to sewage disposal plant at an airfield—by U. S. Engineer Office, Phoenix. 12-22

YUMA CO.—**Fritz Ziebarth,** 820 W. Esther St., Long Beach, Calif.—less than $50,000, for pumping plant and automatic control system at a reception center—by U. S. Engineer Office, Los Angeles, Calif. 12-17

California

KINGS CO.—**Western Well Drilling Co., Ltd.,** 522 W. Santa Clara St., San Jose—less than $50,000, for drilling, casing and developing a water well—by U. S. Engineer Office, Sacramento. (Shown in December issue as "unannounced Co.") 12-9

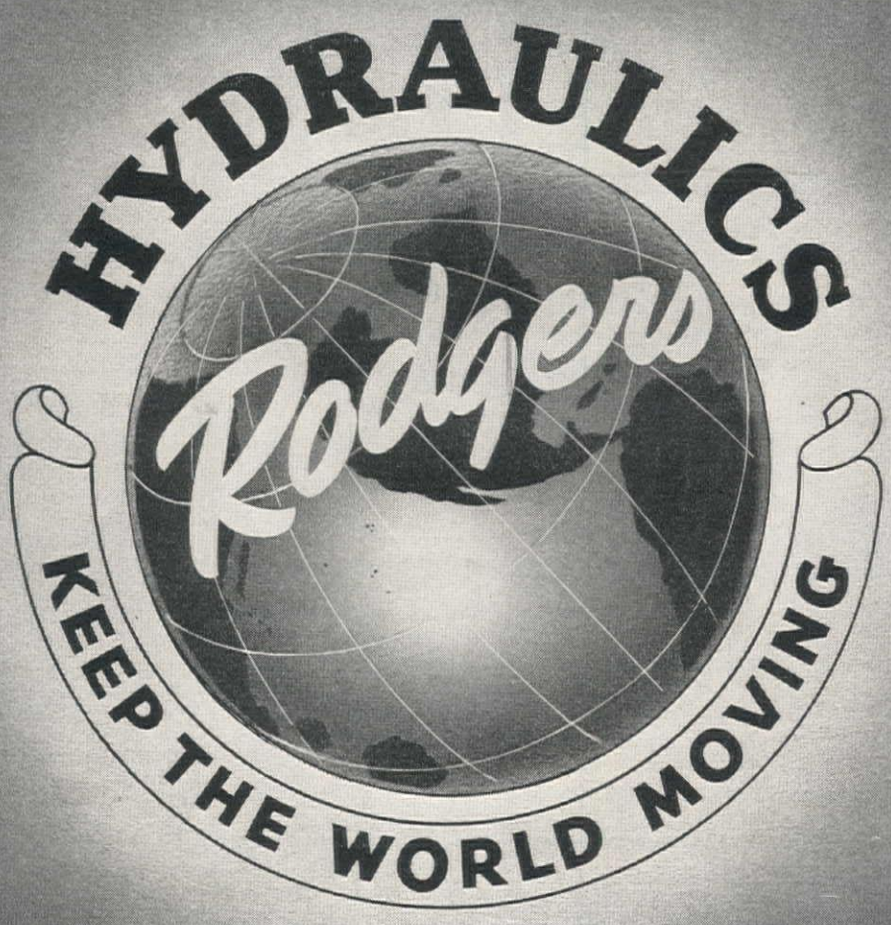
LOS ANGELES CO.—**Edward Green,** 3001 Coolidge Ave., Los Angeles—less than $50,000 for water connections and sewage collection system—by U. S. Engineer Office, Los Angeles. 12-18

LOS ANGELES & ORANGE COS.—**American Pipe & Construction Co.,** 4635 Firestone Blvd., South Gate—(1) $296,819, and (2) $501,214, for removal of pipe and appurt. from the Pasadena pipe line and for Orange Co. feeder extension to the Colorado River Aqueduct distribution system—by Metropolitan Water District, Los Angeles. 12-1

STANISLAUS CO.—**Pacific Pipe Line Construction Co.,** Avenal—less than $50,000, for const. and completion of water and sewer systems and appurt. facil.—by U. S. Engineer Office, Sacramento. 12-17

Nevada

CLARK CO.—**Fritz Ziebarth,** 820 W. Esther St., Long Beach, Calif.—less than $50,000, for adds. to water supply system at an air force flexible gunnery school—by U. S. Engineer Office, Los Angeles, Calif. 12-2



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Oregon

BENTON CO.—**Ertz, Burns & Co., Lorenz Bros., D. M. Drake** and **Parker-Schram,** Couch Bldg., Portland—$12,000 (approx.), for a water system at a military site—by U. S. Engineer Office, Portland. 12-14

Texas

CORYELL CO.—**Layne Texas Co. Ltd.,** Houston—over $100,000, for water wells and well houses—by U. S. Engineer Office, San Antonio. 12-17

Utah

CARBON CO.—**Vincent Jones,** Denver, Colo.—$143,000 for a water distribution system at the new townsite of Drager—by Housing Authority, Salt Lake City. 12-1

WEBER CO.—**MacIsaac & Menke, Inc.,** 3445 Union Pacific Ave., and **Pozzo Construction Co.,** 2403 Riverside Dr., both Los Angeles, Calif.—over $50,000 for a water system—by U. S. Engineer Office, Salt Lake City. 12-1

Washington

KING CO.—**Patterson Drilling Co.,** Rt. 7, Box 543, Seattle—less than $50,000, for drilling a well—by U. S. Engineer Office, Seattle. 12-21

PIERCE CO.—**Neukirch Bros.,** 745 Bellevue Ave. North, Seattle—$24,254, for reservoir and water distribution system—by Town Council, Milton. 12-14

PIERCE CO.—**Valley Construction Co.,** 4354 Henderson St., Seattle—over $50,000, for extensions and alterations to water system—by U. S. Engineer Office, Seattle. 12-9

SPOKANE CO.—**General Machinery Co.,** E. 500 Riverside Ave., Spokane—less than $50,000, for pumping equipment and water supply line—by U. S. Engineer Office, Seattle. 12-21

PROPOSED PROJECTS

Washington

ISLAND CO.—Presidential approval was announced for a 10-in. drilled well with necessary equipment and connecting lines to augment the water supply at Oak Harbor, to cost $22,700. 12-3

Sewerage . . .

CONTRACTS AWARDED

California

CONTRA COSTA CO.—**Elmer J. Freethy,** 1432 Kearney St., El Cerrito—$2,386, for a retaining wall and 650 ft. of 24-in. vitrified pipe at the El Cerrito Junior-Senior High School—by Union High School Board, Richmond. 12-29

LOS ANGELES CO.—**Holman & Powell Paving Co.,** 1921½ Echo Park Ave., Los Angeles—$8,000, for sanitary sewers from existing trunk in Clark Ave., to the Ryan Ave. school site and from the existing sewer in Leahy Ave. to the Eucalyptus Ave. school site—by Board of Supervisors, Los Angeles. 12-2

LOS ANGELES CO.—**Leko & Bosnyak,** 3014 Worthen Ave., Los Angeles—$1,698, for sewer in Lowry Rd.—by Board of Public Works, Los Angeles. 12-17

LOS ANGELES CO.—**V. C. K. Construction Co.,** 5629 Via Corona, Los Angeles—$5,202, for sanitary sewer system in Lynwood—by Federal Works Agency, Los Angeles. 12-21

LOS ANGELES CO.—**Werner & Webb,** 1116 N. Mansfield Ave., Los Angeles—$54,417, for fourth section of Lockheed storm drain, Burbank—by Defense Public Works, Los Angeles. 12-7

LOS ANGELES CO.—**C. G. Wopschall,** 35 N. Arroyo Parkway, Pasadena—$33,000 (approx.), for a sewage treatment plant in Lancaster—by Defense Plant Corp., Los Angeles. 12-2

MONTEREY CO.—**Anderson-Dougherty-Hargis Co.,** 225 Main St., Salinas—$5,517, for 1,800 lin. ft. of 8-in. sewer line in Salinas—by Salinas Community Hospital Association. 12-7

Oregon

MULTNOMAH CO.—**Lord & Loryea,** 4507 SE Milwaukie, Portland—$12,000 (approx.), for outfall sewers at a military site—by U. S. Engineer Office, Portland. 12-14

THESE THREE SABOTEURS *failed!*

"We are sending you under separate cover, one eight pound hammer head and two picks which passed through our Secondary Crusher on Sept. 18, 1942, without apparently doing any damage.

This is such a remarkable demonstration of the power and efficiency of your 48" TELSMITH Gyrasphere Secondary Crusher, that we feel you should have these specimens as proof of the statement. This machine at the time was set for one-half inch discharge, which makes the demonstration more remarkable.

We get a large percentage of tramp iron * * * In the past this was a source of grave trouble but since installing your machine tramp iron doesn't bother us."

