WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED
WESTERN HIGHWAYS BUILDER

PUBLISHED MONTHLY
VOLUME XIX, No. 12

DECEMBER • 1944

35 CENTS A COPY
$3.00 PER YEAR

IN THIS ISSUE

Railroad Built By Navy
In Olympic Peninsula Woods

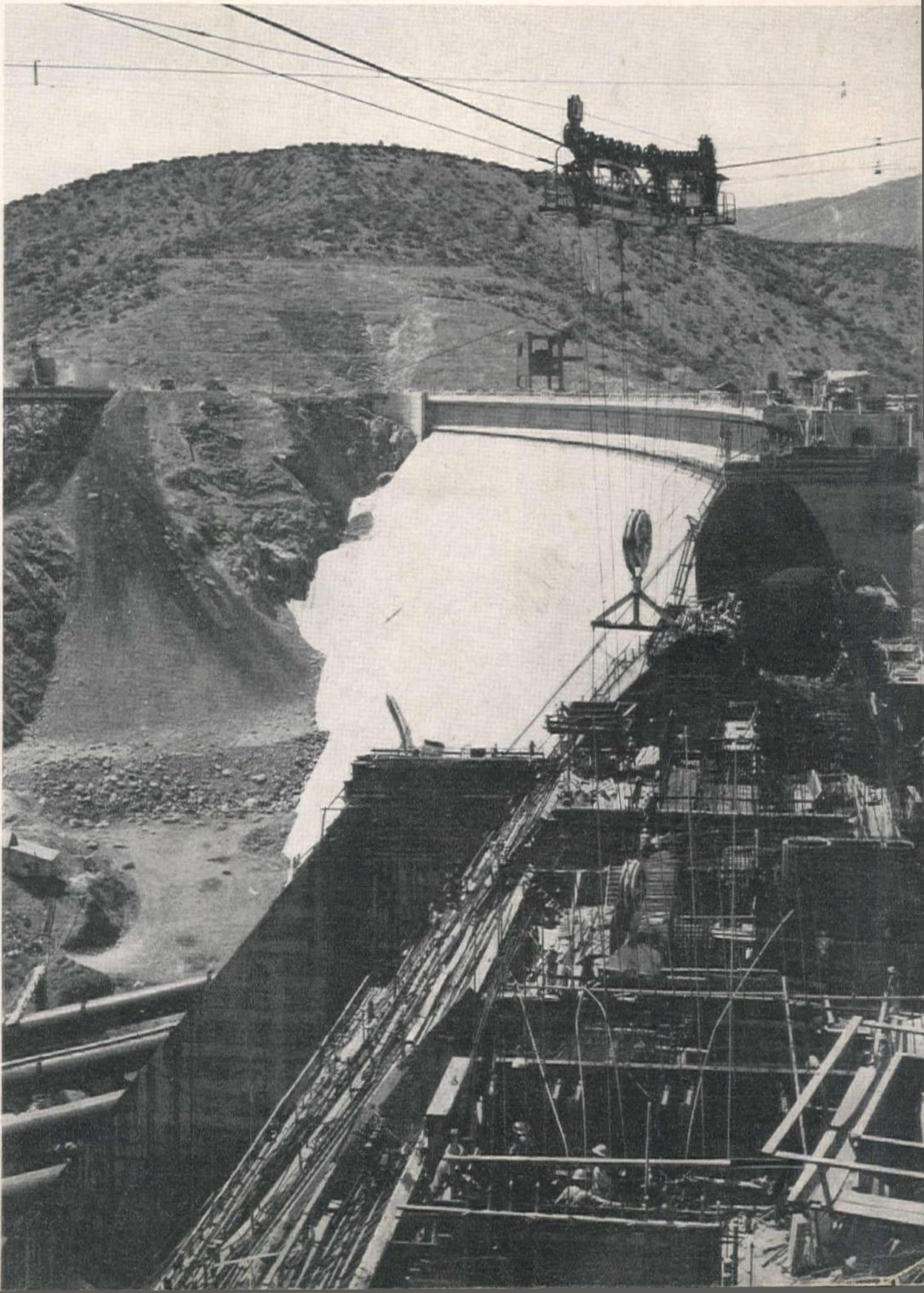
Open Graded Paving Mix
Used on California Roads

Portland Civic Center
Planned for Water Front Site

Missouri River Report
Settles Design Differences

Ponton Bridge History
First Used 30 Centuries Ago

Important Conventions
Of Engineers, Reclamation



AS CENTRAL VALLEY project of California celebrates its seventh birthday, Shasta dam approaches the completion of its construction stage, only the top pours of the spillway section still remain unfinished. Water is already being stored in the reservoir formed by this giant Bureau of Reclamation structure and power generation has commenced in the powerhouse.

NORTHWEST *Performance* on RUBBER TIRES

When you think of Truck Mounted shovels, cranes and draglines, think of NORTHWEST. Northwest Truck cranes and Truck shovels bring you the advantages characteritsic of Northwest crawler equipment — advantages that mean better Truck crane and shovel performance.

Northwest Truck cranes bring you Northwest simplicity oi design that cuts upkeep costs, the "feather-touch" clutch control for fast, smooth, easy operation, the cushion clutch that helps to make ample power safer and reduces the overloads on all parts under power, the uniform pressure swing clutches that take the nerve wracking jerks out of swinging, ball and roller bearings on all high speed shafts, the helical gear drive and many other Northwest features that have been proved in years of service on the big jobs of the country.

If you need truck mobility and want the smooth performance and high output for which Northwests have always been famous, check up on Northwest for your future plans.

NORTHWEST ENGINEERING CO.
1736 Steger Bldg., 28 E. Jackson Blvd.
Chicago 4, Illinois

Northwest Sales Agents: ARNOLD MACHY. CO., INC., 149 W. 2nd South St., Salt Lake City, Utah; BALZER MACHY. CO., 2136 S.E. Eighth Ave., Portland, Oregon.

Branch Offices: 255 Tenth St., San Francisco, Calif; 1234 Sixth Ave., South, Seattle, Wash.; 3707 Santa Fe Avenue, Los Angeles, Calif.

NORTHWEST for TRUCK CRANES

No matter what your off-the-highway hauling problem may be . . . big loads . . . steep grades . . . short or long hauls . . . Rear-Dump and Bottom-Dump EUCLIDS will move more pay dirt faster and at lower cost. Built in every part for tough hauls, Euclids combine minimum vehicle weight with maximum power and strength for large capacity off-the-highway hauling.

Fast, easy loading with modern excavating equipment . . . speed in hauling and dumping . . . rugged dependability day in and day out . . . these are reasons why leading contractors and industrial users of hauling equipment are cutting costs and increasing production with Euclids . . . reasons why Euclids are *your* best bet for any material and any haul.

Write for your copies of two new books that show Rear-Dump and Bottom-Dump EUCLIDS at work on construction jobs and mine and quarry operations.

The EUCLID ROAD MACHINERY Co. · · · Cleveland 17, Ohio

THE EUCLID ROAD MACHINERY CO.

3710 SAN PABLO AVENUE — PIEDMONT 8046 — EMERYVILLE, CALIFORNIA

CONTRACTORS' EQUIPMENT & SUPPLY CO., Albuquerque; INTERMOUNTAIN EQUIPMENT COMPANY, Boise; HALL-PERRY MACHINERY COMPANY, Butte; F. W. McCOY COMPANY, Denver; COLUMBIA EQUIPMENT COMPANY, Portland; A. H. COX & CO., Seattle; LANG COMPANY, Salt Lake City.

WESTERN CONSTRUCTION NEWS

WITH WHICH IS CONSOLIDATED WESTERN HIGHWAYS BUILDER

Covering the Western Half of the National Construction Field

Contents for December, 1944

J. M. SERVER, JR.
Editor

Published by King Publications

OFFICE OF PUBLICATION
503 Market St., San Francisco 5, Calif. . . . . Telephone YUkon 1537

SOUTHWEST OFFICE
479 S. Holt Ave., Los Angeles 36, Calif. . . . . Telephone BRadshaw 2-3935
J. O. HODGES, District Manager

EASTERN OFFICE
5833 So. Spaulding Ave., Chicago 29, Ill. . . . . Telephone PRospect 1685
A. C. PETERSEN, District Manager

WASHINGTON OFFICE
1120 Vermont Ave., NW., Washington 5, D. C. . . . . Telephone DIstrict 8822
ARNOLD KRUCKMAN, Associate Editor

Please address correspondence to the executive offices, 503 Market St., San Francisco 5, California

Entered as Second Class Matter at the Post Office at San Francisco, California, under the Act of March 3, 1879.

SUBSCRIPTION RATES

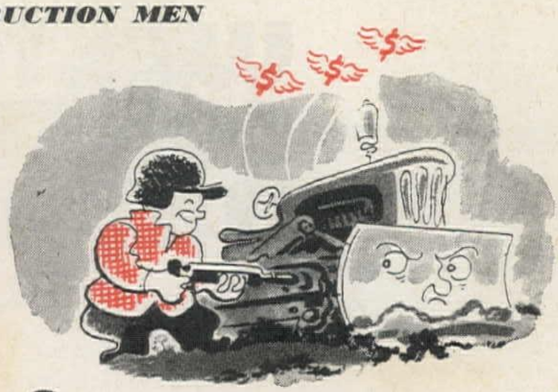
The annual subscription rate is $3 in the United States and foreign countries where extra postage is not required. To Canada and to foreign countries where extra postage is necessary the annual rate is $4. Single copies, 35 cents.

3 Answers that May Save You Time, Money and Machines!

Q **Can You Get "M. P. T."* From Your Machines?**

A Definitely . . . by reducing "time-out" for lubrication! In one case, Alemite Lubrication Specialists cut by 50% a contractor's lubricating time on a group of 5 machines . . . actually gaining an hour and 40 minutes "M. P. T."* every day! What's more—the Alemite System paid for itself in weeks!

**More Productive Time*



Q **Is Hand-Type Greasing Costing *You* Too Much?**

A It's bound to! But you can save money and do a better job using Alemite's "on the job" barrel-to-bearing method. On one construction project Alemite Portable Service Stations reduced wear of track rollers on "cats" by 32% . . . reduced oil and grease consumption by 19%!

Q **Does Winter Weather "Freeze" Your Grease and Oils?**

A Not if they're Alemite's! Because Alemite builds an extra-wide operating range into *all* of its grease and oils. The result is amazing toughness and free-running qualities that fight friction in the coldest weather! Alemite "Sub-Zero" lubricant, for example, is designed for heavy-duty cold weather work—*actually protects bearings down to 40° below!* You can have that kind of performance, too!

This Winter Get "On the Job" Power Lubrication with an Alemite Portable Service Station!

• Winter's no worry when you've got this complete lubrication department on wheels working for you! It carries lubricants to the machines on the job . . . delivers lubricants easier and faster and with less spoilage due to "barrel-to-bearing" control. Developed by Alemite, the unit includes high- and low-pressure Alemite Barrel Pumps, Alemite Motor Oil Dispenser, hose reels and gas engine equipped compressor.

It's proving its ability to fight ruinous winter friction and costly shutdowns on thousands of construction jobs. Write for catalog to: Alemite, 1819 Diversey Parkway, Chicago 14, Illinois. In Canada: Belleville, Ontario.

WANTED
Tough Job by Man with "MML" Degree!

This man, an Alemite Lubrication Specialist, is a "Master of Modern Lubrication." His technical training, skill and experience equip him to come on your job and consult with you about applying the most modern lubricating methods. He has added more productive time to machines, saved lubricants and man power. He has installed safer, surer, more accurate lubricating methods.

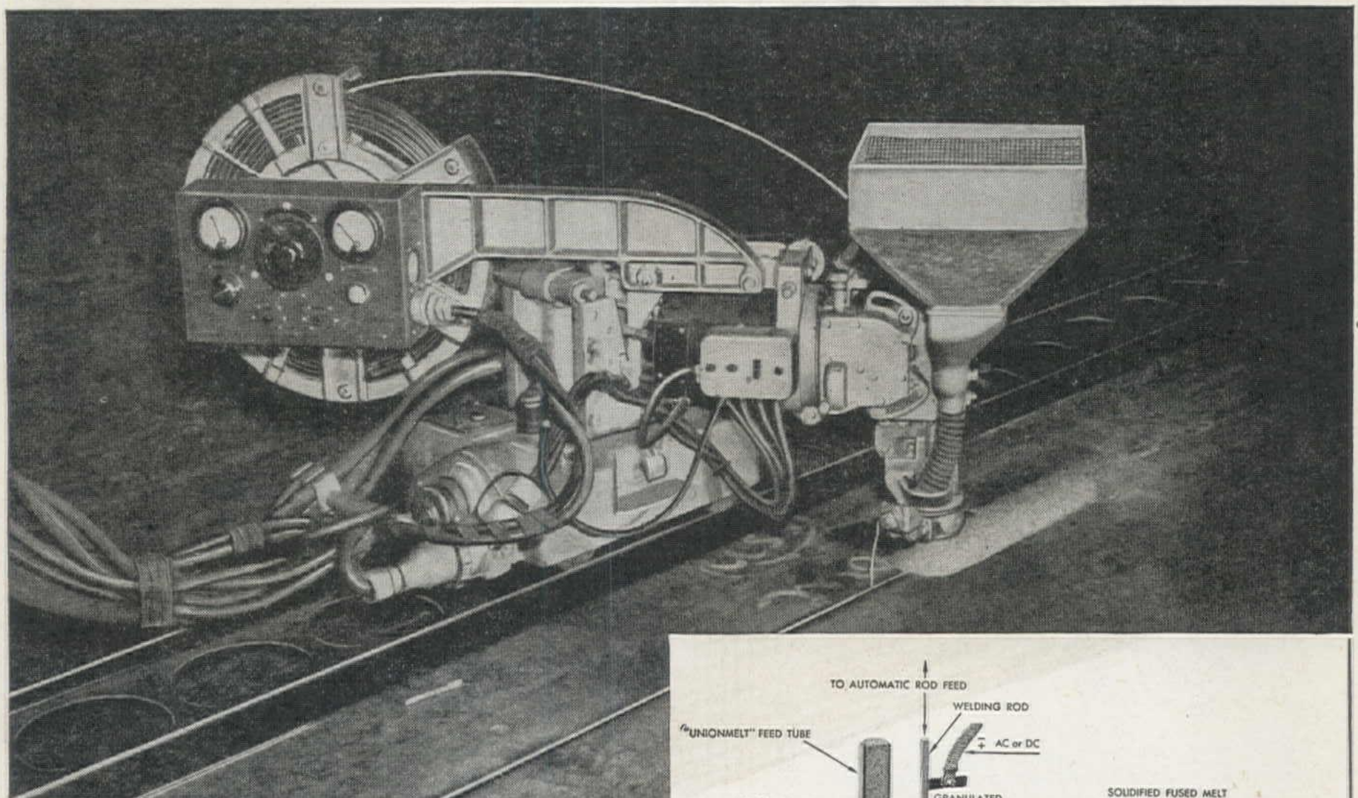
He's ready to go to work for you now, backed by the world's most experienced organization in the handling and application of lubricants. Call him. Or, if you prefer, write Alemite for the address of the nearest Alemite Lubrication Specialist.

Another Product of STEWART WARNER

ALEMITE REG. U. S. PAT. OFF. *First in Modern Lubrication*

CONSULTATION • ENGINEERING • EQUIPMENT • LUBRICANTS • MAINTENANCE

UNIONMELT WELDING



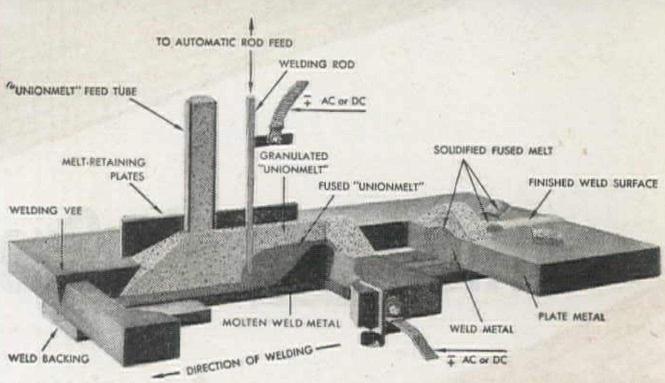
Linde's Automatic Electric Process

UNIONMELT electric welding joins steel of any commercially used thickness at speeds up to twenty times faster than similarly applicable methods. Because the process is automatic, it produces uniform welds of unusually high-quality with minimum dependence on the manual skill of welding operators.

The flexibility of UNIONMELT welding has led to its application for a wide variety of work—for heavy and light material, for repetitive operations or single jobs, and for shape-welding as well as for straight-line and circumferential welding.

Metal-fabricating shops of all kinds can profit by using the UNIONMELT process for either fabrication or repair work. If you are interested in learning more about this process, or in discussing its possibilities for any particular application, please write to us.

BUY UNITED STATES WAR BONDS



HOW IT WORKS

1. A special granulated material known as UNIONMELT is laid down along the seam to be welded so that it covers the end of the welding rod.

2. Heat, generated by passing an electric current through the UNIONMELT composition between the welding rod and the parts being welded, progressively melts some of the UNIONMELT so that it forms a protective blanket over the weld area.

3. Underneath this molten UNIONMELT composition, metal from the rod and from the plate edges are fused to form the weld.

4. The molten UNIONMELT cools and solidifies behind the welding zone and, on further cooling, contracts and detaches itself.

The process of welding electrically beneath a mineral melt by the method illustrated is patented.

The Linde Air Products Company
Unit of Union Carbide and Carbon Corporation
UCC
General Office, 30 E. 42nd St., New York 17, N. Y.
Offices in Other Principal Cities
In Canada: Dominion Oxygen Company, Limited, Toronto

**LINDE OXYGEN . . . PREST-O-LITE ACETYLENE . . . UNION CARBIDE
OXWELD, PUROX, PREST-O-WELD, UNIONMELT APPARATUS
OXWELD AND UNIONMELT SUPPLIES**

The word "Unionmelt" is a registered trade-mark of The Linde Air Products Company

Alcan Veterans Show

HOW AIRPORT CONSTRUCTION CAN BE SPEEDED WITH TOURNAPULLS

Average 10 Loads per Hour on Half Mile Round Trip Haul . . . Travel to Job Over Highway Under Own Power.

Tournapull stripping 3 inches of top soil gets heaping loads like this in 50 seconds. No waiting at shovel. Tournapulls used here travelled under their own power 750 miles from Dawson Creek to Watson Lake, were later brought back to Peoria and reconditioned. They travelled the 150 miles from Peoria to Dubuque in about 15 hours.

To build a 4,500,000-yard airport at Dubuque, Iowa, in 160 days, McVaugh-Haynes Co. travelled 10 Tournapulls, reconditioned veterans of the Alcan Highway, to the job. The hilly site, selected to put the airport above reach of Mississippi flood waters, requires fills up to 50 feet deep and cuts of 35 feet. An early time study, made while the Tournapulls were stripping top soil and stockpiling it, shows these results:

Material	sod and black dirt
Loading time	50 sec. (average)
Loading depth	3 inches (stripping)
Loading distance	150 to 200 feet
Haul Distance	1/2 mile round trip
Cycle time	6 min. (average)
Trips per hour	10
Estimated load per trip	12 cu. yds.
Hourly yardage	120 cu. yds.

Like McVaugh-Haynes Co., and many other successful contractors, you will find Tournapull earthmoving faster and cheaper. Try it!