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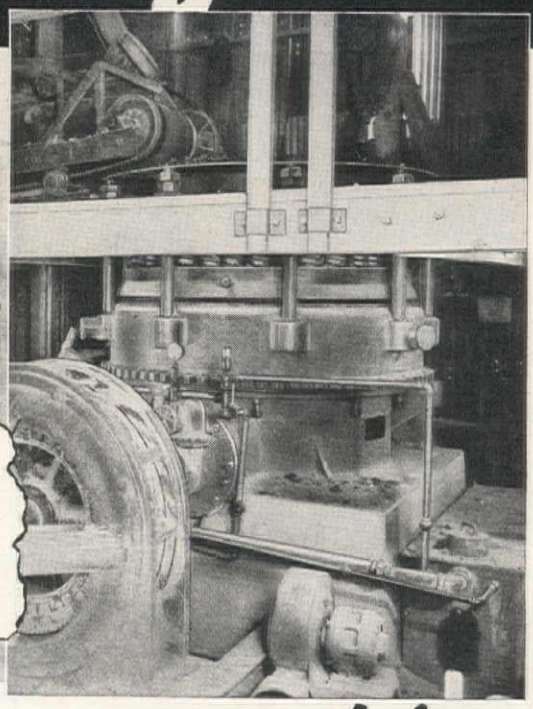

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A silent, skulking saboteur—Tramp Iron constantly menaces your production. Get the insurance against shut-downs of Telsmith's *spring relief*. The crusher's concave bowl is backed by heavy springs, adjustable as to compression. When tramp iron gets in, it causes undue pressure in the crushing bowl. The springs let the concave bowl *tilt* at the point of stress. The pressure is relieved. The concave resumes its normal position. Crushing goes on as usual. The same relief is afforded when crusher bowl is packed by fines. This means a greatly increased capacity in fine crushing, continuous operation and minimum upkeep. *For the whole story, get Bulletin Y-30.*

Y-3

SMITH ENGINEERING WORKS, 4010 N. HOLTON STREET, MILWAUKEE, WISCONSIN

Mines Eng. & Equip. Co.
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Mines Eng. & Equip. Co.
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Clyde Equipment Co.
Seattle, Wash.

Clyde Equipment Co.
Portland, Ore.

General Machinery Co.
Spokane, Wash.

Arnold Machinery Co.
Salt Lake City, Utah

Gordon Russell, Ltd.
Vancouver, B.C.

Utah

CARBON CO.—**Vincent Jones,** Denver, Colo.—$178,000 for a sewer system at the new townsite of Drager—by Housing Authority, Salt Lake City. 12-1

Washington

PIERCE CO.—**Paine-Gallucci,** 521 S. Grant St., Tacoma—less than $50,000 for a sanitary sewer system at a military site—by U. S. Engineer Office, Seattle. 12-16

PIERCE CO.—**Thorburn & Logozo,** 4608 - 36th Ave. S. W., Seattle—over $50,000, for sanitary sewers—by U. S. Engineer Office, Seattle. 12-14

PROPOSED PROJECTS

California

SAN DIEGO CO.—Defense Public Works, Los Angeles, rejected all bids received for sewage pumping plant with appurt. and discharge line, in National City. 12-4

Irrigation . . .

CONTRACTS AWARDED

California

STANISLAUS CO.—**McMillen & Norseen,** 427 Mill St., Turlock—$6,437, for conc. piping on the Fox-Wagoner ditch near Hughson—by Turlock Irrigation District, Turlock. 12-16

STANISLAUS CO.—**McMillen & Norseen,** 427 Mill St., Turlock—$4,740 for conc. pipe in the north branch of the Eddy ditch, near Turlock high school—by Turlock Irrigation District, Turlock. 12-4

STANISLAUS CO.—**Lloyd W. Terrell,** 221 - 9th Ave., Turlock

18,000 MONOTUBES

Driven for Large Midwestern Steel Plant

A LARGE midwestern steel company recently used 18,000 tapered Monotubes in the construction of three new projects.

In Chicago, Monotubes were chosen because of their extra strength and rigidity. Driving had to be done through a clay formation to sand and gravel, much of it in ground filled with "skulls"—and that requires piles that can "take it"!

In Youngstown, Monotubes were considered best because of a confined and congested working area. Only piles that could be easily and swiftly handled with light, mobile driving equipment would suffice—and that's one of the chief qualities of Monotubes.

In Cleveland, Monotubes were used because of unforeseen ground conditions where length variations ran as high as 100%—requiring flexibility as well as structural strength.

The experience of the engineers and contractors on these three jobs proves the Monotube features of (1) fast handling; (2) fast driving; (3) fast extension; and (4) ease of inspection.

Engineering & Design

Cleveland.. United Engineers & Constructors, Phila.; also the owner's own engineering department.
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Cleveland.. United Engineers & Constructors (also Gen. Con.) Hunkin-Conkey Construction Co. (also Gen. Con.)
Youngstown United Engineers & Constructors (also Gen. Con.)
Chicago . . . Fitzsimmons & Connell, D & D Co., Chicago

Remember "More Production means Axis Destruction"

The UNION METAL Manufacturing Co., CANTON, OHIO

—$1,410 for conc. pipe instal. in the Boone-Pedersen branch of the McMullen ditch—by Turlock Irrigation District, Turlock. 12-18

PROPOSED PROJECTS

California

SAN JOAQUIN CO.—The County Board of Supervisors, Stockton, has completed plans for drainage, pumping and levee work in Tuxedo Country Club Villas and Pacific Garden Area of Stockton. Estimated cost is $17,000. 12-3

Building . . .

CONTRACTS AWARDED

Arizona

COCHISE CO.—**Paddock Engineering Co. of Texas,** 2929 N. Fitzhugh St., Dallas, Texas—less than $200,000, for hangars at an airfield—by U. S. Engineer Office, Albuquerque, New Mexico. 12-1

MARICOPA CO.—**E. W. Duhame,** 3719 N. Central Ave., Phoenix—over $100,000, for addtl. temporary bldgs.—by U. S. Engineer Office, Phoenix. 12-14

MARICOPA CO.—**J. K. Thomas** and **Beyer Construction Co.,** 533 Chamber of Commerce Bldg., Los Angeles, Calif.—over $50,000, for four hangar bldgs. at two airfields—by U. S. Engineer Office, Los Angeles, Calif. 12-7

MARICOPA CO.—**Tifal & King,** 1726 Grand Ave., Phoenix—over $50,000, for WAAC bldgs.—by U. S. Engineer Office, Phoenix. 12-17

MARICOPA CO.—**Del E. Webb Construction Co.,** 302 S. 23rd Ave., Phoenix—over $50,000, for addtl. bldgs. at an airfield—by U. S. Engineer Office, Los Angeles, Calif. 12-16

MOHAVE CO.—**Del E. Webb Construction Co.,** 302 S. 23rd

The Care and Feeding of Rock Crushers

No. 1 of a series of advertisements in the interests of national economy to aid users of crushing equipment unable to secure new units during the emergency.

Proper Feeding of Materials

Avoid feeding stone that is too large for the crusher opening as it is certain to increase wear and cut production. As long as a large rock chokes the mouth of the crusher, no new material can be fed and an empty crusher is non-productive. Avoid dumping directly into crusher mouth as big rocks may be in the load to choke and damage equipment and its removal is a slow, tedious job.

Don't ever use a sledge hammer to break a large rock in the crusher while it is running. An accident with the sledge might easily result in serious damage to the crusher. It is much safer to stop the crusher. Better still—be sure all rock is reduced to the proper size before bringing it up to the crusher.

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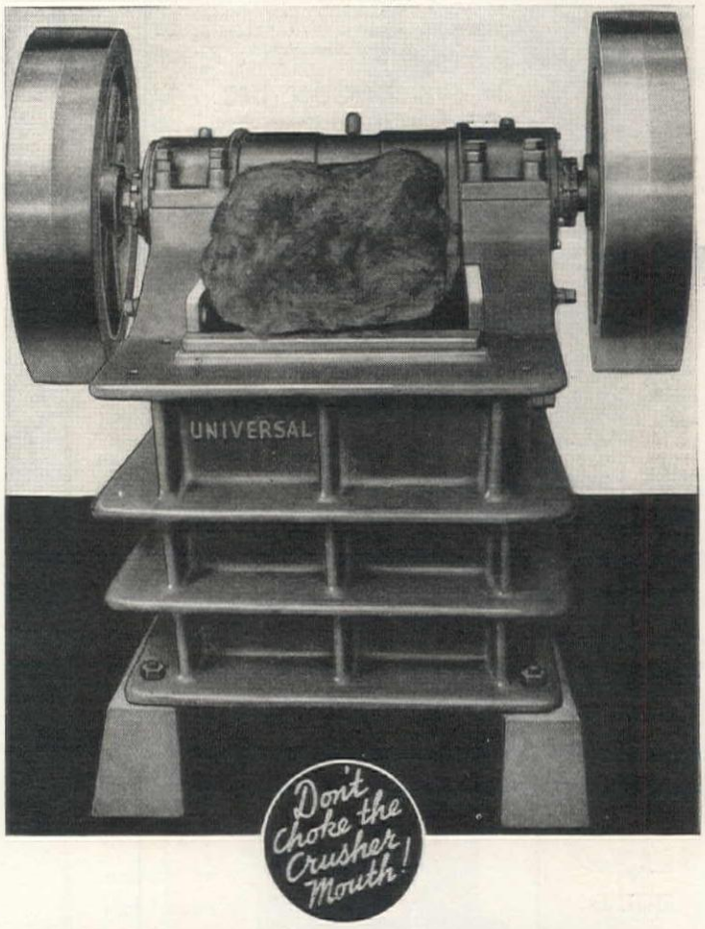
Removal of excess clay avoids packing of the crusher jaws and slippage. Removal of tramp iron in the field or on the conveyor avoids costly breakdowns.

Universal Crushers and Crushing Plants are built for long time trouble-free service—proper care and maintenance will greatly extend their useful service life.



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Casper, Wyo.
Empire Equipment Co.
Spokane, Wash.
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Reno, Nevada
States Tractor & Equipment Co.
Phoenix, Ariz.
Midland Implement Co., Billings, Montana

UNIVERSAL

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS

Ave., Phoenix—over $100,000, for hangar bldgs. at a flexible gunnery school—by U. S. Engineer Office, Los Angeles, Calif. 12-7

PIMA CO.—**M. M. Sundt Construction Co.,** Box 2592, Tucson—over $50,000, for WAAC bldgs.—by U. S. Engineer Office, Phoenix. 12-17

PIMA CO.—**Del E. Webb Construction Co.,** 302 S. 23rd Ave., Phoenix—for 20 dormitory apts. and 130 family units at Ajo—by Federal Housing Authority, Washington, D. C. 12-4

PINAL CO.—**Shumaker-Evans, Contractors,** 3000 N. Central Ave., Phoenix—over $100,000, for housing, and extensions to water, gas, sewer and elec. systems—by U. S. Engineer Office, Albuquerque. 12-1

YUMA CO.—**R. J. Daum,** 6803 West Blvd., Inglewood, Calif.—over $50,000, for hangar bldgs. at an air force flying school—by U. S. Engineer Office, Los Angeles, Calif. 12-2

YUMA CO.—**Gorelnik Co.,** 117 S. Poinsettia Place, Los Angeles, Calif.—over $500,000, for bldgs and util. at an operating base—by U. S. Engineer Office, Los Angeles, Calif. 12-24

California

ALAMEDA CO.—**Hayward Construction Co.,** 1 Castro St., Hayward—for a 40-unit housing project at Westvaco, near Livermore—by Federal Housing Authority, San Francisco. 12-29

BUTTE CO.—**Lawrence Construction Co.,** 3511 E. Curtis Park Dr., Sacramento—over $50,000 for bldgs. at an airport—by U. S. Engineer Office, Sacramento. 12-8

CONTRA COSTA CO.—**Heyman Bros.,** 564 Market St., San Francisco—over $50,000 for bldgs.—by U. S. Engineer Office, Sacramento. 12-15

CONTRA COSTA CO.—**G. W. Williams Co.,** 10 California Dr., Burlingame—$1,310,475, for 800 war apt. units at Richmond—by Richmond Housing Authority. 12-3

FRESNO CO.—**Trewhitt, Shields and Fisher,** 1501 Pacific Southwest Bldg., Fresno—over $50,000 for bldgs. at an airfield—by U. S. Engineer Office, Sacramento. 12-10

KERN CO.—**Basich Bros.,** 20530 S. Normandie Ave., Torrance—over $50,000, for six warehouses at a bombing range—by U. S. Engineer Office, San Bernardino. 12-16

LOS ANGELES CO.—**Guy F. Atkinson Co.,** 662 Russ Bldg., San Francisco, and **George Pollock Co.,** Box 903, Sacramento—$14,131,008, for a fleet operating base at San Pedro—by Bureau of Yards & Docks, Washington, D. C. 12-4

LOS ANGELES CO.—**C. W. Driver,** 111 W. 7th St., Los Angeles—$233,000, for four wood frame and stucco school units, in Bellflower—by School District, Bellflower. 12-2

LOS ANGELES CO.—**C. W. Driver,** 111 W. 7th St., Los Angeles—over $50,000, for WAAC bldgs., util. and paving at a subport of embarkation in southern Calif.—by U. S. Engineer Office, Los Angeles. 12-15

LOS ANGELES CO.—**Ford J. Twaits Co.,** 451 S. Boylston Ave., Los Angeles—$250,000 for an engineering and mock-up bldg. in Culver City—by Hughes Tool Co., Culver City. 12-3

ORANGE CO.—**Central Building Co.,** 804 Loew's State Bldg., Los Angeles—over $50,000, for theater of operations type shelters and facil. in a park—by U. S. Engineer Office, Los Angeles. 12-11

ORANGE CO.—**Midstate Construction Corp.,** 501 Pacific Southwest Bldg., Fresno—$68,928, for San Diego Industrial Farm, near San Clemente—by U. S. Department of Agriculture, Los Angeles. 12-9

RIVERSIDE CO.—**Jackson Bros.-Le Sage,** 547 S. Fairfax Ave., Los Angeles—over $100,000, for service bldgs. and training auditoriums for addtl. anti-aircraft battalions—by U. S. Engineer Office, Los Angeles. 12-1

RIVERSIDE CO.—**Zoss Construction Co.,** 1037 N. Cole Ave., Los Angeles—over $1,000,000, for housing for anti-aircraft battalions at a camp—by U. S. Engineer Office, San Bernardino. 12-1

SACRAMENTO CO.—**Carl N. Swenson Co.,** 355 Stockton Ave., San Jose—over $50,000 for misc. bldgs.—by U. S. Engineer Office, Sacramento. 12-26

SACRAMENTO CO.—**G. W. Williams Co.,** 10 California St., Burlingame—over $50,000 for bldgs. at an army camp—by U. S. Engineer Office, Sacramento. 12-15

SAN BERNARDINO CO.—**James I. Barnes Construction Co.,** 1119 Montana Ave., Santa Monica—over $500,000, for a reinf. engine test bldg. at an air depot—by U. S. Engineer Office, Los Angeles. 12-18

SAN BERNARDINO CO.—**Meyer-Nash Co.,** 1414 Hollywood Way, Burbank—over $50,000, for warehouse for chemical warfare materials at an air depot—by U. S. Engineer Office, Los Angeles. 12-17

SAN BERNARDINO—**J. O. Oltmans & Son,** 810 E. 18th St., Los Angeles—over $50,000, for foundation for supply bldg. at an air depot—by U. S. Engineer Office, San Bernardino. 12-9

SAN DIEGO CO.—**Hastings-Quinn, Inc.,** 1135 N. Las Palmas Ave., Los Angeles—over $100,000, for addtl. bldgs. and moving existing bldgs. at a factory training school—by U. S. Engineer Office, Los Angeles. 12-28

SAN DIEGO CO.—**H. H. Peterson,** 3340 Harasthy St., San Diego—$57,395, for an elementary school at Palm City—by Public Buildings Administration, Washington, D. C. 12-28

SAN DIEGO CO.—**A. O. Reed & Co., Inc.,** 672 - 8th St., San Diego; and **J. W. Breedlove Corp.,** 1101 Transamerica Bldg., Los Angeles—$1,259,000, for West Coast sound school bldgs. store houses, administration bldgs., etc., at San Diego—by Bureau of Yards & Docks, Washington, D. C. 12-17

SAN FRANCISCO CO.—**Barrett & Hilp,** 918 Harrison St., San Francisco—$450,000 (approx.), for 500 dormitory units at Hunters Point—by Housing Authority, San Francisco. 12-16

SAN FRANCISCO CO.—**MacDonald & Kahn, Inc.,** 200 Financial Center Bldg., San Francisco—$1,000,000 (approx.), for 500 dwelling units at Hunters Point—by Housing Authority, San Francisco. 12-16

SOLANO CO.—**Barrett & Hilp,** 918 Harrison St., San Francisco—for 1,000 war apt. units, in the Vallejo area—by Housing Authority, Vallejo. 12-21

SOLANO CO.—**David Paganini, Inc.,** 617 Montgomery St., San Francisco—for 500 dormitory units in the Vallejo area—by Housing Authority, Vallejo. 12-22

SOLANO CO.—**Peter Sartorio,** 262 Clementina St., San Francisco—$62,310, for grammar school add. at Benicia—by Public Buildings Administration, Washington, D. C. 12-21

Colorado

DENVER CO.—**Mead & Mount Construction Co.,** 422 Denver National Bldg., Denver—over $100,000 for permanent theater at an army camp, to seat 1,038 persons—by U. S. Engineer Office, Denver. 12-24

GARFIELD CO.—**C. D. Poland,** Grand Junction—for a 44-unit frame housing project at Rifle—by Federal Housing Authority, Kansas City, Mo. 12-15

MONTROSE CO.—**Frank W. Cassidy,** Uravan—for a 68-unit frame housing project in Uravan—by Federal Housing Authority, Kansas City, Mo. 12-15

OTERO CO.—**Mead & Mount Construction Co.,** 422 Denver National Bldg., Denver—$505,000 for 190-unit housing project with all appurtenances at La Junta—by Federal Housing Authority, Kansas City, Mo. 12-24

Idaho

POWER CO.—**J. W. Brennan,** Pocatello—$200,000 (approx.), for bldgs. and appurt. work at military site—by U. S. Engineer Office, Portland, Oregon. 12-22

Montana

CASCADE CO.—**Cahill-Mooney Construction Co.,** 220 E. Front St., Butte—for 100 family units at Great Falls—by Federal Housing Authority, Seattle, Wash. 12-16

Nevada

CLARK CO.—**M. J. Brock & Sons, Inc.,** and **Davies & Keusder,** 107 N. Larchmont Blvd., Los Angeles, Calif.—over $50,000 for WAAC bldgs. and facils. at a gunnery school—by U. S. Engineer Office, Los Angeles, Calif. 12-22

CLARK CO.—**General Construction Co.,** and **J. Walter Johnson,** 5205 Hollywood Blvd., Los Angeles, Calif.—over $50,000, for two hangars at an airfield—by U. S. Engineer Office, Los Angeles, Calif. 12-2

NYE CO.—**Haddock Construction Co.,** 3578 E. Foothill Blvd.,

Pasadena, Calif.—over $1,000,000 for bldgs. and utils. and a hospital group—by U. S. Engineer Office, Sacramento, Calif. 12-11

New Mexico

BERNALILLO CO.—**W. T. Davis, Inc.,** Albuquerque—over $50,000 for temporary frame bldgs. at an airfield—by U. S. Engineer Office, Albuquerque. 12-2