Less First Cost—More Power

To begin with, Tournapulls cost you $500 to $7,000 less than crawler-scraper rigs of comparable hourly capacity. What's more, your Super C Tournapull lugs but 207 pounds per horsepower, while each horsepower in a crawler-scraper unit of the same 15-yard capacity has to budge 411 pounds.

You get the same one-man loading, hauling and spreading efficiency. But Tournapull speed is 2 to 3 times faster than the fastest crawling tractor, thus making profitable any haul from 300 ft. to 3 miles. And Tournapull design concentrates weight and power on two big rubber-tired drive wheels to give you greater traction, maximum flotation and quick turning.

See Your LeTourneau Dealer

Why use slow-moving crawler equipment or one-purpose loading and hauling rigs, when you can move more yardage farther, faster and more profitably with Tournapulls? See your LeTourneau Distributor . . . he can help you get new Tournapulls NOW for essential jobs or reconditioned Tournapulls for low-priority work.

Tournapull stockpiling top soil for future use on Dubuque airport. In addition to 10 Tournapulls, McVaugh-Haynes uses 8 tractor-drawn LeTourneau Carryalls* for short-haul earthmoving, 4 LeTourneau Dozers and a Rooter* on this job.

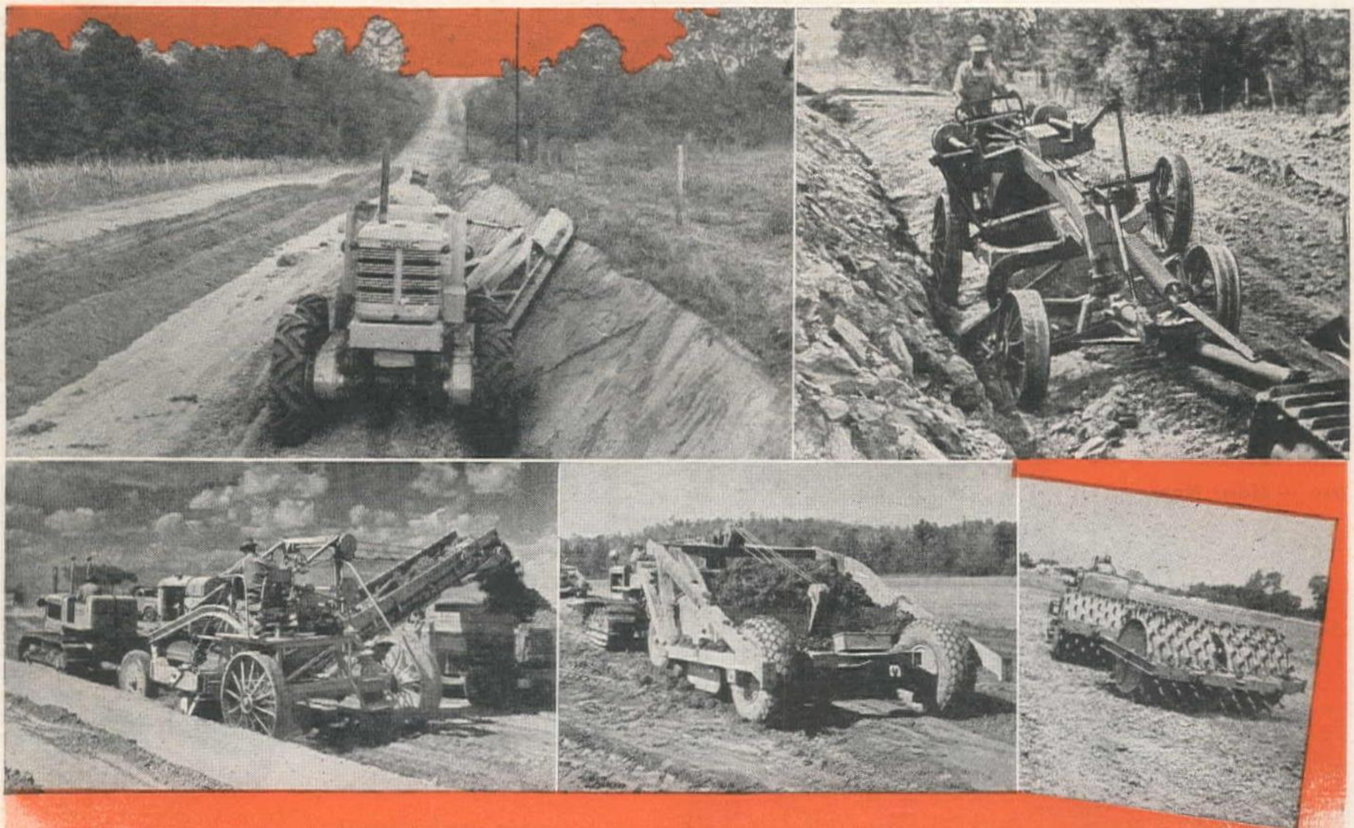
LETOURNEAU
PEORIA, ILLINOIS • STOCKTON, CALIFORNIA

2400 Now in Use by Alert Earthmovers.

TOURNAPULLS

Manufacturers of TOURNAPULLS*, ANGLEDOZERS*, BULLDOZERS, TILTDOZERS*, CARRYALL* SCRAPERS, POWER CONTROL UNITS, ROOTERS*, TOURNATRAILERS*, TOURNACRANES*, TOURNATRUCKS*, SHEEP'S FOOT ROLLERS, TOURNAROPE*, TOURNAWELD*, TOURNALIFTS*. *Trade Mark Reg. U.S. Pat. Off.

RUBBER-TIRED POWER FOR FASTER EARTHMOVING



THEY'LL SOON BE BACK *in "Civies"...*

FOR SOME three years practically every machine leaving the Adams shipping dock has been dressed in the war paint of the Army or Navy. Hundreds of Adams motor graders, leaning wheel graders, elevating graders—including specially designed pull-type graders and tamping rollers for the airborne engineers—have been shipped to all parts of the world. Reports from all sources indicate that they are doing a grand job in the building and reconstruction of air bases, landing strips, roads, etc.

In the very near future—in time for spring work—Adams equipment should again be available for delivery for civilian uses subject, of course, to whatever government restrictions are in effect at that time. In connection with your 1945 planning see your local Adams dealer now about the machines you need. He's alive to the possibilities and can be of real service to you.

J. D. ADAMS COMPANY • INDIANAPOLIS, IND.

At war's end we'll need many new roads and many jobs for returning service men. Plan post war projects now and meet both needs.

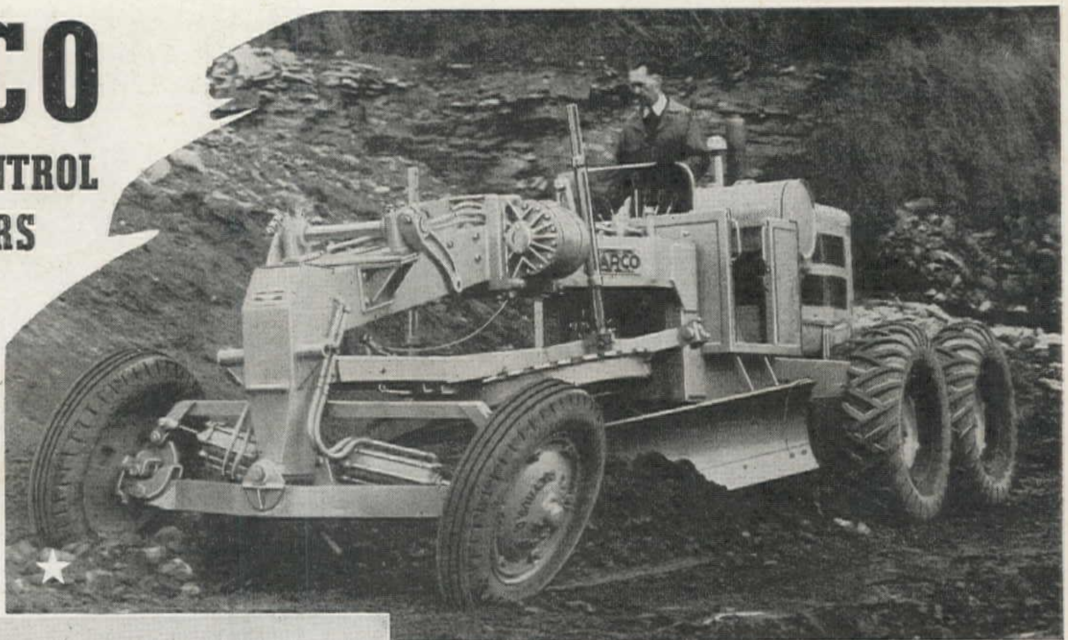
Let These Distributors Service Your Equipment

ALASKA—Glenn Carrington & Co., Fairbanks
ARIZONA—O. S. Stapley Company, Phoenix
CALIFORNIA—J. D. Adams Co., San Francisco, Los Angeles
Sutton Tractor & Equip. Co., Sacramento
J. G. Bastain, Redding
COLORADO—McKelvy Machinery Co., Denver
IDAHO—Intermountain Equipment Co., Boise, Pocatello
MONTANA—Industrial Equipment Company, Billings
NEVADA—Allied Equipment, Inc., Reno
NEW MEXICO—Hardin & Coggins, Albuquerque
OREGON—Howard-Cooper Corp., Portland, Eugene
UTAH—The Lang Company, Salt Lake City
WASHINGTON—Howard-Cooper Corp., Seattle, Spokane, Walla Walla
WYOMING—Industrial Equip. Co., Billings, Mont.
The Lang Company, Salt Lake City, Utah

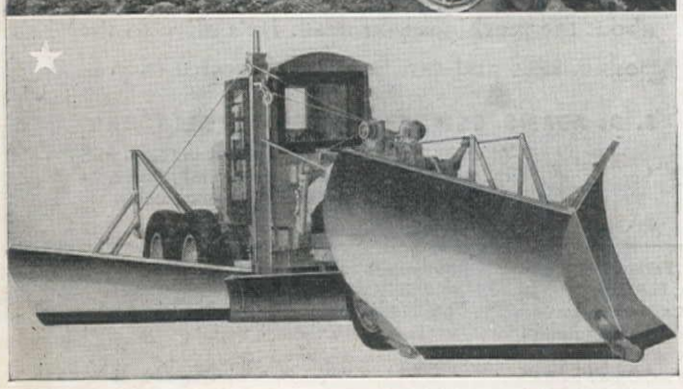
ADAMS ☆ ROAD-BUILDING AND ☆ EARTH-MOVING EQUIPMENT

WARCO

HYDRAULIC CONTROL MOTOR GRADERS



Simple Design — Rugged Construction — Long Use — Hard Wear.



★ **For precision work in rough terrain.**

★ **For super-highway building in all altitudes and climates.**

★ **For a full blade's worth of earth in grading.**

★ **For snow removal through tough drifts.**

WARCO Graders are "war tested." This means they meet high standards of efficiency, endurance and dependability — great qualities to benefit WARCO users in peace-time construction.

Now available only on WPB releases or approval — but ready for reconstruction work when it comes.

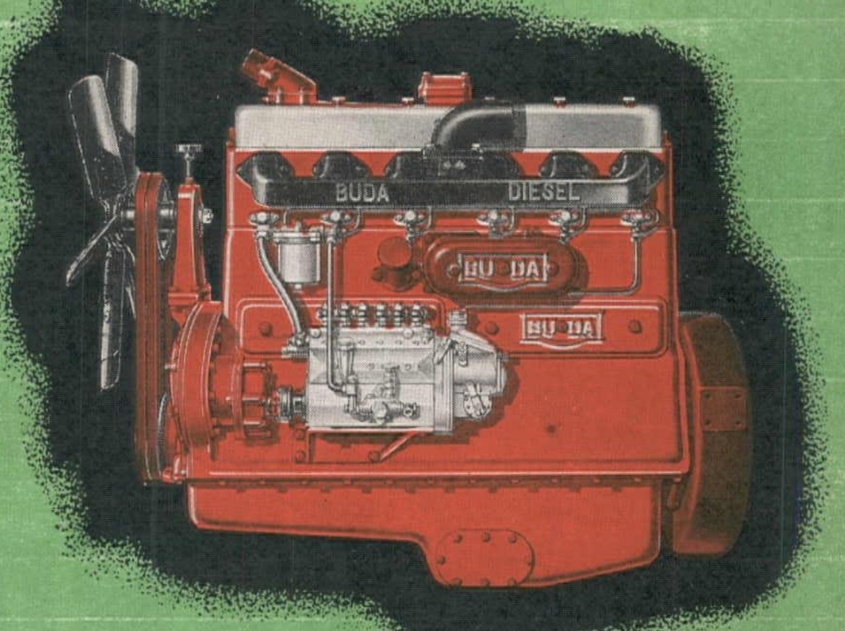
Sold and Serviced by

Mine and Smelter Equipment Co., Phoenix, Ariz.; Le Roi-Rix Machinery Co., Los Angeles 11, Calif.; Sorensen Equipment Co., Oakland 1, Cal.; Contractors Equipment & Supply Co., Albuquerque, N. M.; Feenaughty Machinery Company, Portland - Boise - Seattle - Spokane.

Post-War Items

HYDRAULIC SCOOPS - LIGHT PATROL MAINTAINERS - MULTIPLE BLADE MAINTAINERS - TERRACING GRADERS - ROTARY SCRAPERS

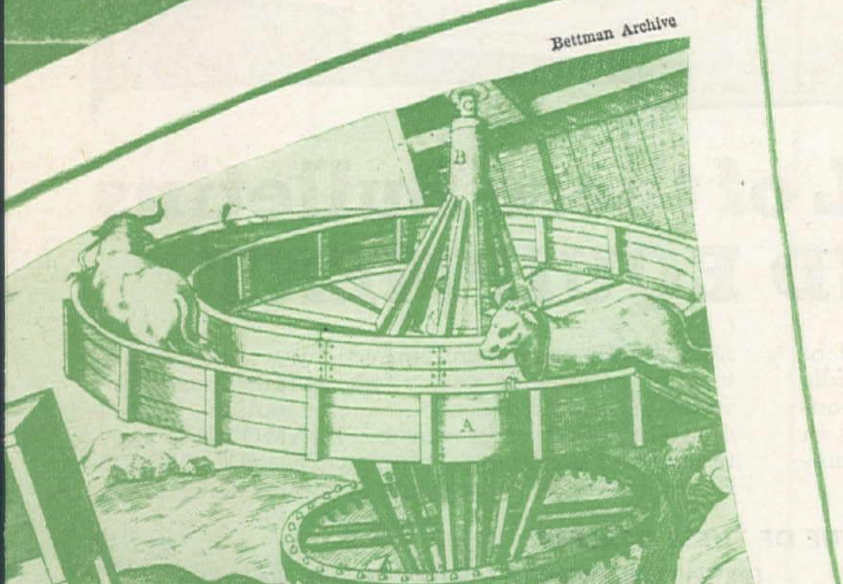
W.A.RIDDELL CORPORATION, Bucyrus, Ohio



BUDA
Service is
Nation-Wide

Power...
precedes progress

Bettman Archive



Stone Crusher operated by Animal Power.

The problem of efficiently propelling equipment in the by-gone days was largely a matter of insufficient power.

Today you can have the finest, most modern, efficient power ever developed, by specifying BUDA Diesel Engines.

ARMY E NAVY

Write or wire for literature.

BUDA

15424 Commercial Avenue
HARVEY (Chicago Suburb) **ILLINOIS**

Get ONE or ALL of these Bulletins on DIAMOND EQUIPMENT

When we hear the wonderful news of the end of the war in Europe — will you be ready to handle your share of the tremendous road building and construction program which peace is sure to bring in America? Do you need to modernize your equipment, or add to it?

DIAMOND equipment, proved by a quarter century of nationwide use, offers you the maximum value in perfected design, volume output, rugged durability — all re-proven by DIAMOND'S wartime record-breaking performance. Get DIAMOND Bulletins NOW, and consult with our engineers.

CONTACT ONE OF THESE DEALERS:

COAST EQUIPMENT COMPANY, San Francisco 1, California

GARLINGHOUSE BROS., Los Angeles 21, California

A. H. COX & CO., Seattle 4, Washington

LOGGERS & CONTRACTORS MACHY. CO., Portland 14, Oregon

CONSTRUCTION EQUIPMENT COMPANY, Spokane, Washington

CONTRACTORS EQUIPMENT & SUPPLY CO., Albuquerque, New Mexico

WESTERN EQUIPMENT COMPANY, Boise, Idaho

C. H. JONES EQUIPMENT COMPANY, Salt Lake City, Utah

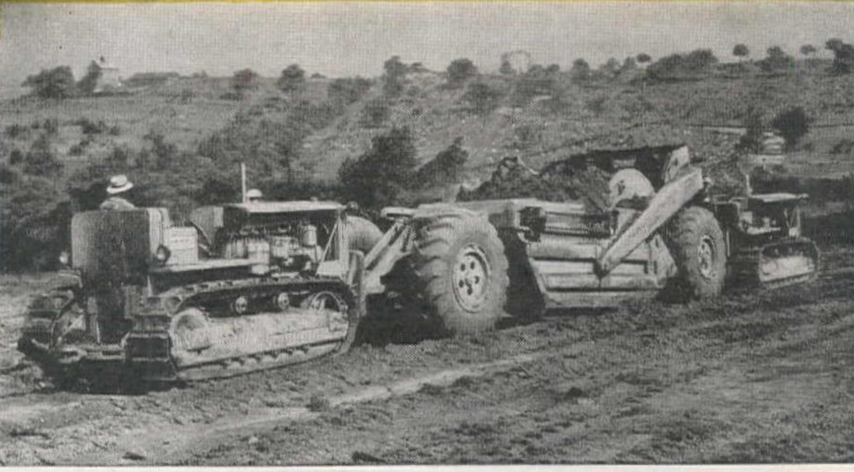
OR WRITE

DIAMOND IRON WORKS, INC.
ESTABLISHED 1880
AND THE MAHR MANUFACTURING CO. DIVISION

1818 SECOND STREET NORTH — MINNEAPOLIS 11, MINN.

"TRIPLE THREAT"

. . . AND THEN SOME!



THE football star who can run, pass and kick with equal ability is familiarly known as a "triple threat" man — and usually gets the "most-valuable-player" vote.

"Caterpillar" Diesel Tractors are even more versatile. They're "*multiple* threat" performers that can come through with a good job on any of a score of assignments. In fact, there isn't another type of mobile power unit that can rip, push, drag, haul, scrape, lift, load, run rotating machinery with such ready *adaptability, thoroughness* and *low over-all cost.* And because versatile "Caterpillar" Diesels can do so many things, they can "stay in the game"—get in a greater number of useful working hours and have fewer wasteful idle hours.

While your particular jobs may not call for all the things "Caterpillar" Diesels can do, it is well to remember the many kinds of equipment these rugged, dependable tractors can operate, and are operating throughout every field (to say nothing of the countless services they are rendering on the war fronts):

Bulldozer • Pushdozer • Scraper • Ripper
Wagon • Winch • Side Boom • Crane
Shovel • Loader • Logging Arch

Versatility and dependability! These give "Caterpillar" Diesels the ability to keep gainfully employed—provide faster, steadier profits for their owners. Keep this in mind when let-down in war needs enables you to "rearm for the industrial battle of peace."

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

CATERPILLAR DIESEL

REG. U.S. PAT. OFF.

ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

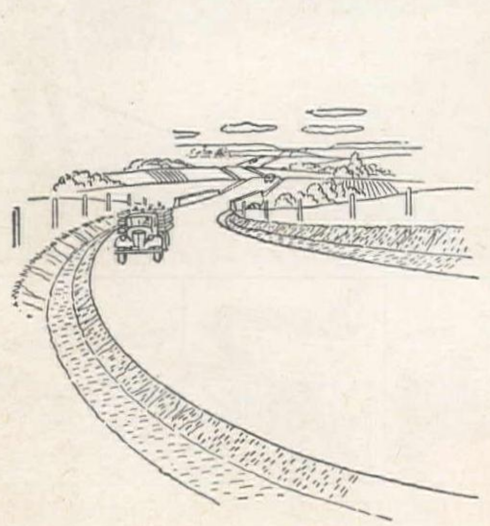
LET'S HELP PROVIDE JOBS!...

It's up to Us in the Highway Industry to help ward off a Breakdown of our Peacetime Economy

MR. CONTRACTOR . . Is your present equipment in condition? Could you put it to work . . . NOW? Have you talked to your dealer about additional units?

MR. ROAD OR STREET OFFICIAL . . Are your plans ready for bids? Can you start the ball rolling in your community without a moment's delay? YOU are the *key man!*

AS YOUR MANUFACTURER . . As one of your suppliers of construction machinery, we are happy to say we will have a wider and better line of units than ever before. Our plans for peacetime expansion have been made. As rapidly as the fortunes of war permit, you will get those powerful, fast-moving 2-cycle Diesel tractors with bulldozers and scrapers . . . motor graders, power units and other necessary tools — proved and improved by the rigors of war. But, as you would want it, until the war is unconditionally won in every theater, Allis-Chalmers will produce every machine possible to attain that end. Our policy is to "Work For Victory . . . and Plan For Peace!"



★

ALLIS-CHALMERS

TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

A scientific development that costs you no more

IT'S THE *internal lubrication* IN MACWHYTE PREformed WIRE ROPE

In Macwhyte PREformed Wire Rope, Internal Lubrication increases the life of the rope, thereby reducing operating costs.

A special-formula lubricant made to Macwhyte specifications is force-fed to the wires as they are being closed into the strand.

Macwhyte Internal Lubricant improves the sliding action of the wires as they move in bending around sheaves and drums. In many cases the inside wires are in good condition after the outside wires are seriously worn.

Operators of equipment prefer Macwhyte PREformed Wire Rope because it operates so smoothly and spools on the drum so well.

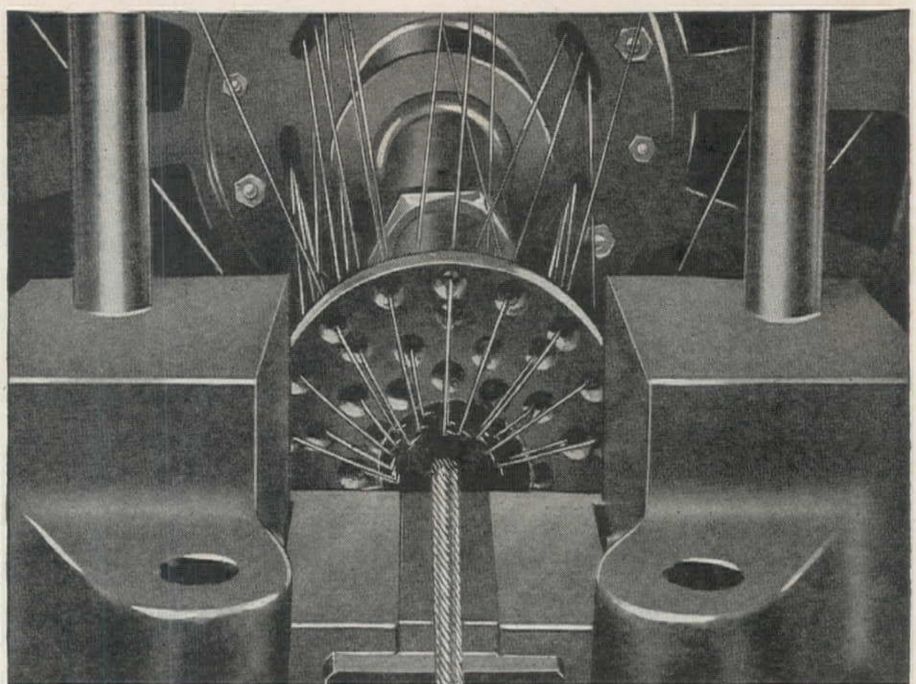
Macwhyte Wire Rope Lubricant is packed around each wire in all strands of Macwhyte Wire Rope.

If you have a service problem, Macwhyte Wire Rope engineers stand ready to give you the benefit of their experience in selecting the proper size, grade, and construction.

The demands of our armed services are so great now, there may be times when we cannot give you our usual prompt service and delivery. The situation changes from day to day so please keep trying to get Macwhyte Wire Rope. We'll serve you if we possibly can.

Rope Conservation Bulletins

18 illustrated articles on the use and care of Wire Rope have been bound into an 8½" x 11" book which is available free to Wire Rope users requesting it on their company letterhead. Ask for Bulletins No. 43-85.



The above illustration shows how internal lubrication is applied to Macwhyte PREformed ropes. *(Top of stranding die is removed.)* Note the wires pass through the lubricant which is pumped up from below and therefore each wire is completely covered and all spaces between the wires in the strand completely filled.

MACWHYTE PREformed WIRE ROPE *Plus* Internal Lubrication · Selected Steels · Tested-Proved

The correct rope for your equipment

NO. 758

MACWHYTE COMPANY

Wire Rope Manufacturers

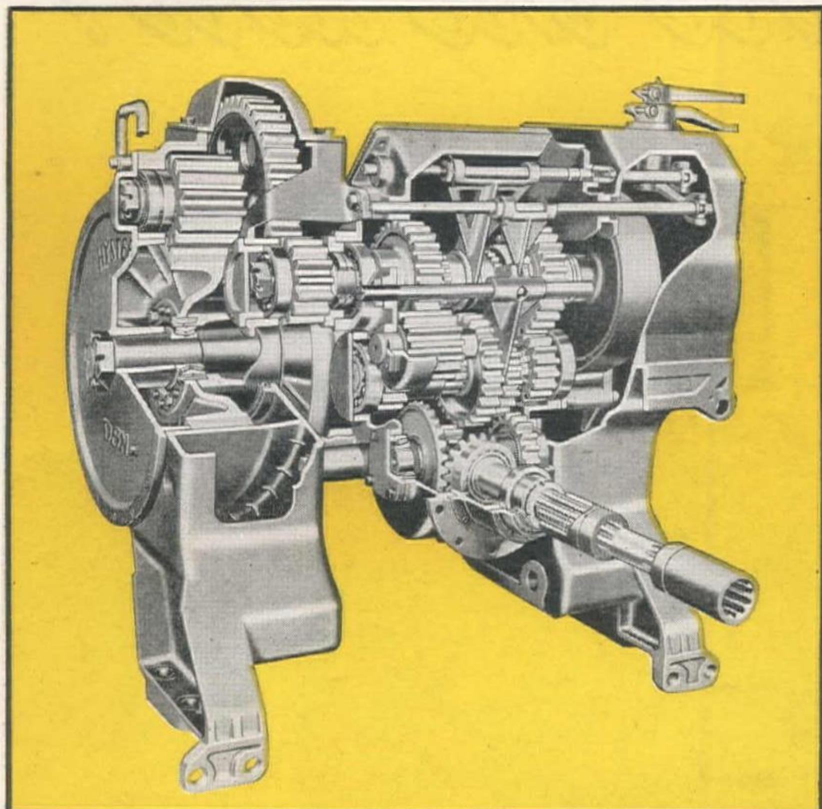
2909 FOURTEENTH AVENUE KENOSHA, WISCONSIN

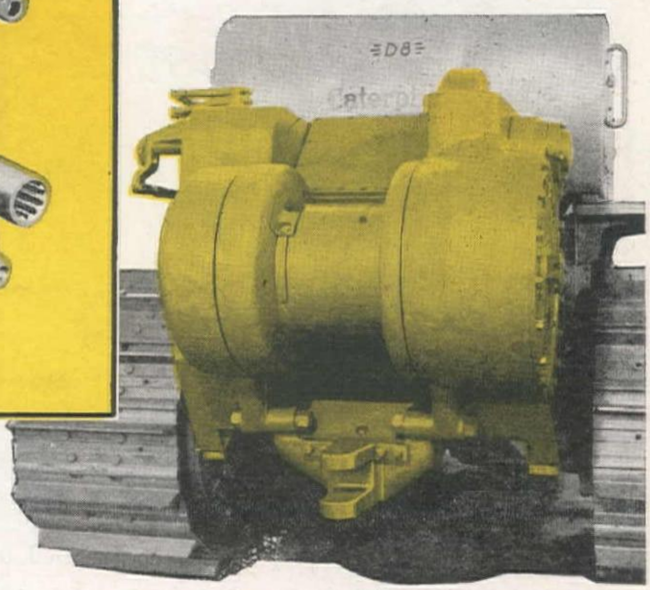
Mill Depots: New York · Pittsburgh · Chicago · Fort Worth · Portland · Seattle · San Francisco. Distributors throughout the U.S.A.

MACWHYTE PREformed and Internally Lubricated Wire Rope · MONARCH WHYTE STRAND Wire Rope · MACWHYTE Special Traction Elevator Rope · MACWHYTE Braided Wire Rope Slings · MACWHYTE Aircraft Cables and Tie-Rods · MACWHYTE Stainless Steel Wire Rope · MACWHYTE Monel Metal Wire Rope

Experts

on Tractor and Equipment Repair Service . . . . . Your Dependable "Caterpillar" Distributor





Proper upkeep of your tractor and its equipment is vitally important today. It's smart economy. It's also wise to go to your "Caterpillar" distributor. His factory trained mechanics do expert repair work, save unnecessary expense, and will get your equipment back on the job that much sooner.

Every "Caterpillar" dealer and serviceman is a HYSTER Winch specialist. These rugged winches work long and hard with minimum time out for repairs. But, like any good machine, adjustments are sometimes necessary. Have your "Caterpillar" mechanic check your HYSTER Winch. Then you'll be all set for winter weather towing jobs; with lots of pull for heavy towing in muddy going; with insurance that tractor and equipment won't stay bogged down.

Make that "one call" trip now. See your "Caterpillar" dealer and be ready for a full season's work.

Service by "Caterpillar" dealers, everywhere, is a valuable factor to keep in mind when buying a tractor winch. With a HYSTER Winch on your "Caterpillar" tractor, you'll get expert, "one-stop" service—all at the same place. Write for HYSTER Winch catalog.

HYSTER Company

2951 N. E. Clackamas, Portland 8, Oregon

1851 N. Adams, Peoria 1, Illinois

LARGEST MANUFACTURER OF TRACTOR HOISTS AND WINCHES

Sold and Serviced by "Caterpillar" dealers everywhere.

MORRISON-KNUDSEN COMPANY, INC.

MKCO

uses Timken Rock Bits

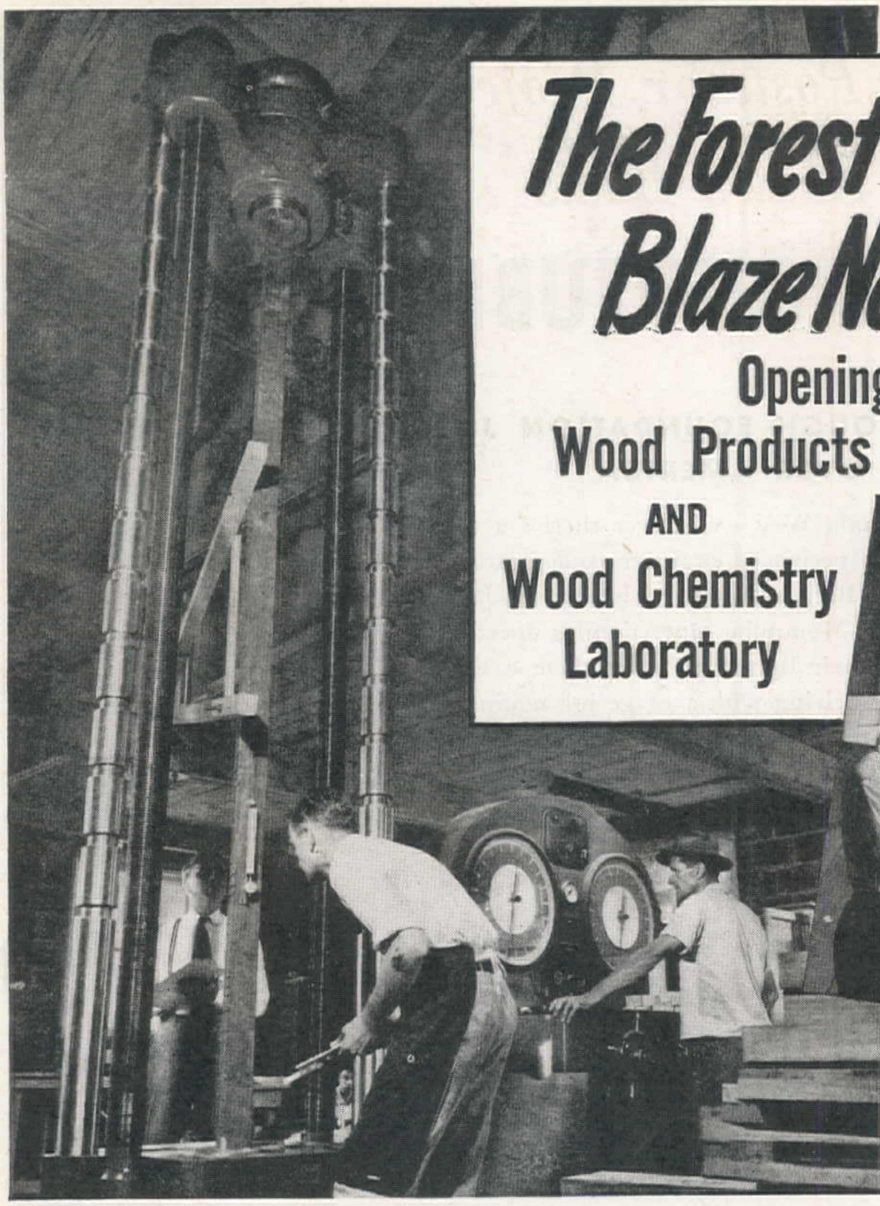
The name of Morrison-Knudsen Company, Inc., is associated with many of the world's largest and most spectacular construction projects.

Always alert to the most modern methods and equipment, Morrison-Knudsen Company, Inc., began using Timken Rock Bits in 1934 and has used them on projects in sixteen states, several territories and possessions and two foreign countries — which incidentally indicates the tremendous scope of this contractor's activities. It also indicates the wide variety of drilling conditions under which the Timken Rock Bit has done its job — that of reducing drilling costs by drilling faster, drilling farther, and reducing steel handling. The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN

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

ROCK BITS



The Forest Industries Blaze New Trails

Opening of TECO Wood Products Development Shop AND Wood Chemistry Laboratory

TECO Chemistry Laboratory. TECO chemists are here shown working on lignin derivatives.

200,000 lb. Baldwin-Southwark testing machine in the TECO Shop. Material undergoing test is a small wood column being tested in compression.

Timber Engineering Company announces the opening of its Wood Products Development Shop and Wood Chemistry Laboratory located in Washington, D. C.

The Wood Products Development Shop has a full scale testing rig equipped to handle trusses up to 50′ span; auto-claves and other equipment used in pressure treating; dry kiln and high pressure steam equipment for impregnating; and other facilities for determining the physical and mechanical properties of wood and wood products.

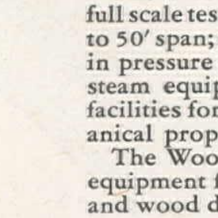
The Wood Chemical Laboratory has modern equipment for investigations in wood chemistry and wood derivatives research. It is giving special attention to lignin research including adhesives, synthetic plastics, etc.

If you have any problems in respect to the physical, mechanical and chemical properties of wood, the technical staff of the Timber Engineering Company may be of assistance on a moderate fee basis. If its own facilities will not solve your problem, it will assist you in locating sources which can.

Consultations at our Washington office may be made by appointment and without obligation on your part. Write us on your business letterhead stating your wood utilization problem.

Timber Engineering Co., Inc. of Washington, D.C.

Monadnock Building, 681 Market Street, San Francisco · Telephone Garfield 6296



SPECIFY TECO CONNECTORS
SPLIT RINGS · SHEAR PLATES
GROOVING TOOLS

KEEP ME POSTED

Alden K. Smith,
Monadnock Building,
681 Market St., San Francisco

WCN

Put my name on your mailing list.