BERNALILLO CO.—**W. T. Davis, Inc.,** Albuquerque—over $50,000, for warehouses at an airfield—by U. S. Engineer Office, Albuquerque. 12-29

EDDY CO.—**E. S. McKittrick Co., Inc.,** 7839 Santa Fe Ave., Huntington Park, Calif.—over $100,000 for addtl. bldgs. at an airfield—by U. S. Engineer Office, Albuquerque. 12-1

LEA CO.—**John W. Murphey-Leo B. Keith Building Co.,** Box 2267, Tucson, Arizona—over $50,000, for housing and facil. for WAAC's at an airfield—by U. S. Engineer Office, Albuquerque. 12-16

LEA CO. — **Parks - Marshall - McCleskey Construction Co.,** Dallas, Texas—less than $200,000, for 2 hangars at an airfield—by U. S. Engineer Office, Albuquerque. 12-2

LUNA CO.—**K. L. House Construction Co.,** 214 E. Marquette Ave., Albuquerque—over $50,000, for housing and facil. for WAAC's at an airfield—by U. S. Engineer Office, Albuquerque. 12-15

OTERO CO.—**M. M. Sundt Construction Co.,** 440 S. Park Ave., Tucson, Arizona—over $50,000, for housing and facil. for the W. A. A. C. at an airfield—by U. S. Engineer Office, Albuquerque. 12-17

OTERO CO.—**M. M. Sundt Construction Co.,** 440 S. Park Ave., Tucson, Ariz.—over $50,000 for 14 theater of operations bldgs. and alterations to others—by U. S. Engineer Office, Albuquerque. 12-1

Oregon

COOS CO.—**Humphreys Gold Co.,** Denver, Colo.—$300,000 (approx.) for primary chrome reduction plant to handle 10,000 tons of chrome-bearing sand per month—for self. 12-26

DESCHUTES CO.—**W. C. Smith,** Board of Trade Bldg., Portland; **Howard S. Wright Co.,** 407 Yale Ave. N., Seattle, Wash.; and **L. H. Hoffman,** 715 SW Columbia Ave., Portland—Approx. $4,000,000 for a 9,000-man army engineer cantonment at Bend—by U. S. Engineer Office, Portland. 12-22

UMATILLA CO. (AND WALLA WALLA CO., WASH.)—**J. W. Brennan,** Pocatello, Idaho—$110,000 for bldg. units at military sites—by U. S. Engineer Office, Portland. 12-16

Texas

DALLAS CO.—**Cedric Burgher Construction Co.,** Dallas—over $50,000, for relocation of hangar—by U. S. Engineer Office, Denison. 12-9

EL PASO CO.—**J. E. Morgan & Sons,** 210 N. Campbell St., El Paso—over $50,000, for bldg. at a post—by U. S. Engineer Office, Albuquerque, New Mexico. 12-11

LUBBOCK CO.—**M. G. Bowles,** Lubbock—over $50,000, for housing and facil. for the W.A.A.C. at an airfield—by U. S. Engineer Office, Albuquerque, New Mexico. 12-17

LUBBOCK CO.—**John W. Murphey-Leo B. Keith Building Co.,** Box 2267, Tucson,

VICTOR

Underwater Cutting Torch

The VICTOR Underwater cutting torch is the result of years of practical experience and the suggestions made by many of our greatest divers.

The torch weight, its over-all size, freedom from protruding parts, heating efficiency at all encountered depths, and cutting speed, are the result of many years of field testing.

Divers cannot gamble with questionable equipment . . . emergencies demand the utmost dependability.

VICTOR EQUIPMENT COMPANY

844 FOLSOM STREET
SAN FRANCISCO

3821 SANTA FE AVENUE
LOS ANGELES

"SealKure's" QUALITY WINS GOVERNMENT RECOGNITION!

WAR DEPARTMENT
Office of the Chief of Engineers
Washington

CE-600.13-SPEEN November 23, 1942

CIRCULAR LETTER NO. 2156
Construction Division No. 558.

SUBJECT: STANDARD SPECIFICATION FOR CURING CONCRETE.

TO. All concerned.

1. Circular Letter No. 1618, Construction Division No. 429 dated March 20, 1942 is hereby rescinded. Concrete paving will be accomplished in accordance with Section VII, Specification for Theater of Operations (Modified) and Mobilization Construction.

2. In order to standardize concrete curing practice, it is directed that the attached "Tentative Specification on Curing" be inserted in all specifications for concrete issued by or subject to the approval of District and Division Engineers throughout the Engineer Department. The attached specification will also be incorporated, by addendum or reissue, in Sections VI and VII of the Specification for Theater of Operations (Modified) and Mobilization Construction, in the near future. Current investigations of concrete curing membranes, including their effects on durability, will probably lead to a modification of the specification requirements and the attached specification is issued as "Tentative" until the completion of the tests.

3. Inasmuch as determination of equality of performance of concrete curing membrane, with that of the approved materials cited in the inclosed paragraph, is a matter involving special equipment and trained personnel, it is directed that all such determinations, for the present, at least, be delegated to one of the Departmental laboratories cited in the inclosed specification. If other Departmental laboratories desire to conduct such determinations, qualified technicians should be detailed to either of the cited laboratories for training.

4. If curing compounds are used upon vertical surfaces, especial care must be exercised to insure uniform and adequate coverage without excessive runoff or sagging; and if such compounds are used on pre-stressed tanks or other liquid-impounding structures, two coats of any compound will be required. In this connection, attention is drawn to the fact that waterproofing compounds, and lining materials for tanks, probably will not adhere satisfactorily on membrane cured concrete.

5. If further information concerning curing compounds is desired District and Division Engineers are authorized to communicate directly with either of the two Departmental laboratories referred to in the inclosed Specification. Copies of such correspondence will be forwarded to the Office of the Chief of Engineers, Attention: Engineering Branch, Construction Division, for information.

By order of the Chief of Engineers:

/s/ Thomas M. Robins

Thomas M. Robins
Major General
Assistant, Chief of Engineers.

Inclosure:
Tentative Specification

Distribution: Normal
1. Field Agencies (Par. 1a of C/L 1904)
2. O.C.E.

Reproduced here with is Circular Letter No. 2156, Construction Division No. 558, as issued by the War Department, Office of the Chief of Engineers, Washington, D. C.

CHECK THESE 10 TESTS...

1. MOISTURE RETENTION
2. VISCOSITY
3. RATE OF HARDENING
4. EASE OF APPLICATION
5. ABSENCE OF SHRINKAGE CRACKS OR HOLES IN THE MEMBRANE
6. TEXTURE OF THE FILM
7. PERCENTAGE OF NON-VOLATILE SOLIDS
8. REACTION WITH THE CONCRETE INGREDIENTS
9. RESISTANCE TO RAIN DURING THE HARDENING PROCESS
10. ADHESION TO BOTH VERTICAL AND HORIZONTAL SURFACES

Enclosure to Circular Letter No. 2156 covering the use of curing membranes and citing "SealKure" as one of the four approved brands.

INCLOSURE TO CIRCULAR LETTER 2156
Construction Division No. 558

"TENTATIVE SPECIFICATION FOR CURING" TO BE INSERTED IN ALL SPECIFICATIONS FOR CONCRETE.

Note: In Specification for Theatre of Operations (Modified) and Mobilization Construction, Part VI, dated May 8, 1942, delete par. 6-16b; in Part VII, dated September 12, 1942, delete par 7-16d, and in each case substitute the following for the paragraphs deleted:

Curing Compounds. Curing compounds of satisfactory composition and characteristics may be used. Moisture retention, viscosity, ease of application, rate of hardening, texture of the film, absence of shrinkage cracks or holes in the membrane, percentage of non-volatile solids, adhesion to both vertical and horizontal surfaces, resistance to rain during the hardening process, reaction with the concrete ingredients, and other characteristics of the compound will be considered. A compound will be approved if, in the opinion of the Contracting Officer, laboratory tests and field performance demonstrate that the above characteristics are equal to those secured with Klearcure (No. 70), SealKure, Tru-cure (No. FX-199 or 203), or Aquastatic (1-C. 1FMST, or black) as submitted for test at the Central Concrete Laboratory, Mount Vernon, N. Y., in June 1942.

(1) Testing. In the event that any compound not named above is proposed for use, it will be tested by the Government and shall not under any circumstances be used until written notification has been given by the Contracting Officer that it meets the requirements of this specification. Samples consisting of at least one gallon, shall be furnished by the Contractor to the Contracting Officer for forwarding to either the Cincinnati Testing Laboratory, U. S. Engineer Office, Mariemont, Ohio, or the Central Concrete Laboratory, U. S. Engineer Office, Mount Vernon, N. Y., in time to reach the laboratory at least 14 days before the date upon which it is proposed to use the material. All curing compound material delivered to the job (including brands named above) will be subject to check tests to determine compliance with this specification.

(2) Application. Curing compounds, if used, shall be thoroughly agitated during use, and shall be uniformly sprayed in a single coat, by approved power-driven spraying equipment, on all concrete surfaces, at a rate not to exceed 200 square feet per gallon in place. Application shall be made as soon as all surface water sheen has disappeared from the concrete surfaces. If concrete surfaces have become dry, they shall be thoroughly moistened with water, immediately previous to application of the compound. If, in the opinion of the Contracting Office, discontinuities or pin-holes exist, a second coat shall be immediately applied to the affected areas. Curing compound shall not be used on surfaces to which new concrete is to be bonded.