Name________________
Firm________________
Business________________
Street________________
City____________ State________

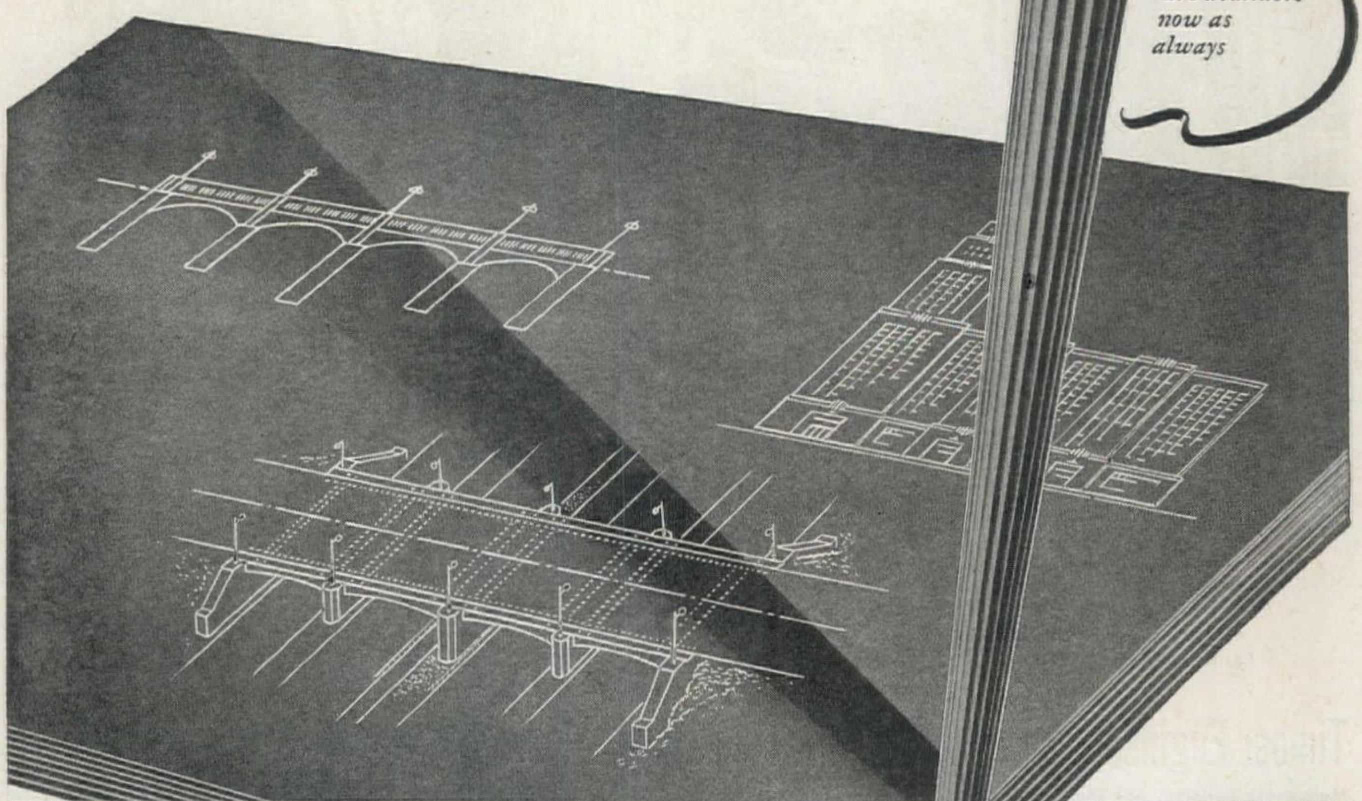
Put Your Postwar Projects on a Sound Basis

... WITH MONOTUBES

PROVED ON TOUGH FOUNDATION JOBS ALL OVER AMERICA

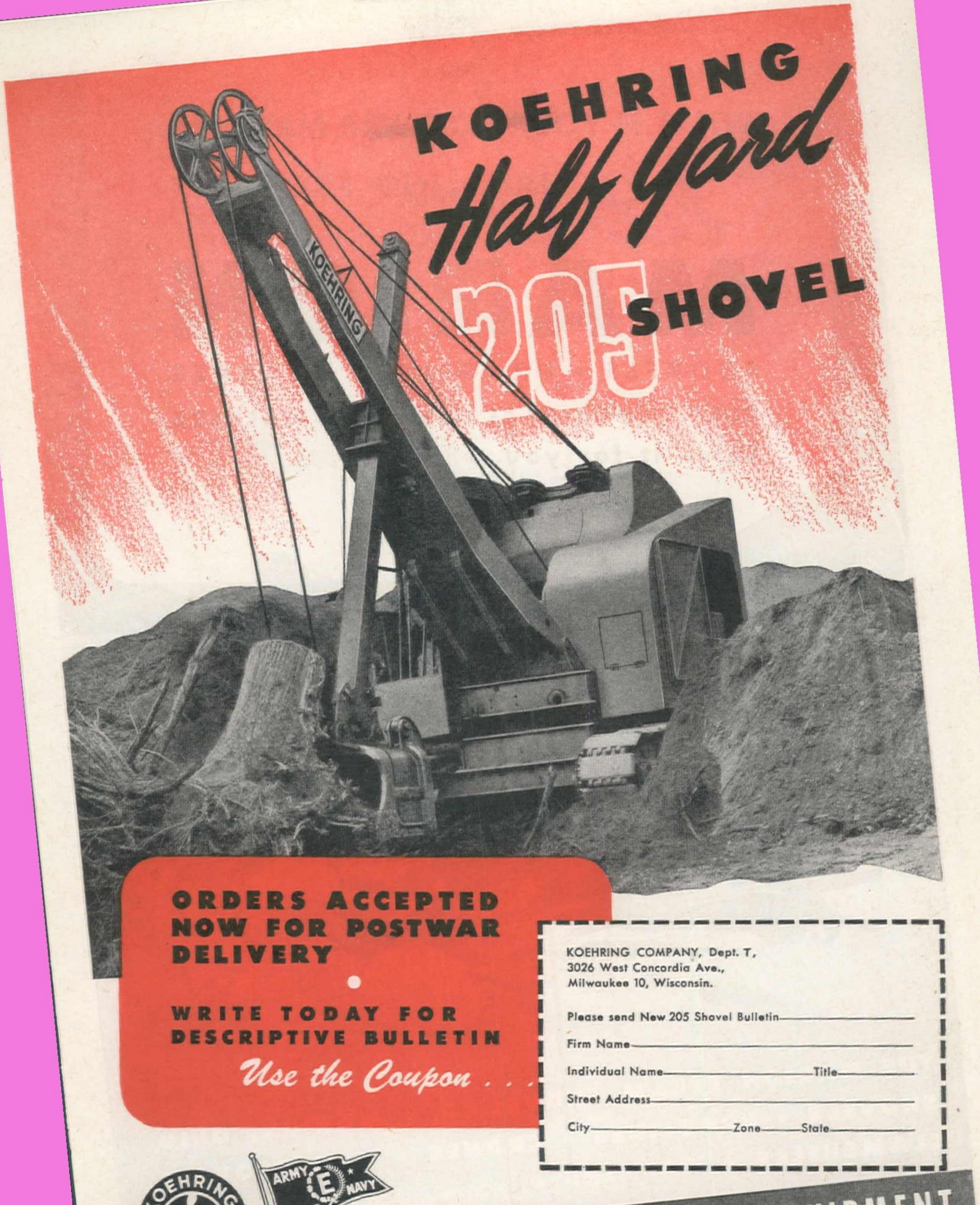
NORTH, East, South, West—wherever there's a tough foundation job experienced engineers and contractors use Monotubes. Why? Because when you want foundations in ahead of schedule—Monotube tapered piles speed and simplify your work. Their lightness makes them easier to handle; permits faster driving with average job equipment. Their tubular design permits quick, sure inspection before concreting. And, best of all, Monotubes can be readily extended on the job to meet varying conditions. Available in gauge, size, and taper to meet all requirements. Ask for Catalog 68A. Write The Union Metal Manufacturing Company, Canton 5, Ohio.

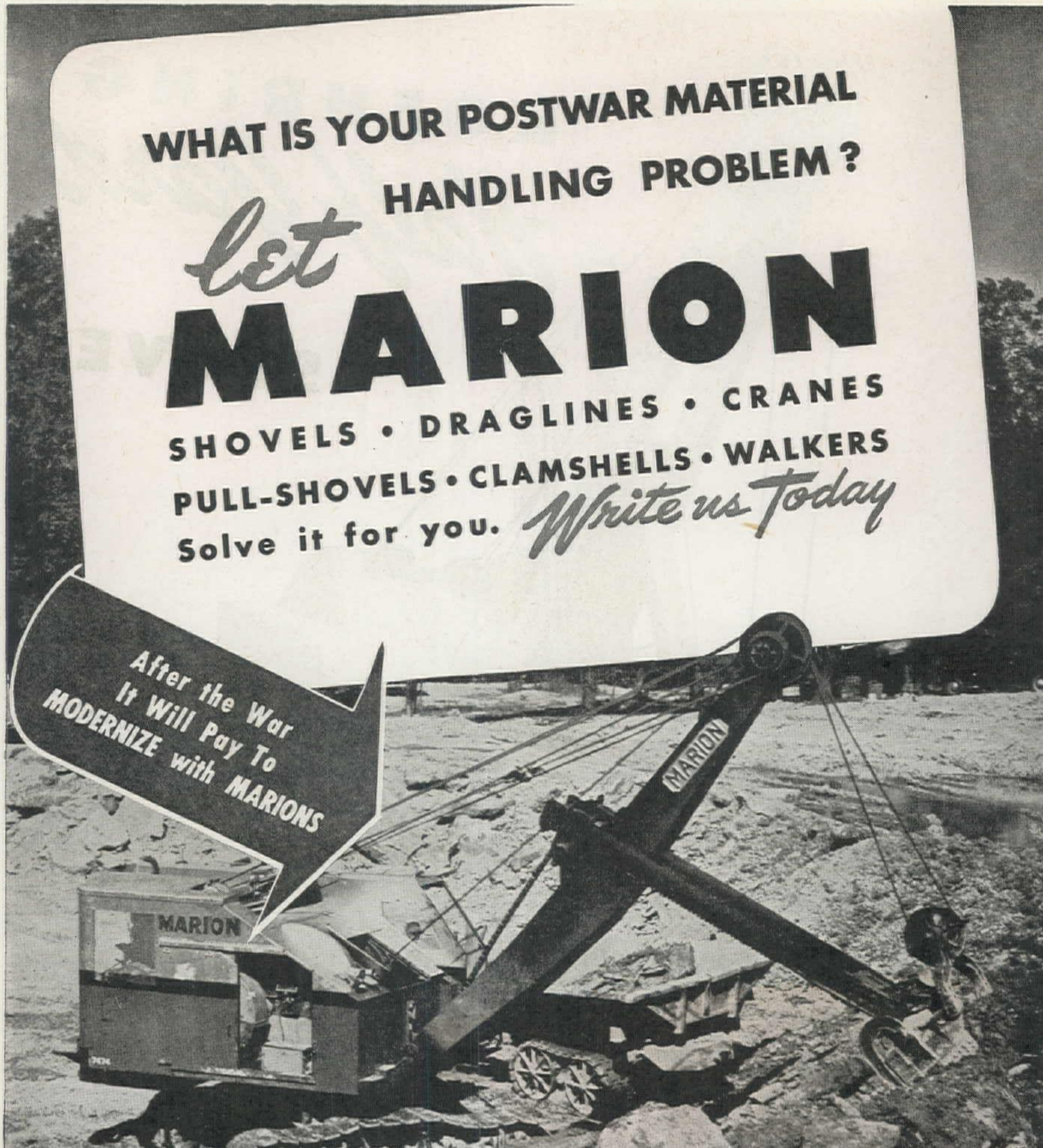
Services of our engineers are available now as always

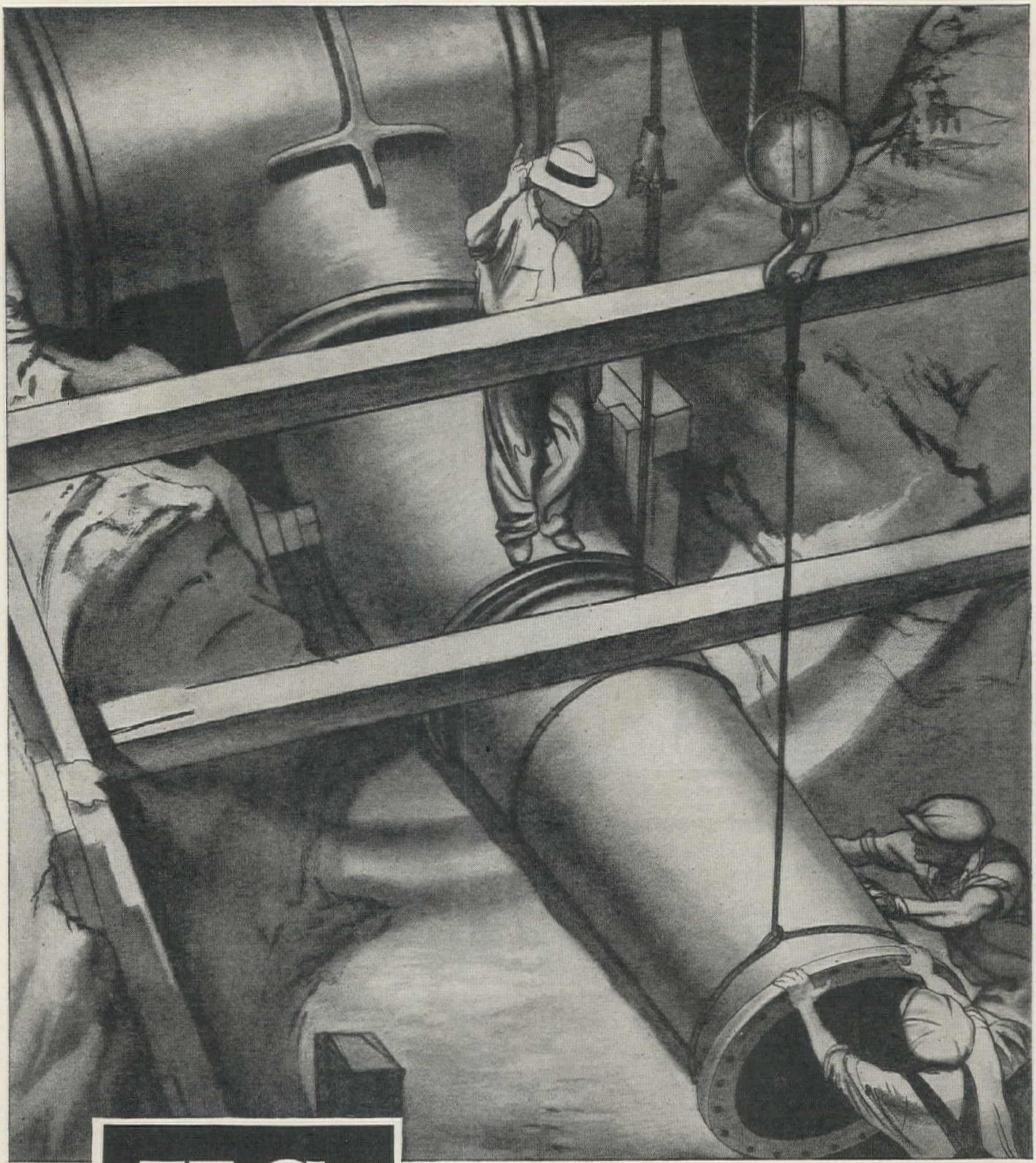


UNION METAL

Monotube Tapered Piles


KOEHRING
Half Yard
205 SHOVEL
KOEHRING
ORDERS ACCEPTED NOW FOR POSTWAR DELIVERY
WRITE TODAY FOR DESCRIPTIVE BULLETIN
Use the Coupon . . .
KOEHRING COMPANY, Dept. T,
3026 West Concordia Ave.,
Milwaukee 10, Wisconsin.
Please send New 205 Shovel Bulletin
Firm Name
Individual Name Title
Street Address
City Zone State
KOEHRING HEAVY DUTY
ARMY E NAVY
HEAVY-DUTY CONSTRUCTION EQUIPMENT

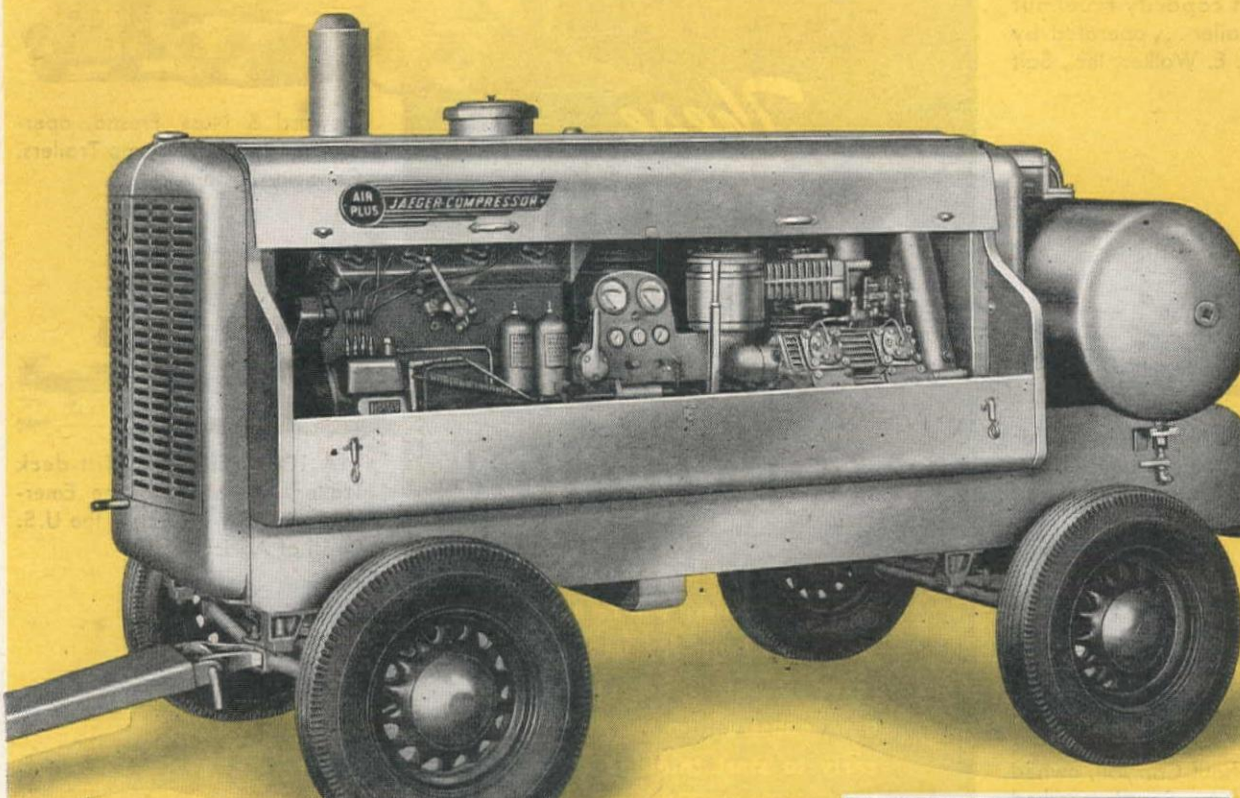

WHAT IS YOUR POSTWAR MATERIAL
HANDLING PROBLEM?
let
MARION
SHOVELS • DRAGLINES • CRANES
PULL-SHOVELS • CLAMSHELLS • WALKERS
Solve it for you. Write us Today
After the War
It Will Pay To
MODERNIZE with MARIONS
MARION
MARION
THE MARION STEAM SHOVEL CO. • MARION, OHIO
SHOVELS • DRAGLINES • CRANES • PULL-SHOVELS
CLAMSHELLS • WALKERS • from 3/4 cu. yd. to 35 cu. yds.



Large diameter fittings installed for pumping station.
Drawn by Rico Lebrun for U. S. Pipe & Foundry Co.

AIR PLUS

JAEGER COMPRESSOR



BUILT IN A BALANCED "W" TO GIVE YOU S-M-O-O-T-H-E-R PERFORMANCE — COMPLETE ACCESSIBILITY OF EVERY PART

By fundamentally correct design, as well as micro-precision workmanship (parts honed and lapped to aircraft engine tolerances), Jaeger provides the efficiency, stamina and ease of maintenance you have always wanted in air compressors. Identified by the name "AIR PLUS". All sizes, from 60 to 500 feet. . . . THE JAEGER MACHINE COMPANY, COLUMBUS 16, OHIO.

JAEGER Engineered EQUIPMENT

"FLEET-FOOT" Crane-Loaders

"SPEEDLINE" Concrete Mixers

"SURE PRIME" Contractors Pumps

JAEGER-LAKEWOOD SPREADERS, FINISHERS AND BITUMINOUS PAVERS, FORMS, FORM TAMPERS—"DUAL-MIX" TRUCK MIXERS, AGITATORS—JAEGER HOISTING ENGINES, TOWERS

A 60-ton capacity Fruehauf Carryall Trailer . . . operated by J. B. and R. E. Walker, Inc., Salt Lake City.

Steward & Nuss, Fresno, operate such Fruehauf Dump Trailers. Capacity 25 tons.

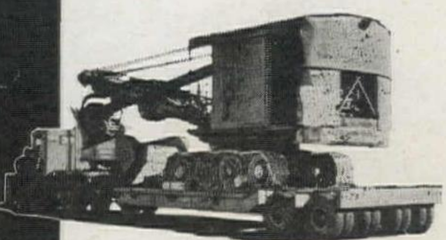
These FRUEHAUF TRAILERS will also build for RECONVERSION

When we've fired the last shot in this war, there will be a lot of work piled up for us here at home . . . rebuilding, enlarging, new construction. It isn't too early to start thinking of your haulage needs. Why not consult your Fruehauf Branch now about your postwar trailers?

This roll-in type dump Trailer operated by Blue Diamond, Los Angeles, adds many tons to the truck's capacity.

A 10-ton Fruehauf Tilt-deck Trailer, operated by the Emergency Rubber Project of the U.S. Dept. of Agriculture.