(3) Delivery. Each shipment of material must be accompanied by a certified statement that it is identical with the sample upon which acceptance was predicated. The curing compound shall be delivered to the job in the manufacturer's original container which shall be marked with the manufacturer's name, trade name of the material, and lot number with which test samples may be correlated.

Arizona—over $50,000, for housing and facil. for WAAC's at an airfield—by U. S. Engineer Office, Albuquerque, New Mex. 12-15

PRESIDIO CO.—**McGough Bros.**, Bankers Mortgage Bldg., Houston—less than $200,000, for civilian war housing at an airfield—by U. S. Engineer Office, Albuquerque, New Mexico. 12-11

PRESIDIO CO.—**Paddock Engineering Co.**, 2929 Fitzhugh St., Dallas—over $50,000 for bldgs. at an airfield—by U. S. Engineer Office, Albuquerque, N. Mex. 12-1

REEVES CO.—**B. I. Barfield**, Amarillo—over $50,000, for civilian war housing at an airfield—by U. S. Engineer Office, Albuquerque, New Mexico. 12-11

REEVES CO.—**Stubblefield & Daugherty**, Pecos—over $50,000, for housing and facil. for the W.A.A.C. at an airfield—by U. S. Engineer Office, Albuquerque, New Mex. 12-17

Utah

TOOELE CO.—**Harrison & Dorman**, 13th S. St. and 4th W. St., Salt Lake City—over $100,000 for civilian housing at an airbase—by U. S. Engineer Office, Salt Lake City. 12-15

TOOELE CO.—**Intermountain Constructors**, 325 Atlas Bldg., Salt Lake City—over $500,000 for a group of combat equipment storage bldgs.—by U. S. Engineer Office, Salt Lake City. 12-11

TOOELE CO.—**S. Patti & McDonald Construction Co.**, 1114 Broadway, Kansas City, Mo.—$659,909 for 250 dwelling unit housing project, and all facils. at Tooele—by Federal Housing Authority, Kansas City, Mo. 12-17

WEBER CO.—**Johnson & Leck**, 227 Eccles Bldg., Salt Lake City—over $50,000 for insulation in a quartermaster depot warehouse—by U. S. Engineer Office, Salt Lake City. 12-5

WEBER CO.—**Earl S. Paul**, 2943 Harrison Blvd., Ogden—$250,000 for 112-bed hospital addn. at Dee Memorial Hospital—by Dee Memorial Hospital, Ogden. 12-1

WEBER CO.—**W. C. Smith, Inc.**, Board of Trade Bldg., Portland, Ore.—over $50,000 for a railroad transfer station at a quartermaster depot—by U. S. Engineer Office, Salt Lake City. 12-1

Washington

KING CO.—**Moore & Roberts**, 693 Mission St., San Francisco, Calif.—$2,499,777, for 500 temporary dwelling units; 600 war apartments; and 200 dormitory accommodations for men—by King County Housing Authority, Seattle. 12-9

PIERCE CO.—**A. G. Homan**, 112 N. Franklin, Olympia—over $100,000, for recreation facil.—by U. S. Engineer Office, Seattle. 12-21

PIERCE CO.—**A. G. Homan**, Olympia—over $50,000, for misc. bldgs.—by U. S. Engineer Office, Seattle. 12-3

SNOHOMISH CO.—**Sam Bergeson, Wick & Dahlgren**, Rt. 1, Box 971, Tacoma—over $50,000, for misc. bldgs.—by U. S. Engineer Office, Seattle. 12-22

SPOKANE CO.—**Spencer B. Lane Co.**, 845 Pine St., San Francisco, Calif.—over $50,000, for a warehouse—by U. S. Engineer Office, Seattle. 12-3

Wyoming

LARAMIE CO.—**Mead & Mount Con-**

struction Co., 422 Denver National Bldg., Denver, Colo.—$642,000 for a 325-unit housing project, having 46 bldgs., at Cheyenne—by Federal Housing Authority, Kansas City, Mo. 12-24

Territories

CANAL ZONE—**Lindgren & Swinerton; Hegeman & Harris Corp;** and **Tucker McClure,** Box M, Balboa—$6,276,700, for addtl. facil. at Naval Hospital, Coco Solo, Arijan Submarine Base and Gatun Naval air station—by Bureau of Yards & Docks, Washington, D. C. 12-4

Canada

BRITISH COLUMBIA — **Carter-Halls-Aldinger Co., Ltd.,** 670 Taylor St., Vancouver—$1,000,000, for addtl. bldgs for temporary accommodation at an airport and camp development—by Department of Munitions & Supply, Ottawa.

BRITISH COLUMBIA — **Coast Construction Co., Ltd.,** 510 W. Hastings St., Vancouver—$600,000, for accommodations at an undisclosed centre—by Department of Munitions & Supply, Ottawa.

BRITISH COLUMBIA — **Consolidated Mining & Smelting Co. of Canada, Ltd.**—$150,000, for 47 houses, a school, hospital and water and electrical service instal. at Pinchi Lake—by self.

BRITISH COLUMBIA—**Marwell Construction Co., Ltd.,** 540 Howe St., Vancouver—$240,000, for erection of addtl. accommodation at an undisclosed point—by Department of Munitions & Supply, Ottawa.

BRITISH COLUMBIA—**Northern Construction Co.,** and **J. W. Stewart, Ltd.,** 736 Granville St., Vancouver—$1,800,000, for temporary const. at an R. C. A. F. station—by Dept. of Munitions and Supply, Ottawa.

BRITISH COLUMBIA — **Poole Construction Co., Ltd.,** 218 Tegler Bldg., Edmonton, Alberta—$300,000, for addtl. const. at a naval base—by Department of Munitions & Supply, Ottawa.

BRITISH COLUMBIA — **Prefabricated Building, Ltd.,** Foot of Byrne Rd., Burnaby—$70,000, for prefabricated bldgs. at a West Coast Vancouver Point—by Department of Munitions & Supply, Ottawa. 12-15

PROPOSED PROJECTS

Oregon

MULTNOMAH CO.—National Housing Agency, Washington, D. C., has announced approval of 5,040 dormitory acommodations for in-migrant workers in the Portland, Ore. - Vancouver, Wash., area, to cost $1,950,000. 12-22

Texas

CORYELL CO.—The War Department announced authorization for a military instal. to cost over $5,000,000. 12-1

Washington

PIERCE CO.—Presidential approval has been given allotments for two school bldgs. at the Gault Junior High School, in Tacoma. Estimated cost is $95,000. 12-16

THURSTON CO.—Construction of 200-bed addition to St. Peter's Hospital, in Olympia, has been authorized by Federal Works Agency. Estimated cost is $125,200. 12-5

Miscellaneous . . .

CONTRACTS AWARDED

Arizona

MOHAVE CO.—**Louis A. Lefevre,** 4916 Ben Ave., North Hollywood, Calif.—over $50,000, for a gasoline fueling system at an air force flexible gunnery school—by U. S. Engineer Office, Los Angeles, Calif. 12-19

YUMA CO.—**Aqua Systems, Inc.,** 701 E. 3rd St., Los Angeles, Calif.—over $50,000, for a gasoline fueling system at an air force flying field—by U. S. Engineer Office, Los Angeles, Calif. 12-18

California

ALAMEDA CO.—**Ariss-Knapp Co.,** 961 41st St., Oakland—$94,340, for grading and excav. for 1,000 war apartments and defense dwelling units to be located in the vicinity of 18th and Wood St., Oakland—by Housing Authority, Oakland. 12-17

ALAMEDA CO.—**Piombo Bros.,** 1571 Turk St., San Francisco—$89,592, for grading and excav. for 1,000 war apts. and defense dwelling units to be built in the vicinity of 20th and Fallon Sts.—by Housing Authority, Oakland. 12-17

CONTRA COSTA CO.—**F. C. Stolte Co.,** 1405 San Antonio Ave., Alameda—over $100,000 for miscellaneous facilities—by U. S. Engineer Office, San Francisco. 12-20

INYO CO.—**Peter Gadd,** 2173 Colorado Blvd., Los Angeles—over $50,000, for a gasoline fueling system at an airport—by U. S. Engineer Office, Los Angeles. 12-29

LOS ANGELES CO.—**Austin Co.,** 777 W. Washington Blvd., Los Angeles—over $500,000, for protective concealment at an aircraft mfg. plant—by U. S. Engineer Office, Los Angeles. 12-21

LOS ANGELES CO.—**David J. Reed,** 6348 Colgate Ave., Los Angeles—over $50,000, for open storage areas and facil. for sub-port of embarkation—by U. S. Engineer Office, Los Angeles. 12-10

LOS ANGELES CO.—**Shannahan Bros.,** 6193 Maywood Ave., Huntington Park—over $50,000, for railroad spur and platforms at a motor base—by U. S. Engineer Office, Los Angeles. 12-24

LOS ANGELES CO.—**P. J. Walker Co.,** 555 S. Flower St., Los Angeles—over $500,000, for flat topping at an aircraft mfg. plant—by U. S. Engineer Office, Los Angeles. 12-1

LOS ANGELES CO.—**R. A. Wattson Co.,** 1026 N. McCadden Pl., Los Angeles—over $50,000, for grading, paving, fencing and util. for sub-port of embarkation—by U. S. Engineer Office, Los Angeles. 12-10

ORANGE CO.—**Barr Lumber Co.,** Santa Ana—for 50 unassembled wooden barges at $11,800 each—by Maritime Commission, Washington, D. C. 11-28