This Fruehauf Carryall, owned by Hugh Goven, Seattle, worked on the Alcan Highway . . . will help build other new highways.



Sheedy Drayage, Contractor, San Francisco, operates this 50-ton Fruehauf Carryall.

An 80-ton Lowbed Carryall, operated by Hawaiian Constructors, Ltd.

World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER COMPANY

Western Manufacturing Plant — Los Angeles

SALES AND SERVICE BRANCHES: LOS ANGELES • SAN DIEGO • PHOENIX • SALT LAKE CITY
SAN FRANCISCO • FRESNO • DENVER • EL PASO • PORTLAND • SEATTLE • SPOKANE

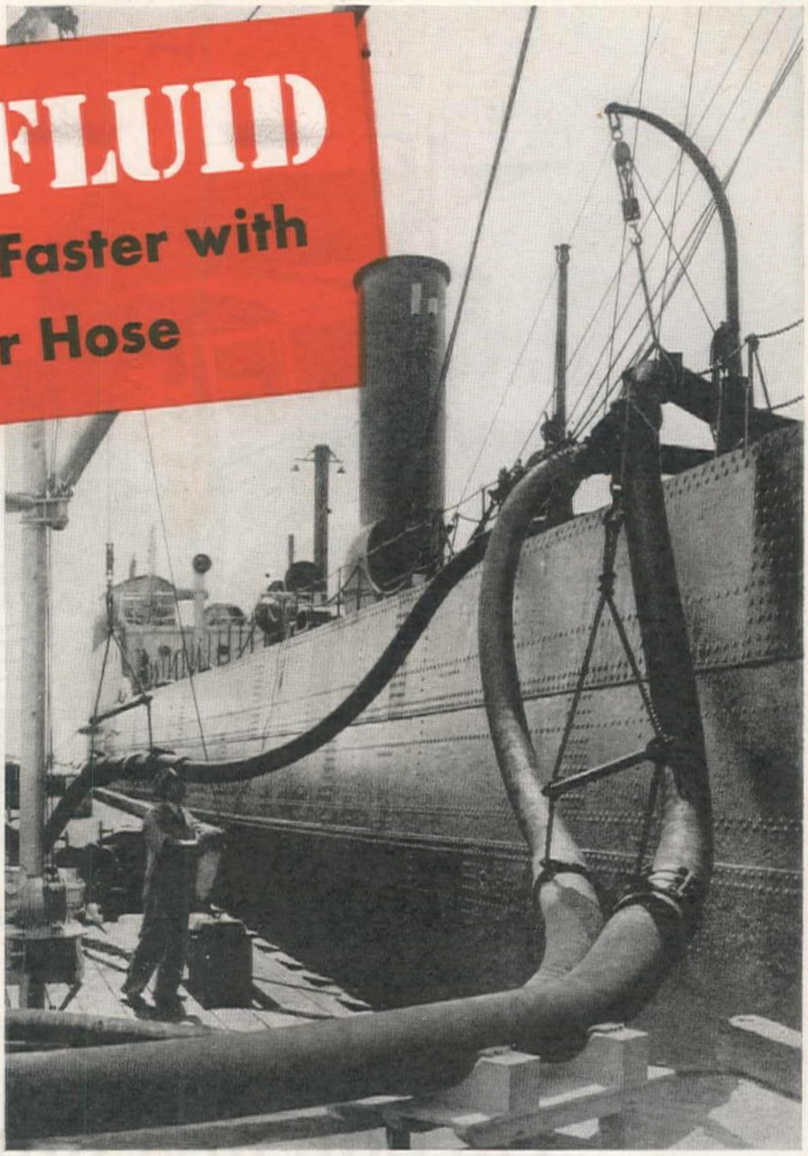
FRUEHAUF *"Engineered Transportation"* **TRAILERS**

Reg. U. S. Pat. Off.

TRUCK-TRAILER TRANSPORT IS DOING AN ESSENTIAL JOB FOR ALL AMERICA

DRY OR FLUID

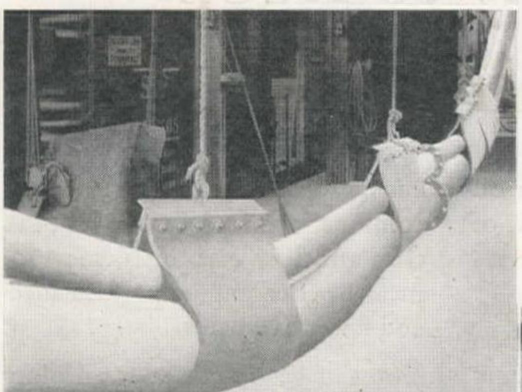
Handle Products Faster with American Rubber Hose



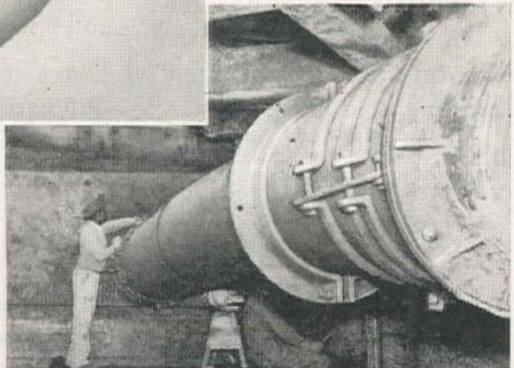
Tanker schedules are faster, man-hours less, since American Rubber smooth-bore loading hose came into use.

Conveying either dry or fluid products faster, more economically, under unusual conditions of pressure, exposure to chemical action abrasion or flexing are daily tasks for American Rubber hose in dozens of industries . . . hundreds of plants.

Cutting down ship loading hours, with obvious and huge economies, is a job for American smooth-bore petroleum hose . . . Hose line filling of freight cars with dry cement speeds shipping for the Portland cement industry . . . Powdered ice, projected through American hose, packs refrigerated cars in minutes instead of hours.



Left: Dry cement is handled in bulk, faster, better with American Rubber hose as the link between platform and freight car. This hose is highly resistant to needle-sharp cement particles moving at high speed.



Right: Dredge head suction pipe, 26-inch inside diameter, must stand up to hammer-like blows of 3-inch gravel as well as the abrasive action of sand and silt. Three million cubic yards have passed through this American Rubber hose, one of the largest hoses ever made.

Wine, milk, sugar, molasses, sulfur, ore, water are just a few of many products conveyed faster, better, more economically with American Rubber hose . . . engineered to fit the job and conditions of use. If you have a product conveyance problem, it will pay you to sit down with American Rubber engineers and explore the possibilities of rubber hose made to meet your special requirements.

The AMERICAN RUBBER Mfg. Co.
OAKLAND, CALIFORNIA
MANUFACTURERS OF RUBBER PRODUCTS FOR INDUSTRY

THE AMERICAN RUBBER MFG CO · OAKLAND CALIF

Many maintenance men have asked...

What's the best way to keep carbon at a minimum?

Every automotive maintenance man knows only too well the dangers of excessive carbon deposits. But perhaps not so well known is this fact: *Nearly all carbon formed in engines comes from the motor oil used.*

This being the case, there can be only one answer to their question. The best way to keep carbon at a minimum is to select a motor oil that contains the least amount of carbon-forming elements.

In this connection, you'll be interested to know the results of a carbon test made on the 7 leading premium motor oils sold in the West.

This laboratory test showed that Triton Motor Oil contained *38% less carbon-forming elements than any of the other oils and 86% less than the average!*

Triton Motor Oil is a 100% pure paraffin-base lubricant carefully refined by Union Oil Company's patented propane-solvent process. This combination of top-quality lubrication and low carbon formation means better engine performance and fewer overhauls.

You can get Triton at any Union Oil Station or, if you would like a supply delivered, just phone the Union Oil Company representative in your area.

TRITON

Another
UNION OIL
Success-Tested Product

In the "mining" of petroleum, as in the mining of many other ores and the production of aggregates, Cummins Dependable Diesels play a vital role. They power drilling rigs, trucks, shovels, dredges and many other types of equipment . . . have established an enviable record for reliable, low-cost performance on the toughest 24-hour-a-day jobs.

America's commercial fishing boats are bringing in record catches to meet record war-time requirements for fish and fish by-products. Many of these boats are Cummins Diesel-powered because fishermen everywhere know that the best assurance of being "first out and first back" is a Cummins Marine Diesel.

Basic in war and basic in peace is the vast logging industry of the Northwest. Here, the performance of Cummins Dependable Diesels in yarders, loaders, trucks and tugs explains why Cummins Diesel power is known among loggers as "the power behind CHEAP LOGS."

In agriculture and its many allied industries, Cummins Diesel power has innumerable applications. It is widely used in the West for irrigation purposes . . . in cotton gins, flour and feed mills, ice plants, dairies and many other places where its economy and dependability have been instrumental in increasing production and also decreasing costs.

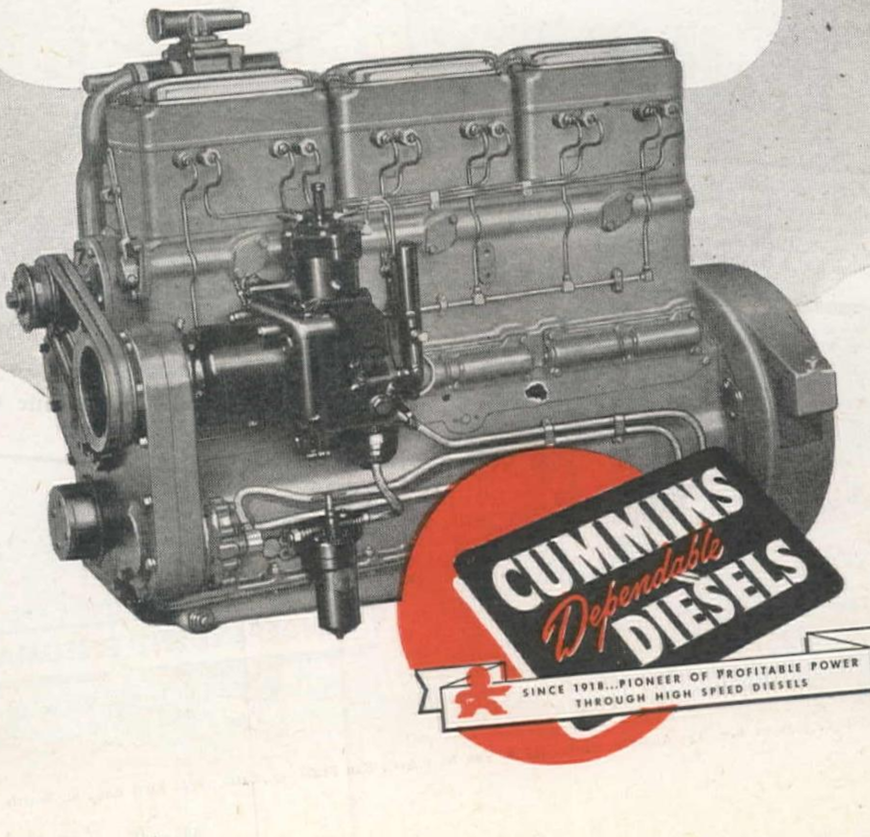
Automotive models • marine engines for propulsion and auxiliary power • power units of all types • stationary engines • generating sets • locomotive models.

Backbone
of every Basic Industry

In the "mother" or basic industries which produce the raw materials—agriculture, mining, commercial fishing and logging—and in the countless allied industries that play a part in the conversion of raw material into finished product, the development of the high speed diesel in 1932 went a long way toward changing modern concepts of power.

This diesel was a Cummins Diesel. Once and for all it struck away the shackles of excessive weight and size which had so long limited the use of diesel power. Once and for all it proved that diesel power could be applied to virtually any heavy-duty job and do that job—cheaper, faster, longer.

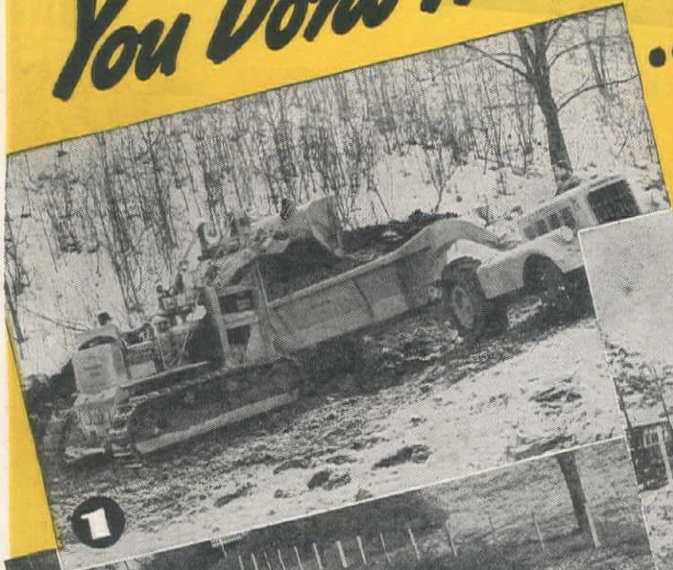
Since 1932, continued refinements in every phase of design, construction and material specification have produced still further improvements in the Cummins Diesel's operating economy . . . still further reductions in its weight and dimensions per horsepower. That's why operators and builders of all types of powered equipment—automotive, industrial and marine—have turned to Cummins for the dependable, low-cost power which is the backbone of industry. CUMMINS ENGINE COMPANY, INC., Columbus, Ind.



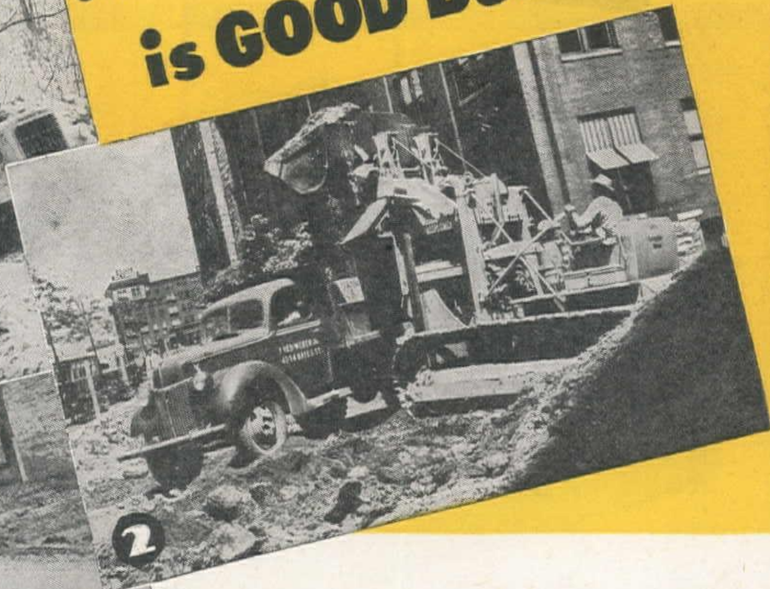

SMALL TOOLS do BIG JOBS!
HAMMERING open wall space with the Thor Electric Hammer, a light, yet powerful tool for use on hundreds of jobs in stone, wood or metal.
Save Time and Cut Costs . . . with
Thor TOOLS
In Scores of Ways!
DRILLING anchor holes in all types of walls or foundations calls for the continuous power of the Thor ½-inch Electric Drill, lightest yet most powerful tool in its class.
Designed and compactly built to minimum weight for fast, easy handling, Thor portable pneumatic and electric tools also pack the power that gets scores of construction jobs done faster . . . at less cost!
There's one of these faster-working Thor tools for every type of construction job—demolition, digging, hammering, sawing, drilling, nail driving, cutting, pumping and many others.
DEMOLITION in concrete, asphalt, stone, timber and any other material finds just the right Thor Paving Breaker to do the job faster with less air and time cost.
SAWING heavy timber with the Thor 12-inch diameter Electric Saw, one of five available models for faster, safer work on heavy duty jobs.
TAMPING with the Thor Backfill Tamper means putting the fill firmly into place to stay . . . no coming back on the job several times to backfill.
DIGGING in clay, gravel, hard pan, frozen ground—in every heavy formation, is the job of the Thor Clay Digger, plus fast work also as a light demolition tool, pickhammer, or the like.
. . . Plus
ALL These Other Thor Tools For Fast, Money-Saving Construction
GRINDERS • WOOD BORERS • ROCK DRILLS
SUMP PUMPS • ACCESSORIES
For All Pneumatic and Electric Tools
Write today for information on how small Thor Tools can help you work faster, at less cost, plus other valuable tips, in Catalog 42-A.
Thor Portable Pneumatic and Electric Tools
INDEPENDENT PNEUMATIC TOOL COMPANY
600 W. JACKSON BOULEVARD, CHICAGO 6, ILL.
Branches in Principal Cities
BRANCHES: 6200 E. Slauson Ave., Los Angeles, Calif.; 315 S. Van Ness Ave., San Francisco, Calif.; 1741 First Ave., S., Seattle, Wash.; 54 E. Fourth. S., Salt Lake City, Utah.

You Don't Have to Baby 'Em

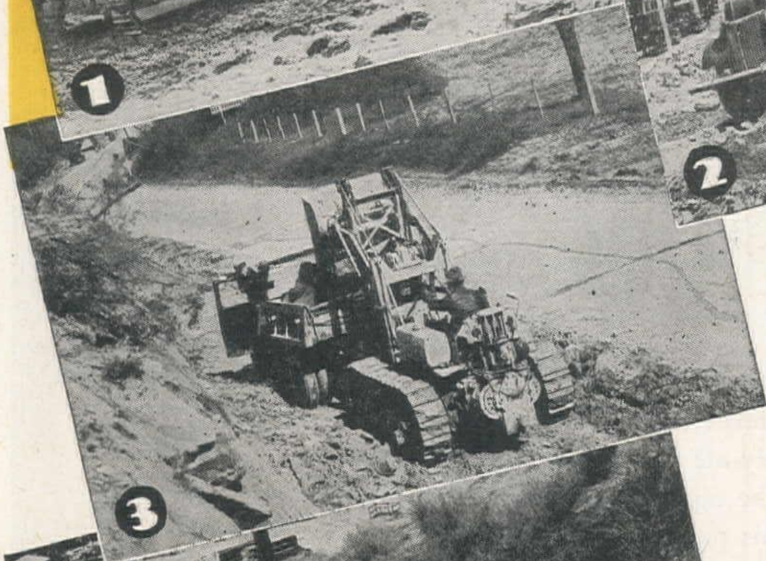
..but PROPER CARE is GOOD BUSINESS!



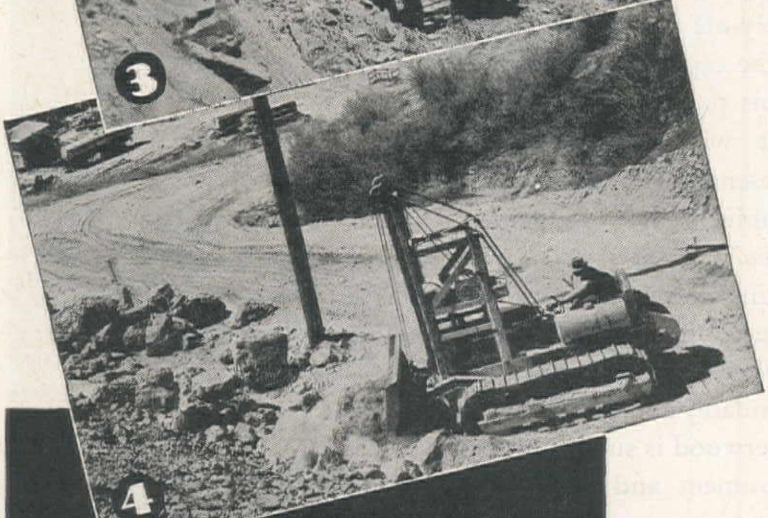
1



2



3



4

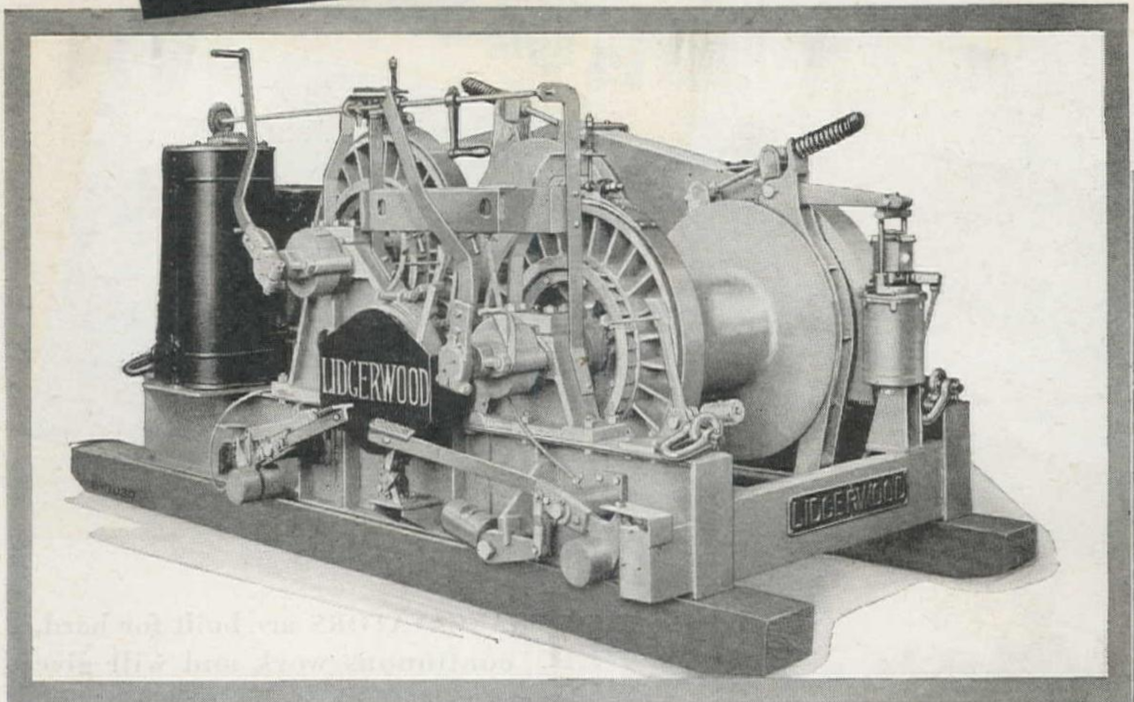
1. LOADING — Big 2½-yard T7 TRAXCAVATOR loading DW10 wagon.
2. EXCAVATING for a large building foundation with Model T7 TRAXCAVATOR.
3. ROAD WIDENING with a TRAXCAVATOR goes forward with little interruption of traffic.
4. BULLDOZERS available for all TRAXCAVATORS. Interchange quickly with the bucket.

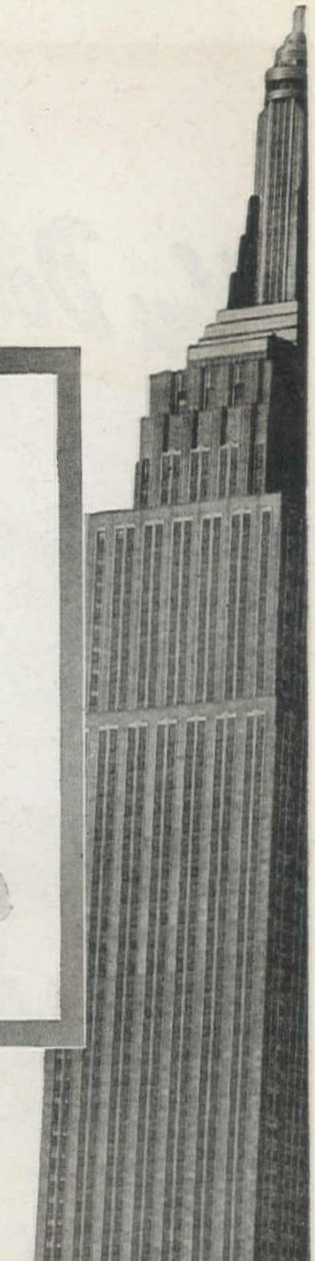
TRAXCAVATORS are built for hard, continuous work and will give long service with ordinary care. Records of machines on toughest jobs prove this fact, but service records likewise prove that proper lubrication and maintenance pay big dividends in longer life and lower net cost of operation. Especially in these times, when new machines are scarce and replacement parts are not always too easily obtained, it is wise to give special thought and action to maintenance. Have your Trackson-"Caterpillar" dealer inspect your TRAXCAVATORS and other TRACKSON Tractor Equipment to see that they are ready for the busier days ahead. Should you need another parts or instruction manual, ask your dealer, or write direct to TRACKSON COMPANY, Milwaukee 1, Wisconsin.

TRACKSON

TRACTOR EQUIPMENT

When Men's Lives Hung on a "Dead-Man's Lever"





WHEN the tallest structure in the world was building, a legal man-carrying hoist was required to get workmen to their working level, hundreds of feet above street level.

Lidgerwood built the hoist—built into it all the dependability and ruggedness for which Lidgerwood hoists have become known in the past 70 years. But that wasn't enough; with men's lives concerned, the element of human error remained to be overcome.

The "Dead-Man's Lever" was the answer! Let the hoist operator release this lever for any reason, and immediately all mechanism locks, preventing the cage from rising or falling.

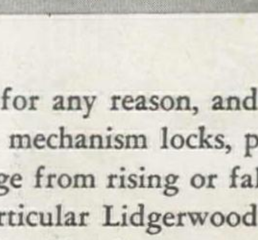
This particular Lidgerwood Safety Hoist with "Dead-Man's" Control represents merely one of the many examples of how Lidgerwood *builds the hoist to fit the job.* Wherever a hoisting job is indicated, there is a Lidgerwood electric, steam, gasoline or Diesel hoist to do the job *right*—dependably and efficiently. At present, Lidgerwood is supplying hoists to the government and contractors serving the war.

LIDGERWOOD

ESTABLISHED 1873

Manufacturing Company

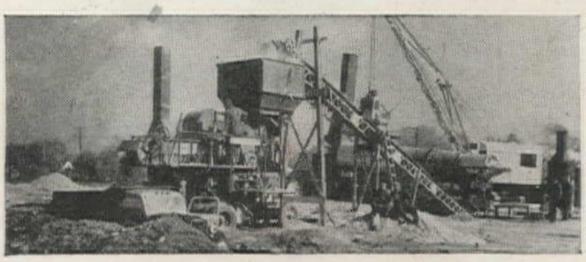
MAIN OFFICE AND WORKS • ELIZABETH B, NEW JERSEY



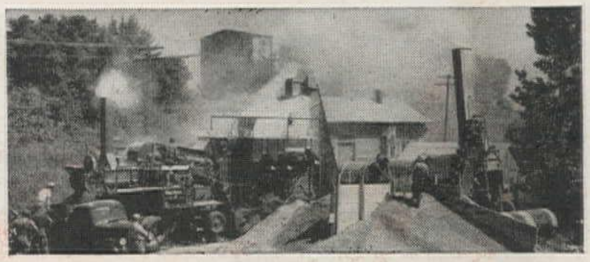
Represented in California by Industrial Equipment Co., Emeryville, California; in Washington and Oregon by Balzer Machinery Co., Portland, Oregon

HOW A B G MIXER PROVIDES VERSATILITY

For Low-Cost Roads—
The B-G Mixer and Bucket Loader Form a Travel Plant



For Intermediate Mixes—
The B-G Mixer Is Teamed Up With a Dual Drum Dryer



For High-Type Mixes—
To the Mixer and Dryer Is Added the B-G Gradation Unit

● High-type mix . . . intermediate mix . . . low-cost road mix! There is a combination of B-G units to make a plant set-up for producing bituminous mixtures under any specification, without employing unnecessary, costly units.

Just couple the Mixer to a B-G Bucket Loader and you have a travel plant that injects high quality into low-cost roads—an outfit that maintains a steady output of *plant-mixed* material mile after mile.

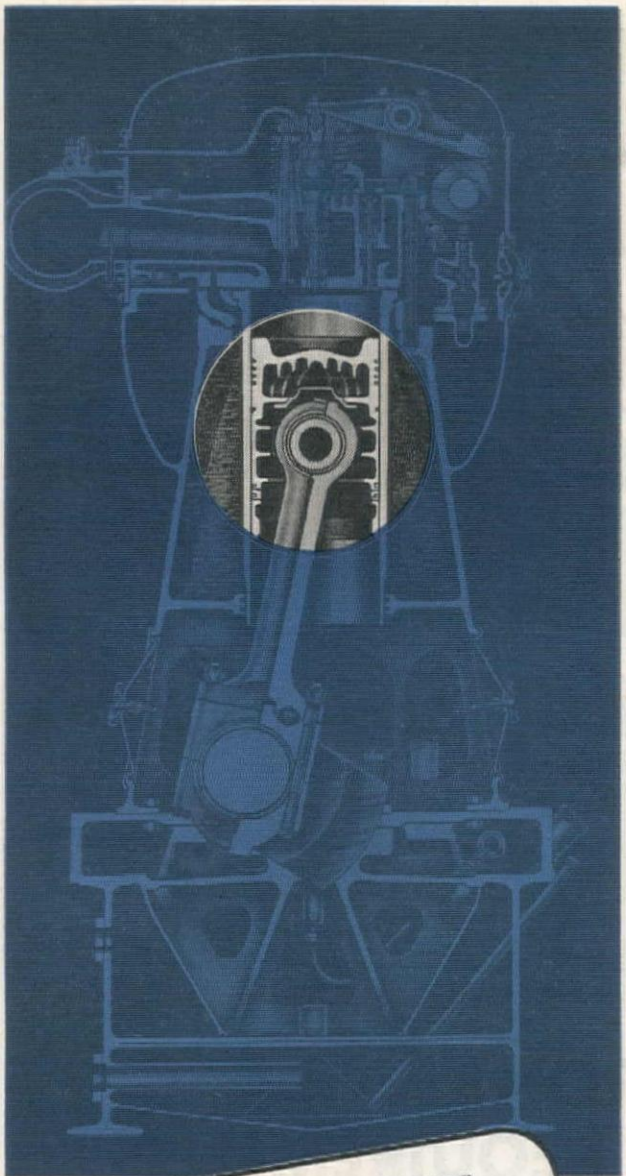
For the production of a wide range of intermediate bituminous mixes, team up the same B-G Mixer with a Dual Drum Dryer. To the accurate proportioning of the Mixer is now added drying to the previously-sized aggregate.

When high-type mixes are needed, add a B-G Gradation Control Unit to the same Mixer and Dryer. Now the plant gives you complete control of aggregate sizing, gradation and moisture control . . . meets most rigid specification requirements . . . yields a constant stream of absolutely uniform mix. For complete information on this versatile equipment, write the Barber-Greene Company, Aurora, Illinois.

44-12

Barber-Greene B G *Constant Flow Equipment*

Brown-Bevis Equip. Co., Los Angeles, Phoenix; Columbia Equip. Co., Portland, Spokane, Seattle, Boise; Contractors Equip. & Supply Co., Albuquerque; Jennison Machinery Co., San Francisco; Lund Machinery Co., Salt Lake City; Western Construction Equip. Co., Billings; Ray Corson Machinery Co., Denver.



OIL-COOLED PISTONS

Another of 22 advanced features combined exclusively in Hendy Diesels

Among the many advanced design features in the Series 50 Hendy Diesels are oil-cooled pistons—to keep rings cool and free, improve top-cylinder lubrication, and minimize cylinder wear. Of clean, rugged design, Hendy pistons are cast in Hendy's own modern foundry to exacting specifications. Heavy ribbing under the piston head provides strength and aids correct cooling by providing maximum surface against which cooling oil is directed from a jet in the top of the connecting rod.

ONLY ONE OF MANY FEATURES

Oil-cooled pistons are but one of the many features combined by Hendy for the first time in a single engine. Others include overhead camshaft, dual intake and exhaust valves with hydraulic tappets, automatically lubricated valve crossheads and guides, and maximum accessibility through *large* inspection doors.

OIL-COOLED PISTONS INCREASE DEPENDABILITY

Correct piston temperatures are assured in the Hendy engine by means of the heavy ribbing on the underside of the pistons and by direction of a continuous stream of cool oil against the ribs. By controlling the temperature of the pistons—and their rings—a superior oil film is maintained on the cylinder walls. This has many advantages: Reduced ring wear...reduced cylinder wear...low oil consumption...freedom from stuck rings...higher operating efficiency...lowered maintenance costs. All of these factors save money for Hendy owners—and are typical of the advanced design features of these engines.

350 TO 675 HP—4 CYCLE

Whatever your requirements may be, within this power range, you will find that Hendy Diesels warrant your closest inspection—they will give you long and dependable service.

For stationary power service or combined with generators as electric power units Hendy Diesels offer a reliable, economic source of power.

A NEW CATALOG which shows many other features of the Hendy Diesel is now available. Please state your power needs and operating conditions if requesting quotations.

JOSHUA **HENDY** IRON WORKS
ESTABLISHED 1856
SUNNYVALE, CALIFORNIA

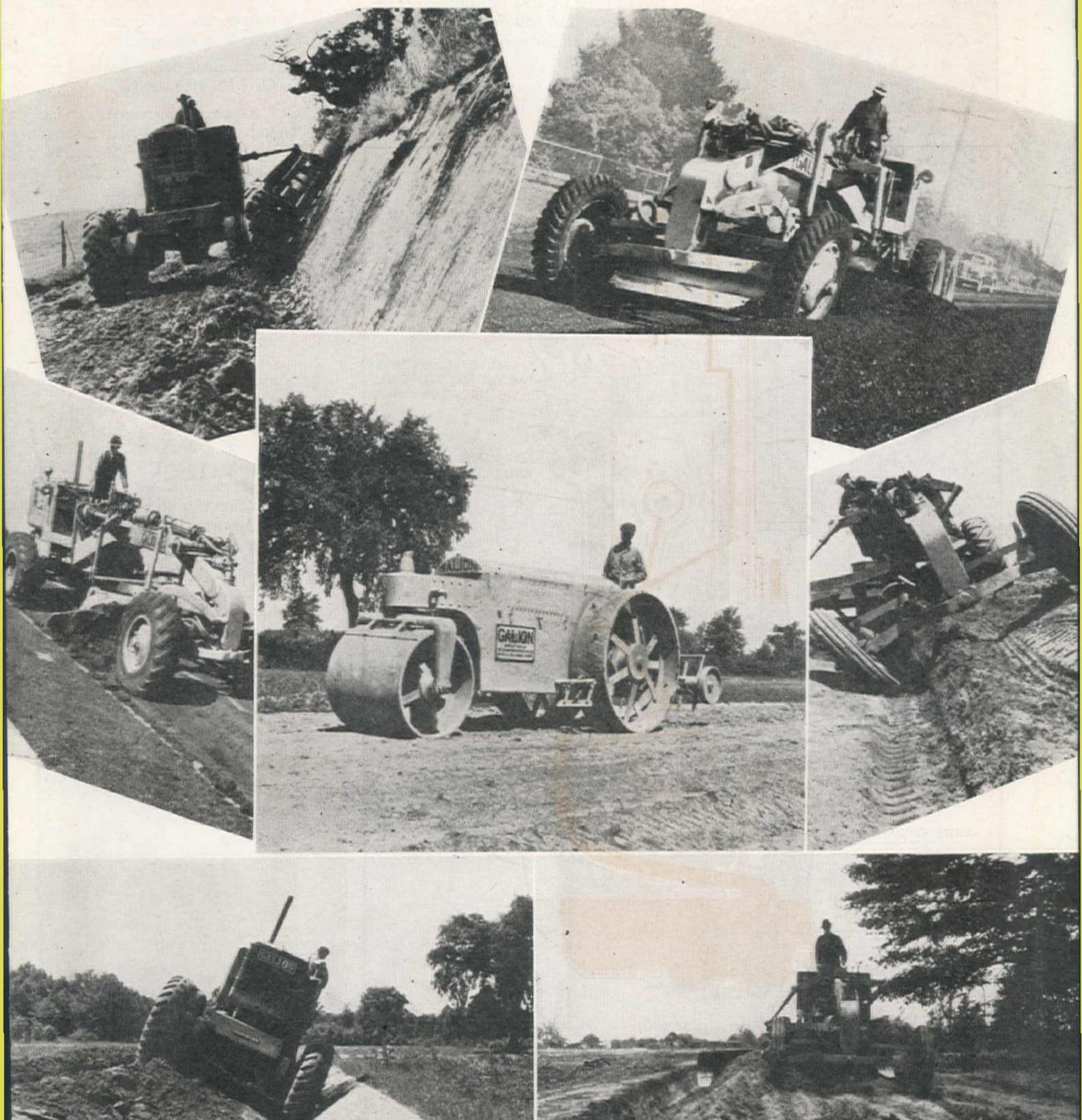
54-D-9

Branch Offices: BOSTON · BUFFALO · CHICAGO · CINCINNATI · CLEVELAND · DETROIT · HOUSTON · LOS ANGELES · NEW YORK · PHILADELPHIA · PITTSBURGH · SAN FRANCISCO · ST. LOUIS · WASHINGTON

GALION

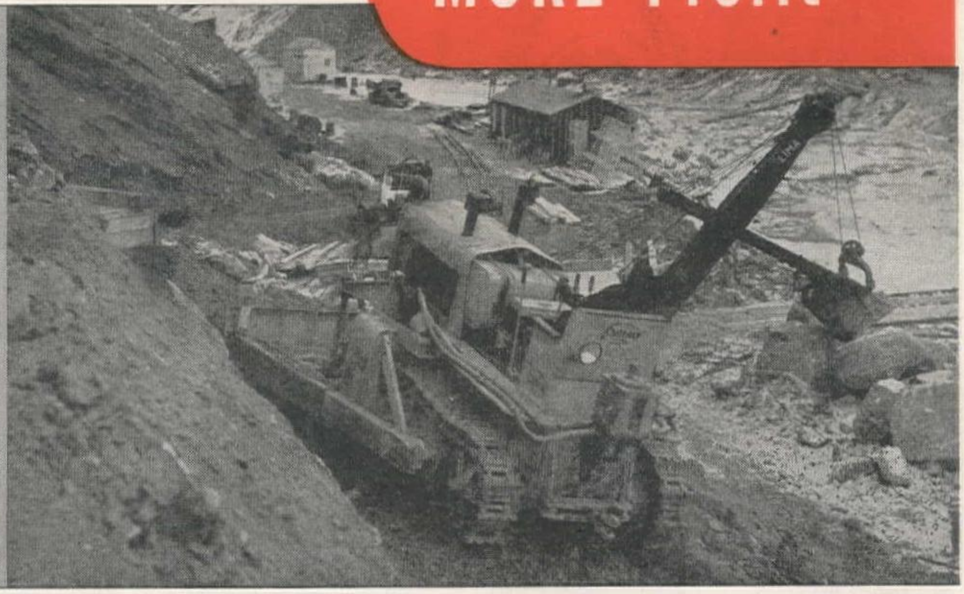
ROLLERS AND MOTOR GRADERS

can be depended on to build BETTER HIGHWAYS, and maintain them MORE ECONOMICALLY. There's a GALION for every type of road job.



he **GALION** IRON WORKS & MFG. CO.
GALION OHIO

*Tru-Traction** means MORE Traction FASTER Work MORE Profit



* Tru-Traction is power on BOTH tracks at ALL times—and you get it only with

CLETRAC TRACTORS

WHEN post-war *planning* is converted into ACTION, much will depend on the equipment you have for the big jobs ahead. Power and traction will be most important.