ORANGE CO.—**Oilfield Construction CO.,** 2650 Cherry Ave., Long Beach—less than $50,000, for a gasoline fueling system at an airport—by U. S. Engineer Office, Los Angeles. 12-29

RIVERSIDE CO.—**Galen B. Finch,** 1055½ "F" St., San Bernardino—less than $50,000, for a railroad spur track at an army camp—by U. S. Engineer Office, Los Angeles. 12-22

SAN DIEGO CO.—**Pacific Bridge Co.,** 333 Kearny St., San Francisco—$735,000, for 3 timber floating drydocks at San Diego—by Bureau of Yards & Docks, Washington, D. C. 12-4

SAN DIEGO CO.—**Pacific Crane & Rigging Co.,** 6800 S. Alameda St., Los Angeles—over $500,000, for protective concealment at an aircraft mfg. plant—by U. S. Engineer Office, Los Angeles. 12-7

SOLANO CO.—**Kruly & Van Valkenburgh,** Sacramento—over $50,000, for addt. to gasoline fueling system—by U. S. Engineer Office, Sacramento. 12-17

SOLANO CO. — **E. E. Lowell,** 1248 Georgia St., Vallejo—$77,900 for excavating and grading for the Vallejo Community Hospital—by Public Building Administration, Washington, D. C. 12-11

SOLANO CO.—**C. M. Syar,** Box 1431, Vallejo—$68,200, for grading work at a hospital site in Vallejo—by Public Building Administration, Washington, D. C. 12-28

Idaho

POWER CO.—**Kimble Construction Co.,** 1723 Sherman Ave., Couer d'Alene—over $100,000, for bldgs., sidewalks, water, sanitary sewer and elect. facil.—by U. S. Engineer Office, Portland, Oregon. 12-21

Nevada

CLARK CO.—**Clifford C. Bong,** 6 N. First Ave., Arcadia—less than $50,000, for a railway spur at a gunnery school—by U. S. Engineer Office, San Bernardino. 12-1

New Mexico

LEA CO.—**George Kies, Inc.,** 1700 Pease Rd., Austin, Tex.; **Waco Construction Co.,** Waco, Tex., and **Marco Construction Co.** —over $500,000 for additional facilities—

by U. S. Engineer Office, Albuquerque. 12-15

Utah

TOOELE CO.—**Intermountain Constructors,** 325 Atlas Bldg., Salt Lake City—$87,850 for trailer site development in Tooele—by Federal Housing Authority, Kansas City, Mo. 12-15

WEBER CO.—**Pacific Electric & Mechanical Co.,** 467 O'Farrell St., San Francisco, Calif.—over $50,000 for heating warehouses at an arsenal—by U. S. Engineer Office, Salt Lake City. 12-11

Washington

GRANT CO.—**Gaasland Construction Co.,** 1161 Ellis, Bellingham—over $50,000, for facil. for a utility yard—by U. S. Engineer Office, Seattle. 12-22

KING CO.—**General Construction Co.,** 3840 Iowa St., Seattle—$770,000, for a timber drydock at Seattle—by Bureau of Yards & Docks, Washington, D. C. 12-21

SNOHOMISH CO.—**Everett-Pacific Co.,** Everett—$7,005,725, for 18,000-ton steel floating drydock and four sections of sectional steel floating drydock at Everett—by Bureau of Yards & Docks, Washington, D. C. 12-15

SNOHOMISH CO.—**Pacific Woodenware,** Marysville—for 50 unassembled wooden barges at $11,936 each—by Maritime Commission, Washington, D. C. 11-28

SPOKANE CO.—**Bumstead-Woolford,** 1411 4th Ave., Seattle—over $100,000 for piping and ash conveyor at a steam plant—by U. S. Engineer Office, Seattle. 12-9

SPOKANE CO.—**Clyde M. Ludberg,** W. 326 1st Ave., Spokane—over $100,000, for a steam plant bldg.—by U. S. Engineer Office, Seattle. 12-18

SPOKANE CO.—**Electric Smith,** E. 121 Sprague Ave., Spokane—over $50,000 for an electric distribution system at a military site—by U. S. Engineer Office, Seattle. 12-5

PROPOSED PROJECTS

California

SAN FRANCISCO—Dept. of Public Works, San Francisco, rejected all bids on wood crib wall, drainage structures, and restoring slopes on Bernal Ave., at Richmond Ave. bridge. 12-26

TRADE WINDS

News of Men Who Sell to the Construction West

CALIFORNIA

B. F. McDonald, president of the *B. F. McDonald Co.*, Los Angeles, Calif., manufacturers of safety equipment, was elected president of the Southern California Industrial Safety Society at the recent annual meeting of the organization. **A. A. Castle,** safety engineer for the *E. D. Bullard Co.*, San Francisco, also manufacturer of safety equipment, was elected secretary-treasurer of the organization.

* * * *

The *Irving Subway Grating Co.* has established a branch plant at the Judson-Pacific Steel Co., located at the foot of Park Ave., in Emeryville, Calif., where they are manufacturing accessories for army airport installations. A note concerning this plant appeared in the November issue of *Western Construction News*, but the address given was in error.

* * * *

B. F. McDONALD

B. C. Heacock, chairman of the executive committee of the *Caterpillar Tractor Co.*, and for many years connected with the manufacture of tractors in California, has been appointed director of the Priorities Control Division of the Distribution of the War Production Board. This division is charged with the responsibility of integrating the Production Requirements Plan and the priorities system with the Controlled Materials Plan. Heacock joined the C. L. Best Tractor Co. in San Leandro, Calif., in 1919, and was elected secretary of the Caterpillar Tractor Co. when that organization was formed by merger of the Best Company and the Holt Manufacturing Co. He was elected president of Caterpillar Tractor Co. in 1930, a position which he held until 1941.

* * * *

Pittsburg Works of the *Columbia Steel Co.* was awarded the joint Army and Navy "E" on Dec. 7, as a result of excellence in production of war material. The award was presented by **Rear Admiral W. L. Friedell,** commandant for the Mare Island Navy Yard, to **W. A. Ross,** president of Columbia Steel Co. **Col. K. B. Harmon,** district chief of the San Francisco Ordnance District, presented the first of the individual "E" pins to **Holger Jeppesen,** a Columbia Steel worker with one of the longest service records at the Pittsburg Works.

PRINCIPALS in the award of the Army-Navy "E" insignia to the Pittsburg, Calif., works of Columbia Steel Co. were: HOLGER JEPPESEN, veteran employee of the company; WILLIAM A. ROSS, president; REAR ADMIRAL W. L. FRIEDELL, commandant of the Mare Island Navy Yard; and COL. K. B. HARMON, chief of the San Francisco ordnance district.

* * * *

Industrial Equipment Co. has received the appointment as southern California representative of Dempster Bros., Knoxville, Tenn., handling their line of dumping equipment. Industrial, which has for some time handled the line in northern California, has a Los Angeles branch at 4441 Santa Fe Ave.

* * * *

AMONG THE MANUFACTURERS

Hercules Powder Co., Wilmington, Del., celebrated its thirtieth anniversary on Jan. 1, 1943. In reviewing the company's activities during 1942 on this occasion, **Charles A. Higgins,** president of the organization, reported that the company's explosives department had been expanded about 1,000 per cent to supervise construction and operation of six government-owned ordnance works for production of smokeless powder, TNT, other military explosives, and ammonia. At the same time, production of dynamite, blasting caps, and other commercial explosives was increased to supply the demand of the mining and construction industries. Beside the explosives production for the government, and the diversion of its chemical business to war needs, the company has been active in the discovery and development of domestic sources for scarce war materials.

* * * *

Joseph H. Kautsky, a machine shop foreman in the Dodge plant at Indianapolis, Ind., of the *Link-Belt Co.*, was one of ten war workers to be awarded a gold medal and citation of production merit by President Roosevelt on Dec. 10. The recognition received by Kautsky is the result of four technical suggestions which he made permitting higher speeds in grinding and machine operations.

* * * *

Paul J. Newton, formerly chief of the excavating and grading section, Construction Machinery Branch, War Production Board, has been elected treasurer of *Hertzler & Zook Co.*, Belleville, Pa., manufacturers of farm, mining and construction machinery. Prior to his association with the War Production Board, Newton was manager of the Eastern Division of the Austin-Western Co.

* * * *

Recent changes in the Industrial Products Sales division of *B. F. Goodrich Co.* include the following: **L. H. Chenoweth** has resumed his duties as manager of manufacturers' sales after serving with the WPB in Washington; **W. E. Williams** is chief clerk of the Akron district office; **R. E. Lewis,** sales correspondent at Akron, has become a Chief Petty Officer in the U. S. Navy; and **R. Burge,** sales correspondent at New York, is at an Army officers' training camp.

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The Cooper-Bessemer Corp., Mount Vernon, Ohio, manufacturer of engines and

compressors, has been awarded the Maritime "M" by the U. S. Maritime Commission in recognition of its excellence in production of diesel engines and engine parts for Liberty ships. The presentation was made by **Rear Admiral Howard L. Vickery,** vice chairman of the U. S. Maritime Commission. Both of the plants of the Cooper-Bessemer Corp. at Mount Vernon, Ohio, and Grove City, Pa., were presented with the award at a double ceremony originating at the Grove City plant, and carried to Mount Vernon by wire.

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A. R. Abelt, secretary of the *Chain Belt Co.,* Milwaukee, Wis., has been elected a director of that organization to replace the late F. J. Weschler of the Baldwin-Duckworth Division. Abelt, who was also elected a vice-president, has been with Chain Belt since 1907, and has served as sales manager of the Chain Belt and Transmission Division, manager of the Division, and secretary of the company. **G. D. Gilbert,** sales manager of the Baldwin-Duckworth Division of Chain Belt Co., Springfield, Mass., has been made general manager of that division, and has also been elected secretary of the company to succeed Abelt.