For ordinary jobs of earth moving, bulldozing and hauling, any equipment may suffice, but when the going is tough and competition is keen, the advantage is with the contractor who is equipped with Cletrac power and traction.

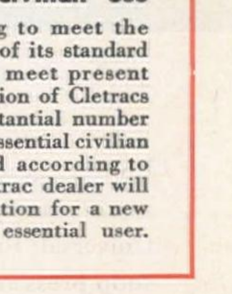
There is a good reason why the use of the Cletrac Tru-Traction principle of power on both tracks at all times has been applied to all high-speed full tracklaying military vehicles. The effectiveness of this principle (Controlled Differential Steering) has been proved over and over again, in mud and muck, over rocks and hills, the world over. This Tru-Traction principle is exclusively a Cletrac development and used solely in Cletrac Tractors for more than 25 years. It is a principle that will earn dividends for contractors whose profits depend upon power, traction, and economy of operation.

Prepare now for postwar needs. Write today for complete information about Cletrac Tractors, including the new booklet "In War and Peace Cletracs Do the World's Work."

AVAILABLE for Essential Civilian Use

While Cletrac is still producing to meet the demands of war with a large part of its standard tractor production required to meet present military contracts, over-all production of Cletracs is sufficiently large so that a substantial number of Cletracs are being released for essential civilian use. These tractors are allocated according to government regulations. Your Cletrac dealer will gladly assist you in making application for a new Cletrac if you can qualify as an essential user.

Write for booklet "In War and Peace Cletracs Do the World's Work"



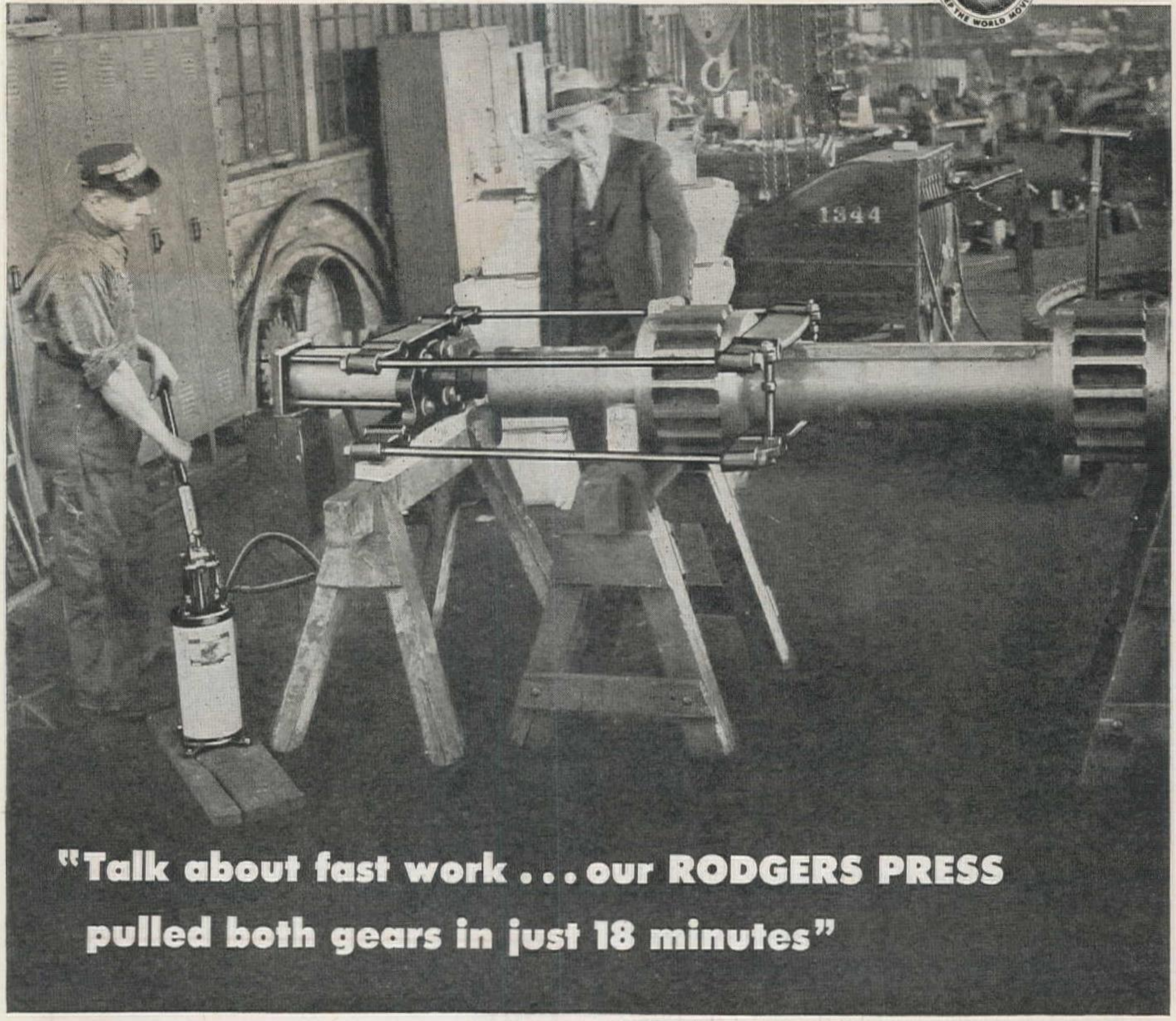
The OLIVER Corporation (Successor to The Cleveland Tractor Company) 19300 Euclid Ave., Cleveland, Ohio

CLETRAC *Tru-Traction* TRACTORS

GASOLINE OR DIESEL

STATE OF CALIFORNIA—Gustafson Tractor Co., Eureka; Mechanical Farm Equipment Dist., Inc., San Jose; Raymond L. Comber, Modesto; Nelson Equipment Co., Los Angeles; Tractor & Equipment Co., San Leandro. STATE OF WASHINGTON—Burrows Motor Company, Yakima; A. C. Haag & Co., Spokane; Pacific Hoist & Derrick Co., Seattle. STATE OF OREGON—A. C. Haag & Co., Portland; Loggers & Contractors Machinery Co., Portland. STATE OF IDAHO—Idaho Cletrac Sales Co., Lewiston; The Sawtooth Company, Boise. STATE OF MONTANA—Western Construction Equipment Co., Billings, Montana. VANCOUVER, B. C.—A. R. Williams Machinery Co., Vancouver.

NO. 22 OF A "READY-WITH-A-RODGERS" SERIES



"Pulling gears from a shovel shaft used to be a 12-hour grind before we got our Rodgers Universal Press. It meant dismantling our big shop press and reassembling it around the shaft... a job we had to do twice, to get at both gears.

"With the Rodgers, we now pull those same gears in 18 minutes. Your portable press has streamlined this operation . . . and that's just one way it is saving us time and money."

This experience was reported to us by one of the top manufacturers in the equipment field ... is typical of many others describing the economical performance of the all-purpose Rodgers Universal Press. *Get complete information and prices today. Write or wire Rodgers Hydraulic, Inc.,* 7419 Walker Avenue, St. Louis Park, Minneapolis 16, Minn. *"If it's a Rodgers, it's the best in Hydraulics."*

Uses for RODGERS UNIVERSAL HYDRAULIC PRESS
Gear Pulling • Wheel Press Work • Jacking Pipe • Erecting Machinery • Relocating Machinery • All-Purpose Jack

RODGERS HYDRAULIC, Inc.

Gar Wood Industries, Inc., manufactures Truck and Trailer Equipment including Hydraulic and Mechanical Hoists, Dump Bodies, Tanks, Flushers, Sprinklers, Winches, Cranes, Pole Derricks, Power Take-Offs; also Road Machinery including 2 and 4 Wheel Hydraulic Scrapers, 4 Wheel Cable Scrapers, Hydraulic and Cable Dozers and Trailbuilders, Hydraulic and Cable Rippers and Tamping Rollers; also Heating Equipment and Motor Boats.

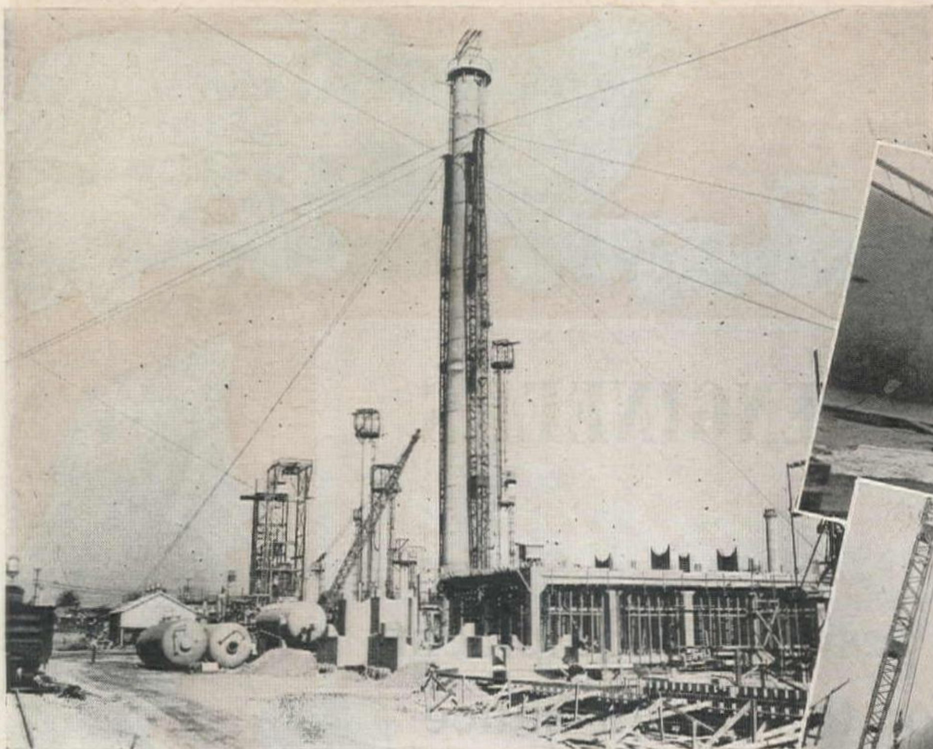
Gar Wood superior products are produced for a wide variety of uses and for every requirement.

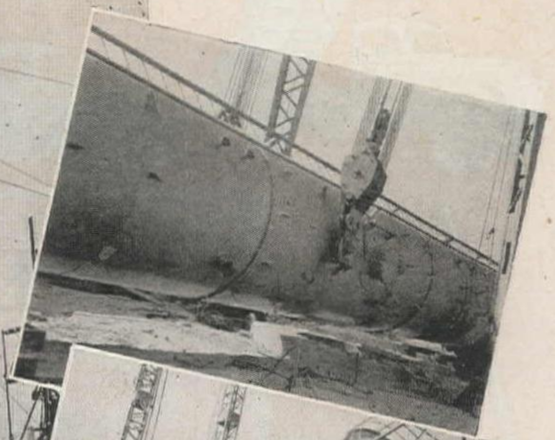
Eleven FACTORIES
Six DIVISIONS

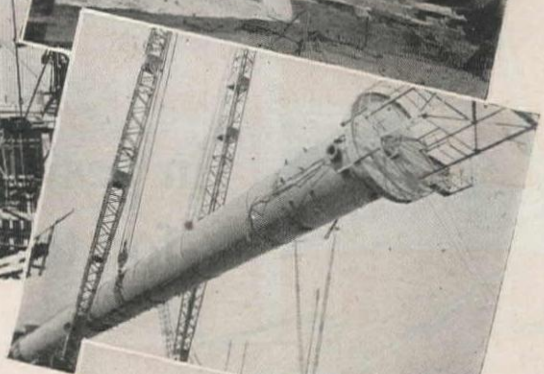
HOISTS & BODIES
WINCHES & CRANES
TANKS
ROAD MACHINERY
HEATING EQUIPMENT
MOTOR BOATS

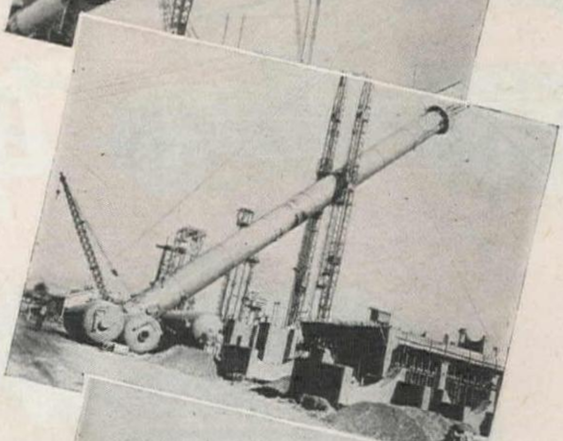
Branches and Distributors located in all Principal Cities

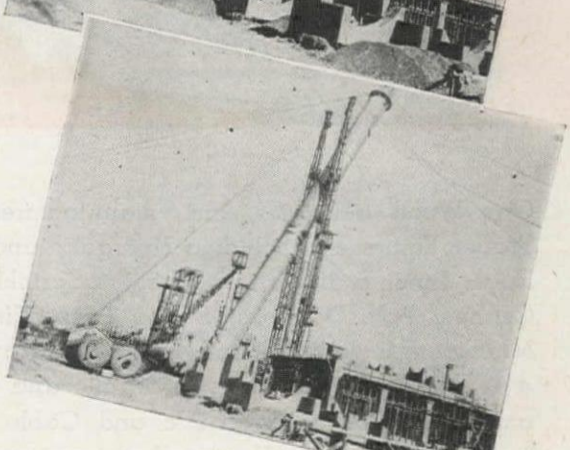
GW **GAR WOOD**
INDUSTRIES, INC., DETROIT
WORLD'S LARGEST MANUFACTURERS OF TRUCK AND TRAILER EQUIPMENT











172-ft. DEISOBUTANIZER TOWER

at a California 100-octane gasoline plant

This deisobutanizing tower for separating isobutane from n-butane at a new 100-octane gasoline plant in California was recently fabricated at one of our plants, shipped to its destination in two sections and erected in the field by the Foster Wheeler Corp. It was designed in accordance with API-ASME Code for Unfired Pressure Vessels and is welded throughout. Each of the two sections was stress-relieved before leaving our plant. After erection in the field, the completed tower was hydrostatically tested to 303 lbs. per sq. in. at the top (373 lbs. per sq. in. at the bottom) based on a maximum working pressure of 202 lbs. per sq. in. when new and cold. Maximum safe working pressure after corrosion allowance and at the design temperature of 250° F. is 185 lbs. per sq. in.

Our plants specialize in the designing and fabricating of pressure vessels for various services in industry. When you need units of this type write our nearest office outlining your requirements.

Interesting data regarding the tower shown above:

Diameter	10 ft.
Total over-all height from foundation to top of superstructure	186 ft. 6 in.
Weight	175 tons
Shell plate thickness at top	1-3/16 in.
Shell plate thickness at bottom	1-11/16 in.
Number of bubble cap trays in tower	70

The views directly above show various erection stages of the deisobutanizer tower. The large view at the top of the page shows the tower in a vertical position.

CHICAGO BRIDGE & IRON COMPANY

CHICAGO • HOUSTON • TULSA
SAN FRANCISCO • BIRMINGHAM
CLEVELAND • NEW YORK
PHILADELPHIA • WASHINGTON

Plants at BIRMINGHAM, CHICAGO, and GREENVILLE, PENNSYLVANIA

WESTERN CONSTRUCTION NEWS
WITH WHICH IS CONSOLIDATED WESTERN HIGHWAYS BUILDER
December, 1944 Vol. 19, No. 12

No More TVA's Needed

ON SEPTEMBER 21, the President addressed an appeal to Congress to enact laws establishing regional water authorities in three Western river basins similar to the Tennessee Valley Authority. The rivers singled out for this attention were the Columbia, Missouri, and Arkansas. At a press conference on November 13, he again brought up this matter, mentioning seven as the number of basins to be thus treated, and naming in addition to the three above, the Connecticut and Tombigbee rivers. Various guesses as to the identity of the two others have been made.

It has since been understood that another seven, in addition to the first group, will be initiated later, and that in fact, it is the plan of the collectivists who wield such an important influence in Washington now, to divide the entire country into watershed regions, each under control of Washington, which will to all practical purposes replace the 48 States which, according to the Constitution, compose the United States.

Vigorous protest has been heard from all over the nation, and it has been so loud that Congressional action has so far been held up, although the Murray Bill, which embodies the legislation, may be debated in the new session, opening in January. Included among those who have protested the adoption of such legislation are the National Rivers and Harbors Congress, the National Reclamation Association, the Mississippi Valley Association, the Chamber of Commerce of the United States, governors and citizens of the affected states.

To this distinguished company, *Western Construction News* wishes to be added. We feel that such federally-operated authorities would have a dangerous power to overthrow State control of water, would interfere with the well-established and efficiently operating organizations of the Bureau of Reclamation and Army Engineers, and supercede technically trained hydraulic and civil engineers with starry-eyed socializers in control of the West's most important resource.

It may be argued that such a single authority would do away with such unseemly bickering as occurred between the two above-mentioned engineering agencies over development of the Missouri River. It has since been shown, however, that the Bureau and the Engineers **can** get together on a unified plan, and will no doubt proceed to do so on all streams where differing proposals have been advanced.

Advocates of both sides of the question will, of course, point to the Tennessee Valley Authority. Proponents will show the improved living conditions of the inhabitants of that region. There can be no question about the truth of this, but it must be borne in mind that the region covered by this Authority has always been the most backward in the nation, and its residents the most retarded. In no section of the great pioneer West do the people live in such poverty or ignorance, and the undenied advances made in that section are not required in the West. Opponents must point to the fact that TVA has not confined its activities to management of the water or even the power, but has entered directly or indirectly into a great variety of other businesses, to such an extent that the life of the citizen is almost completely regimented, whether for good or ill. Westerners, habitually freedom-loving, would not be happy under such paternalistic supervision. Furthermore, like all Federal agencies, the Authority has a tendency to perpetuate and extend itself. Director Lillienthal and various of his staff have been lecturing in the Missouri valley states, urging an MVA, although they are supposed to be devoting their energies to their Tennessee valley projects.

Finally, we must call attention once more to the distance the Western states are from Washington, both in statute miles and in thinking. Although theoretically, Valley Authorities are operated by offices located somewhere in the basin area, it must be remembered they are not local, but federal agencies, and as such get their final authority from Washington. Washington bureaucrats, overwhelmingly eastern people, do not understand and have little sympathy for the West or its problems, cannot understand the unique problems brought about by the paucity of rainfall in most of the territory, and are little concerned with representations from this area, because comparatively few votes exist here. After considering these factors and others, *Western Construction News* declares vigorous opposition to Authority legislation for Western rivers.