* * * *

William C. Carter, executive vice president of the *Link-Belt Co.,* Chicago, Ill., has been elected president of the organization to succeed Alfred Kauffmann who has recently resigned because of ill health. Carter joined the Link-Belt Co. in 1902 as a draftsman, and has been successively engineering department supervisor, construction superintendent, plant superintendent, general plant manager, and for fourteen years vice president in charge of production.

WILLIAM C. CARTER

* * * *

John P. Courtright, for the past year director of sales for *Marion Steam Shovel Co.,* Marion, Ohio, has been appointed vice president in charge of sales. He has been in the Marion sales organization since 1927, and was district manager of the Chicago territory from 1936 to 1937, when he became director of sales.

* * * *

St. Marys Manufacturing Co., St. Mary, Ohio, a subsidiary of the *Goodyear Tire and Rubber Co.,* was awarded the joint Army and Navy "E" on Jan. 6, in recognition of its accomplishments in producing waterproof and fireproof canvas duck, airplane parts and molded rubber goods for war equipment.

* * * *

The Huntington, W. Va., plant of *International Nickel Co., Inc.,* has received the second star on its Army-Navy "E" pennant, representing a renewal of production honors for a third six-months' period. Admiral H. A. Wiley, who made the presentation, stated that "yours is no half-hearted, flash-in-the-pan effort, but rather a solid determination to supply the Army and Navy with the materials they must have to carry the engagement to the enemy. That is the spirit that will win this war."

* * * *

The *Hercules Motors Corp.,* Canton, Ohio, was awarded the Army-Navy "E" insignia on January 11, 1943, for production excellence. The presentation was made at the plant by Col. Harold M. Reedall, representing Undersecretary of War Robt. P. Patterson. Practically the entire facilities of the plant are now devoted to production of war materials.

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 St., San Francisco, Calif.

Nylon Paint Brushes

Manufacturer: E. I. du Pont de Nemours and Co., Wilmington, Del.

Equipment: Nylon tapered brush bristles.

Features claimed: Paint brush bristles made of nylon have adequate taper, resiliency, toughness, length, and inertness to paint ingredients. They will wear at least three times as long as natural bristles, are not eaten by moths, will not rot or dry out.

Glass Partitions

Manufacturer: Owens-Illinois Glass Co., Insulux Division, Toledo, Ohio.

Equipment: Glass wall blocks erection package.

Features claimed: A completely packaged interior partition, consisting of glass blocks held in place by newly developed separating strips and wood wedges for locking the glass blocks in position. After framing the partition opening, horizontal and vertical separating strips are placed between the glass blocks as they are erected. Ridged faces on the wood strips interlock with flutings on the edges of the glass blocks. Notched ends of the vertical wood moldings, in turn, interlock with the horizontal moldings, and the whole panel is locked in place when prefabricated wood wedges are installed at the end of each course. Walls may extend from floor to ceiling, or be waist or head high. They may reach from wall to wall, or have one end free, as in a wing partition. Doors or windows may be inserted in the wall at any point, and the wall need not be of all glass block construction. It may be combined with existing solid or frame partitions. The prefabricated wood strips, packaged and ready for erection, are being distributed by glass block dealers.

Skin Protection

Manufacturer: Mine Safety Appliances Co., Pittsburgh, Pa.

Equipment: Fend, industrial skin creams and lotions.

Features claimed: Designed to keep workers on the job without loss of time and production caused by industrial dermatitis, these creams and lotions provide a protective barrier on the skin against many specific hazards in industry. These consist of cosmetically safe materials which are medically correct, easy to apply, and are bland and neutral. They offer no interference with normal action of the skin glands, protect the skin, and are readily removed with mild soap and warm water. Each of six different types provides protection against a number of specific skin hazards.

Payroll Calculator

Manufacturer: Berger-Bricker Co., Los Angeles, Calif.

Equipment: Simple calculator.

Features claimed: Pay-rolls and job costs

easily calculated on lacquered wood device which fits easily into desk drawer. Rates from $0.50 to $1.75 with half-cent spread between rates are covered for time periods up to 104 hours, with divisions of one-tenth of an hour.

Gypsum Building Board

Manufacturer: U. S. Gypsum Co., Chicago, Ill.

Equipment: Triple-sealed sheetrock siding.

Features claimed: Designed especially for duration buildings, this improved sheetrock siding includes a specially developed process for sealing edges, ends and surfaces, and a "drip cap" shiplap edge to protect joints between the boards from the weather. In a laboratory test to check results under constant exposture to moisture, the siding absorbed about 2 per cent of its weight in water during the first 5 hr., following which absorption ceased. The new board has a camouflaged green exterior surface for exposure to the weather, and a manila inner surface to serve as interior finish. It is produced in one-inch thicknesses, 2 ft. wide, and 6, 8, 9, and 10 ft. long.

Rubber Lung

Manufacturer: E. D. Bullard Co., San Francisco, Calif.

Equipment: Artificial respirator.

Features claimed: Recommended by the manufacturer to supplement and increase the

effectiveness of Schaefer prone pressure treatment to restore breathing suspended through shock, fumes and gases, drowning, etc., the rubber lung does not force air in and out of the lungs, but stimulates action of the normal body muscles, helping them to do the work required for breathing until they regain strength to do this work without assistance. The device is strapped to the back or stomach of the victim, and adheres to the body through suction. Raising and lowering the lung handle at normal breathing rates activates the muscles of the victim, causing him to draw in and exhale air. Because of the natural breathing stimulus, the lung may be used by an inexperienced person without danger of harm to the patient.

Spatterproof Lamp

Manufacturer: Radiant Lamp Corp., Newark, N. J.

Equipment: Welders' lamp.

Features claimed: Made of a special glass that resists penetration of hot metal particles, this new type spatterproof lamp is built to withstand severe handling received in welding and other rough industrial services. The lamps are equipped with a T10 bulb with medium screw base, and are available in sizes of 50, 75, 100, and 150 watts.

Interchangeable Signals

Manufacturer: Schwarze Electric Co., Adrian, Mich.

Equipment: Signals and adaptor plates.

Features claimed: Great variety of signals, such as bells, horns, and trumpets with uniform fittings to fit into universal adaptor plates, thus making interchangeable signals without necessity of tearing out wiring.

Plastic Respirator

Manufacturer: Mine Safety Appliances Co., Pittsburgh, Pa.

Equipment: Dust respirator.

Features claimed: Respirator has been redesigned with filter cases of black plastic, having high impact strength, no electrical conductivity, and is not affected by perspiration Various types are available to meet varying dust and mist conditions.

Arc Control Station

Manufacturer: Wilson Welder & Metals Co., New York, N. Y.

Equipment: Welding arc control station.

Features claimed: When connected in series with welding circuit, will control flow of current so as to give uniform weld deposit. Can be operated either by setting to deliver a definite current, or by varying with a remote control switch in the operator's hand. Stations are made in capacities of 75 and 150 amperes. Especially valuable in operations on thin gauge metal.

Structural Plastic

Manufacturer: Hercules Powder Co., Wilmington, Del.

Equipment: Vinsol resin powder.

Features claimed: Plastic compositions which can replace steel or other metals in many uses may be manufactured by incorporating with various cellulosic fibers of resin powder which is extracted from the Southern pine tree. The resin is currently available without priorities, and can be obtained in ample quantities. A 3-in. diameter plastic tubing to replace steel pipe for shot hole casing in seismographic exploration work has been in progress for some time, and other organizations are studying the possibilities of the product as a metal substitute in the form of lightweight structural I, U and L members.

Truck Conversion

Manufacturer: Truckstell, Inc., Cleveland, Ohio.

Equipment: Flatbed skids for increasing truck capacity.

Features claimed: Trucks with a manufacturers' rating of 1½ tons can be converted by

this method into units rated at 3½ to 6 tons capacity as trucks, and up to 50,000 lb. as tractors. Specially designed skids can be placed at various locations for loading, while other skids with full loads can be delivered and lowered to the ground as a unit to be unloaded when convenient. This provides a "shuttle" service which permits handling loads such as lumber at faster rates than have been possible heretofore. The skids, with a full load of lumber, can be loaded on the truck, or unloaded in a few minutes by means of a winch and special rollers. Empty skids are slid off the truck onto the ground.

Floodlight

Manufacturer: General Electric Co., Schenectady, N. Y.

Equipment: L-43 floodlight.

Features claimed: The shape of the bowed-in silvered-glass reflector creates the equivalent of a larger floodlight in its collection and utilization of light by making it possible for light to be reflected back to the parabolic surface, where it is redirected outward as part of the main beam. The reflector serves as the floodlight casing, and is made shatter-resisting by an extra -coating of electrolytic silver backing. A 1,000-watt general service lamp is used with the reflector. The unit is particularly useful for protective lighting, railroad lighting, general area lighting, and lighting for construction work. In dim-out areas where outdoor night work must continue, the floodlight can be equipped with a metal visor painted a dark color, which shields the upper half of the light. The visor is fastened to the rim of the light door, and swings out with the door when it is necessary to service the light.

SIXTY-FIVE PASSENGER trailer-bus, manufactured by Fruehauf Trailer Co., of Los Angeles, Calif., is used to transport shipyard workers to and from their work at Marin shipyard of Bechtel Co., near San Francisco.

Passenger Trailer

Manufacturer: Fruehauf Trailer Co., Los Angeles, Calif.

Equipment: Passenger bus-trailer for 65 persons.

Features claimed: Relief for serious employee transportation problems at defense plants. Trailer seats 65 passengers, will carry over 100. Ten such units now in use at Marinship yard, San Francisco, Calif.

Hard Hat

Manufacturer: B. F. McDonald Co., Los Angeles, Calif.

Equipment: Laminated bakelite safety hat.

Features claimed: Known as the type "P" hat, this new item of safety equipment has been developed to replace for the duration the type "T" metal hat, and incorporates the same headband suspension. The hat is light and provides strong resistance to heavy blows. Adequate ventilation keeps the head cool in hot weather. The headband is fully suspended to provide a cushioning hammock against shock of heavy blows. The hat may be cleaned or sterilized by steam or any preferred method.

Mobile Aerostand

Maufacturer: Pacific Engineering Corp., Los Angeles, Calif.

Equipment: Adjustable, mobile workstand.

Features claimed: Easily adjusted to desired working height by hand-operated hydraulic pump. Originally designed for servicing aeroplanes, has been found useful for any type of variable-position work where a firm working scaffold is desired. Sixteen-inch air-wheels permit towing to any site; made of light tubular steel, it is a husky, rigid unit. Stabilizer units on base assures absolute safety in any position.

Display Cabinet

Manufacturer: Mine Safety Appliances Co., Pittsburgh, Pa.

Equipment: M. S. A. Tell-Board.

Features claimed: Designed for a better display of war-time safety and morale posters, instructions and special messages, this new bulletin board is constructed of non-critical

materials with a glass front which permits quick change of bulletin material. A pivot joint at the top permits the cover to swing up and away from the back where it is retained in an open position by a hold-out latch so that the fiber posting board can be easily removed or replaced. Finished in two-tone green enamel, the complete unit measures 32 in. x 25 in. x 3½ in. It is equipped with a glass sign with sand-blasted letters reading "Safety Bulletins" or "General Bulletins," and has tightly fitting seams which make its use in exposed locations practical.

Women's Welding Clothes

Manufacturer: General Electric Co., Schenectady, N. Y.

Equipment: Safety clothing for women welders.

Features claimed: Safety, durability, and smart styling are combined in a line of special clothing, the design of which is based on an extensive industrial survey of safety requirements of women welders. Leather sleeves, aprons, jackets and gloves, and a special head and hair covering designed by Sally Victor, are featured. All the items are of high-quality material, comfortable, and light-weight, but provide full protection.

All-Position Electrode

Manufacturer: Air Reduction Sales Co., New York, N. Y.

Equipment: All-position AC electrode.

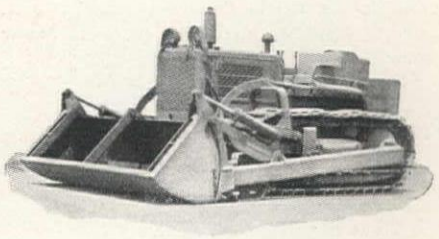
Features claimed: Tests show that quality of deposited metal is fully comparable to the best DC reverse polarity all-position electrodes; finished weld deposit is smooth and has uniform surface contour. Average operator has no difficulty securing good fusion and complete penetration. Made in diameters of ⅛ in. and $\frac{5}{32}$ in.

Four Wheel Drive

Manufacturer: Thornton Tandem Co., Detroit, Mich.

Equipment: Four-wheel-drive unit for Ford trucks.

Features claimed: Utilizes two driving axles under the load and provides a heavy-duty performance for on or off-the-road operation. Interaxle, two-speed transmission multiplies power for hard pull, and furnishes speed for fast schedules on the highway. Can be used on 1½ to 3-ton trucks, converting them to durable, heavy-duty units. Flexible spring suspension permits each wheel to follow surface of ground without losing tractive power.



Clam Type Shovel

Manufacturer: Hi-Way Service Corp., Milwaukee, Wis.

Equipment: Bull clam shovel.

Features claimed: Handles all bulldozer jobs, most shovel operations, and all scraper work. Hydraulically controlled from driver's seat, it digs, carries, cuts, spreads, or dumps. Load is always ahead of tractor, shovel is perfectly balanced, running free of tractor. Clams are made to fit all makes and models of trac-

tors. Objects may be carried as much as 3 ft. above ground, or will cut to 1-ft. below ground.

Pneumatic Hand Drill

Manufacturer: Ingersoll-Rand Co., New York, N. Y.

Equipment: Size 00A drill.

Features claimed: Weighing 2 lb., this unit is powered by a "Multi-Vane" air motor and is constructed for continuous performance. It is equipped with a built-in speed regulator and a quick-action throttle for accurate hole-starting. A built-in automatic oiler provides lubrication. A chuck shield protects the operator and enables him to guide the drill more effectively by grasping the shield with the fingers of his free hand.

Transformer Welder

Manufacturer: Wilson Welder and Metals Co., Inc., New York, N. Y.

Equipment: "Bumble Bee" AC welder.

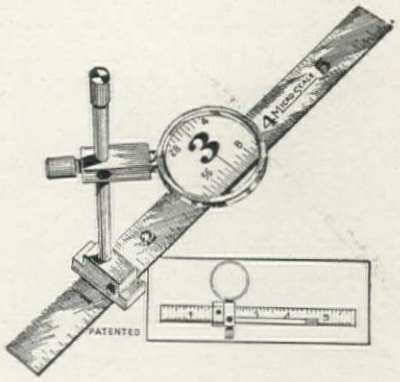
Features claimed: To provide a low open circuit voltage, automatically maintained at 42 volts, two primary coils are used instead of the usual one, with a magnetic contactor in the circuit of one primary. Each primary contributes about 42 volts to the total open circuit voltage, but when the machine is idle, one primary is automatically cut out. As soon as the electrode contacts the work, the second primary is thrown into the circuit and this potential of 84-85 volts permits immediate establishment of the arc. When the welding arc is lengthened, the voltage rises, and when it reaches 45 volts, the contactor opens and cuts out one primary, leaving 42 volts in the open circuit.

Machinist's Micro Scale

Manufacturer: L. V. Fox, Inc., Washington, D. C.

Equipment: Magnifying machinist scale.

Features claimed: This instrument, called "Micro Scale," permits the toolmaker to easily see such fine divisions as 1/64th of an



inch at about 4 times its normal size, permitting him to work to within a few thousandths, since he is able to split 64ths with his scriber. The scale will lie flat on the surface block, has a patented, unbreakable plastic lens which focuses and slides along the scale, but can be carried flat in the pocket. Prevents eye-strain, teaches "green" help to do close work, and eliminates measuring mistakes. A plush-lined instrument box accompanies the scale.

LITERATURE . . .

Copies of the bulletins and catalogs mentioned in this column may be had by addressing a request to the Advertising Manager, Western Construction News, 503 Market St., San Francisco, Calif.

Douglas Fir Plywood Association, Tacoma, Wash.—Two hard-backed, loose-leaf 9x12-in. handbooks. Form 42-60 covers Industrial Uses of Plywood, with special sections devoted to the following subjects: War uses (a tabulation only); blackout purposes, with details of uses in factory, office and home; exterior plywood life-boat covers; railroad uses; specific farm uses; and a paper on the Douglas fir plywood industry. Form 42-70 deals with Technical Data on Plywood, for engineers and architects. The material is described and details of its manufacture are told, also typical terms are defined. This is followed by a section on designing with plywood, showing some tables of moments, stresses, etc. The next section deals with preventing

condensation on walls and ceilings, and the final section is a series of deflection charts for different types and sizes of Douglas fir plywood beams, and a technical discussion on the matter of deflections.

Black & Decker Mfg. Co., Towson, Md.—A handbook devoted to the proper use and care of portable electric drills. The handbook is designed to show new workers the correct methods of portable electric drills and how to obtain the greatest efficiency and longest life from these tools.

American Expansion Bolt & Mfg. Co., Chicago, Ill.—Catalog No. 42 covering expansion bolts, anchors, accessories for highway, industrial and general use. The catalog not only lists the various types of expansion bolts and anchors, but illustrates the proper methods of us, as well.

The Thew Shovel Co., Lorain, Ohio—A handbook devoted to the solution of emergency field repairs to Lorain power shovel equipment. To assist the owners of the machines in keeping their equipment in operation, the handbook describes briefly, and illustrates by simple drawings, the best methods of meeting emergencies in the field.

Link-Belt Speeder Corp., Chicago, Ill.—Twelve page illustrated catalog No. 1943 on heavy-duty crawler shovel, crane, and dragline. Both construction details and installation views are shown, and general dimensions, clearances, lifting capacities and specifications are given.

Mine Safety Appliances Co., Pittsburgh, Pa.—Bulletin FA-79, devoted to six types of industrial skin creams and lotions for protection against industrial dermatitis. In addition to a description of the materials, themselves, the bulletin includes a brief discussion of industrial dermatitis and an application chart consisting of a list of chemicals and processes for which the products afford protection.

Master Builders Research Laboratories, Cleveland, Ohio—Research Paper No. 36, entitled Economics of Cement Dispersion. The paper describes briefly the application of the principle of dispersion to portland cement. The relation of dispersion to hydration, fineness of grinding and water-cement ratio are discussed, showing that dispersion makes possible more effective utilization of the cement.

Opportunity Section

This widely-read column can help you to sell your used machinery and other used equipment. For rates, write to the Opportunity Section, Western Construction News, 503 Market Street, San Francisco, Calif.

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