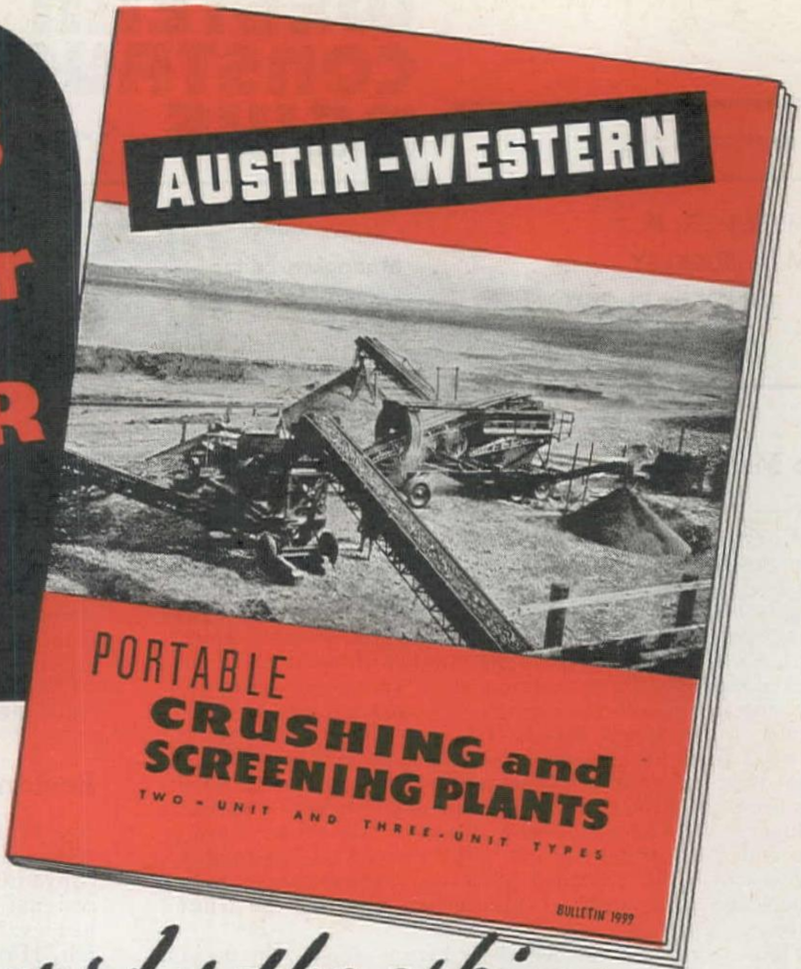
Reclamation Association Moves Ahead

ANOTHER CONVENTION of the National Reclamation Association is history, and several things occurred at this convention which are worthy of special mention. First, in the resignation of President O. S. Warden, the Association has lost a valued and valuable leader, and his going will be deeply felt. However, to replace him, the group selected another outstanding man, Ora Bundy, of Utah. He has had wide experience in reclamation problems, and conducts a contracting business in Salt Lake City, having been at one time President of the AGC chapter in that city. A wise, capable and vigorous leadership is anticipated, and *Western Construction News* takes this opportunity to congratulate Mr. Bundy and offer him whatever assistance is in its power to give.

Second, some people had commenced to form the opinion that the Association was a "stooge" for the Bureau of Reclamation, but if this condition ever did exist, it very positively moved away from that position at this convention. No criticism whatever was heard of the engineering staff or plans of the Bureau, but on every hand were objections to some of the policies of the "Palace Guard," who seem imbued with the thought that the Bureau should be used as a vehicle to accomplish various socialization schemes. Resolutions passed without any dissenting vote were aimed directly at such ideas within the Bureau. As examples, No. 6 urged removal of the excess land provisions of the reclamation law where only supplemental water is being furnished, and urged enactment of the so-called Elliott Amendment, specifically authorizing such removal for the Central Valley project of California, a step opposed by the Bureau; No. 9, criticising the Bureau for neglecting to turn over operation of projects to water users even after the users have complied with all the legal requirements for such delivery; and No. 12, reminding the Bureau that its primary function is the irrigation of land, and that generation of power is an incidental and that in those cases where power is generated, it should be sold at such rates as will assist in the refunding of the cost of the project and not be used as a weapon against private interests against whom the national administration may have a difference, or to subsidize power users.

Third, the Association extended its viewpoint to include all phases of water development in the West, including a consideration of flood control along with its traditional interest in irrigation. This is a sensible and eminently correct move, since the West is in the anomalous position of being short of water most of the time, but having in too great abundance on occasions. A well-rounded development program must take both conditions into consideration.

Guides to Greater POSTWAR Profits



Yours for the asking.

Copies of any or all of these interesting and informative bulletins. Ask for each by its number.

1999 Two-Unit and Three-Unit Crushing Plants . . . . . 1960 Jaw Crushers
1991 C. E. P (Crusher, Elevator, Power) Plants . . . . . 1993 Roll Crushers

• The Post-War demand for crushed aggregate for highway and all other forms of construction will be tremendous. Austin-Western is ready for present and Post-War demands with job-tested equipment, including:

Jaw Crushers and Roll Crushers in a wide range of sizes; plus matching screens, elevators, conveyors and bins.

Portable Crushing Plants, from the smallest to the magnificent Two-Unit and Three-Unit Plants which combine maximum output and variety of specification on the one hand, and maximum economy of operation on the other; giving the owner flexibility of operation that spells maximum profits.

Your nearby Austin-Western dealer will be glad to recommend the plant best suited to your needs.

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

SMITH BOOTH USHER COMPANY . . . . . . Phoenix, Arizona
EDWARD R. BACON COMPANY . . . San Francisco 10, California
SMITH BOOTH USHER COMPANY . . . Los Angeles 54, California
LIBERTY TRUCKS & PARTS CO. . . . . Denver 1, Colorado
WESTERN CONSTRUCTION EQUIPMENT COMPANY . Billings, Montana
C. D. ROEDER EQUIPMENT CO. . . . . Reno, Nevada
COLUMBIA EQUIPMENT COMPANY . . . . Portland 14, Oregon
WESTERN MACHINERY COMPANY . . . Salt Lake City 13, Utah
COLUMBIA EQUIPMENT COMPANY . . . . Seattle, Washington
WILSON EQUIPMENT AND SUPPLY CO. . . . Cheyenne, Wyoming
WESTERN STATES WELDING & PRESS COMPANY, 1304 North Fourth Street, Albuquerque, New Mexico

WESTERN CONSTRUCTION NEWS
DECEMBER • 1944

Postwar Portland—Civic Center Will Be at Waterfront

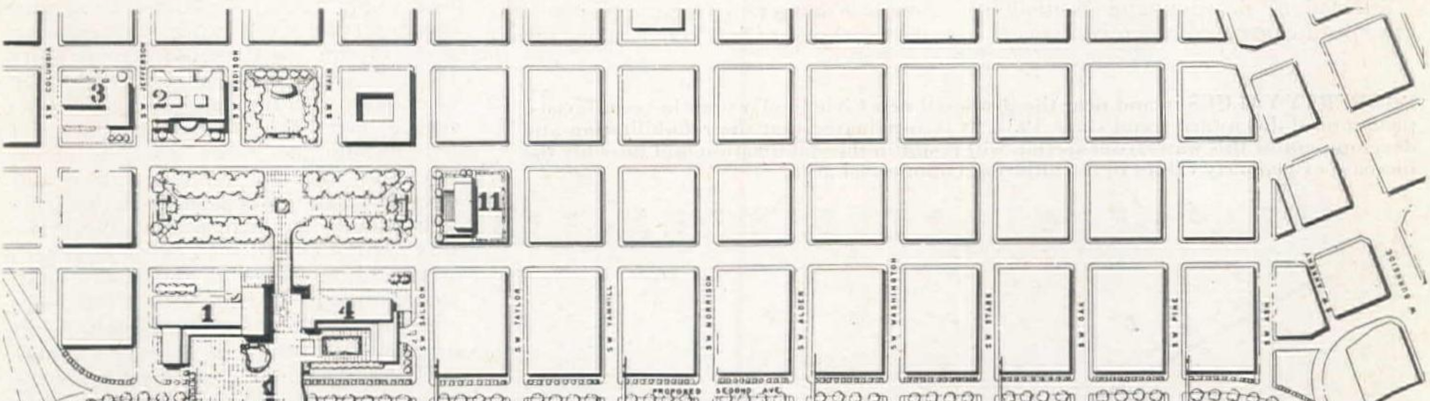
Central government building plan is calculated to stabilize property values, improve traffic conditions, increase parking areas, remove unsightly and rundown commercial buildings, and simplify transaction of government business—Waterfront site gives all these, at lowest acquisition cost

By ARTHUR D. McVOY
Director, City Planning Commission
Portland, Oregon

THE CITY PLANNING Commission of Portland, Oregon, has proposed to the citizens of that city a plan for a great Civic Center, coupling with it the rehabilitation of the city's downtown area and a system of traffic arterials leading into the business district.

In the development of a plan for the rehabilitation of downtown Portland, certain basic assumptions immediately appeared as a result of careful investigation of the needs of the city. Instead of having only one problem, that of providing an adequate plan for the Civic Center, it became evident that there were several inter-related problems, the principal ones being the need for rehabilitation of certain areas in downtown Portland, which had been going down very rapidly in property value and in appearance for years; the need to provide an easy access for major traffic arteries into the city center, with a system of distributor streets; a very serious need for providing additional off-street parking; and the need of blocking growth of the commercial area in certain directions in order to concentrate and stabilize it.

The problem was approached, therefore, from the viewpoint of coordination of many different elements, using the need for a Civic Center as a starting point for providing solutions to these other problems in relationship to it. This approach has produced a solution which is definitely justified on the basis of providing an adequate Civic Center, of aiding substantially in solving the traffic problem of downtown Portland, of providing a large amount of off-street parking for both public and private use, of eliminating the worst deteriorating area in downtown Portland, and of providing an adequate center for the healthy rehabilitation of the commercial area adjacent to the Center.



PLAN OF THE proposed Civic Center development along the waterfront at Portland, Ore. The rehabilitation of this section will not only retain the present commercial establishments, but will encourage others to come into the city. The buildings proposed are (1) City Hall, (2) Hall of Justice, (3) City Jail, (4) State Office Building, (5) Horticultural Center, (6) Museum, (7) Music Hall, (8) Coliseum, (9) Federal Office Building, (10) Market Building, (11) a building for semi-public use.

It is common knowledge that an appropriately designed, handsome street will in itself encourage not only the retention of commercial establishments in the downtown area of the city, but will result in bringing commercial activities into the city from outside. Existing examples of this particular type of plan are Biscayne Boulevard in Miami; Lincoln Road in Miami Beach; Park Avenue in New York City; Michigan Avenue in Chicago; and Canal Street in New Orleans. The two Miami projects were completed recently enough to make it evident a fine artery upon which to develop high class commercial establishments instills a very strong attraction to such development.

Factors involved

The factors considered by the Planning Commission in preparing the city's Civic Center plan were:

1. A determination of cheapest property values.

2. A determination of a location which would be most beneficial in stabilizing property values.

3. Serious needs for traffic and parking solution in downtown Portland.

4. A determination of what buildings are to be included in the Civic Center.

5. A determination of space and parking requirements for such buildings.

6. A determination of the inter-relationship between governmental, other public and semi-public uses in order to insure efficiency and convenience of operation.

7. Appropriate setting for the buildings.

8. Need of defining and controlling growth of central commercial area.

The Commission's studies determined both assessed values and estimated market values, from 1920 to date, for all the property in downtown Portland. A graph was made showing not only the estimated market values of property to be dealt with today, but the history of market values in the past. It shows the history of property values for 129 blocks of the entire central commercial area, the healthy central core which is defined as 38 blocks of the highest property values, and the remainder of the property in downtown Portland which is defined as a decaying fringe. This decaying fringe has gone down very rapidly since 1930, and was even going down in 1920.

This study strongly suggested to the Planning Commission that the Civic Center should extend along the waterfront, in order that advantage be taken of the maximum possibility for stabilizing property values.

The study of traffic and parking problems led to the belief that certain major problems exist in downtown Portland which might be alleviated by a properly located Civic Center and an efficient street system coordinated with it. One of these problems is the serious matter of traffic coming in from Harbor Drive, which the State Highway Commission plans as a main artery for through traffic and an efficient means of getting to downtown Portland from the north, south, southeast and southwest sections and other parts of the city. At the present time Harbor Drive is provided only with grade-level entrances to the central area. Even with the small amount of traffic on this artery under war conditions, there is serious congestion and danger to traffic as a result of the necessity of left hand turns across through-traffic lanes. Both the Highway Commission and the City Traffic Department are exceedingly anxious to alleviate this difficulty.

Another serious need was that of a better means of traffic distribution on the west side of the central commercial area. Still another serious problem is, of course, that of parking, which at the present time is very inadequately taken care of, there being but few off-street parking lots.

Buildings proposed

The Commission's staff went into a very detailed study of the needs for new buildings in Portland, trying to determine, among other things, what the popular demand will be, what possibilities of financing will be, what the benefit to the city might be. It was concluded that among these needs were:

1. A new jail.

2. A new city hall.

3. A state office building.

4. A coliseum or large sports arena type of auditorium.

5. A new music hall (since the present auditorium is woefully inadequate from the standpoint of location, surroundings, acoustics and architectural atmosphere).

6. A horticultural center for exhibitions such as the Rose Festival, flower and vegetable exhibitions, and to house offices of several horticultural groups.

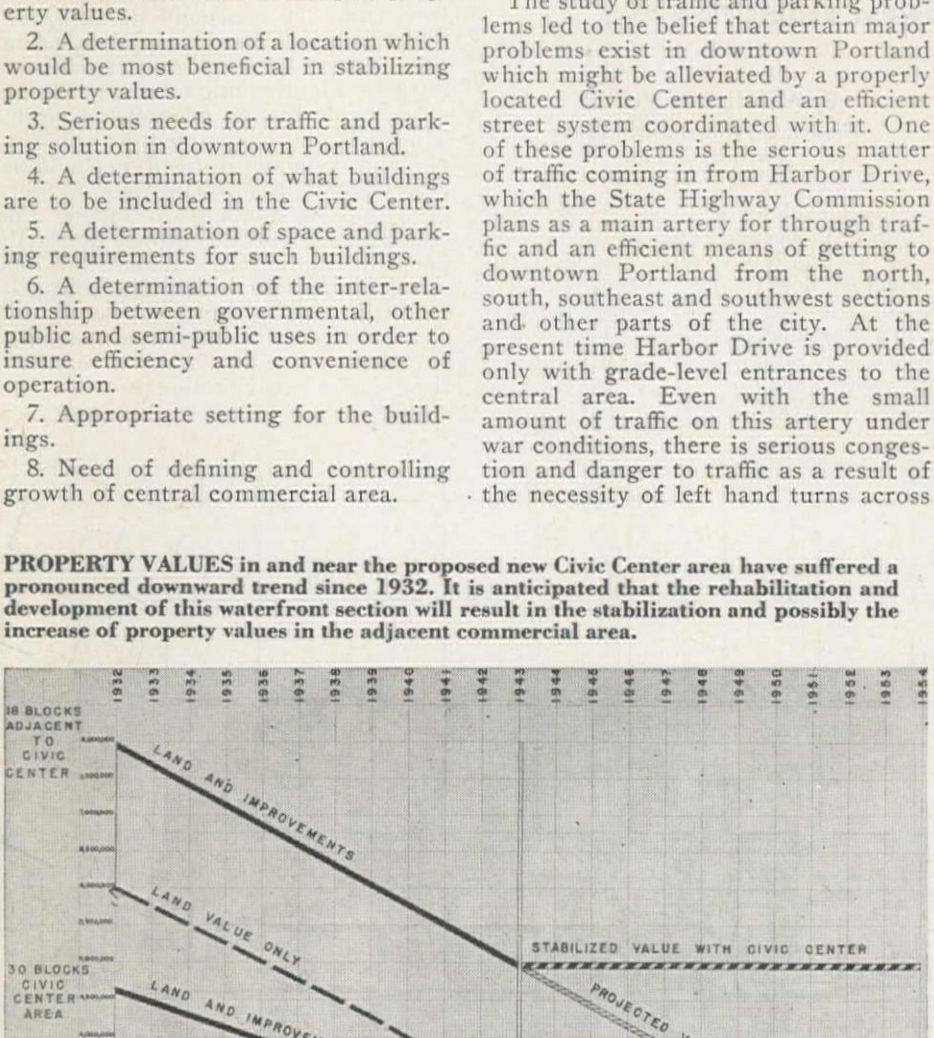
7. A museum for history, science and industry which would combine the Oregon Historical Society, the Battleship Oregon Museum and various scientific and industrial displays.

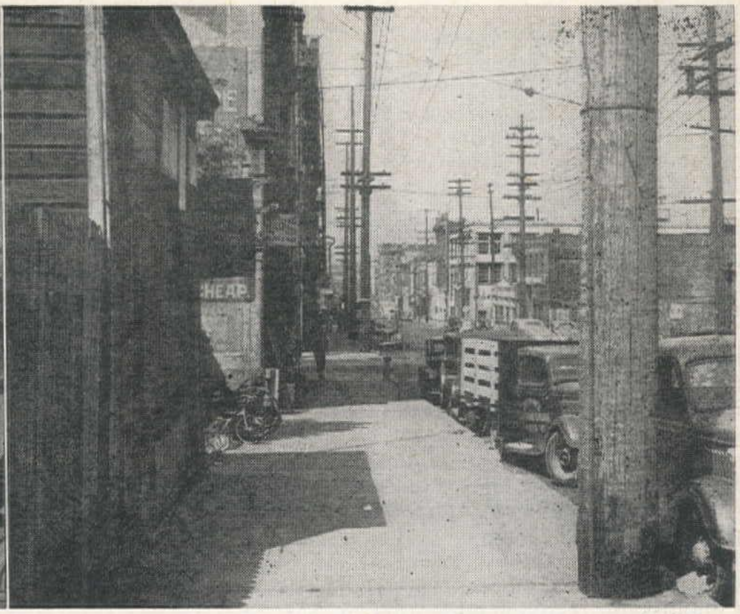
8. A group of federal office buildings. Bonneville Power Administration and the Forest Service already had tentative plans for the construction of new units for their own offices after the war. After discussion with the more important federal agencies it was agreed to have the federal buildings in one group to facilitate inter-agency communication and operation. It was determined that this unit should be convenient to the highway system and to the central commercial area, and should definitely not be in a congested part of downtown Portland.

A study of the functional relationship of these and other groups of buildings was then gone into, determining, for example, that the city, county and state buildings should be grouped together because of the large amount of business transactions between these governmental units. It was also determined that the federal group in general was far more anxious to have fairly close relationship to downtown office areas and buildings than to local government units, since most of these agencies are regional rather than local. It was concluded also that the museum and horticultural center would be appropriately related if they were located adjacent to each other.

The Planning Commission seriously considered the need of so locating the Civic Center that it would become a barrier to the expansion of the commercial section in certain directions. It was concluded, however, that this ex-

PROPERTY VALUES in and near the proposed new Civic Center area have suffered a pronounced downward trend since 1932. It is anticipated that the rehabilitation and development of this waterfront section will result in the stabilization and possibly the increase of property values in the adjacent commercial area.





PRESENT waterfront area is composed of rapidly deteriorating buildings adjacent to present commercial section. These views are typical of present conditions.

pansion to the south during the last several years has already been stopped by the county building and the city hall, the Lownsdale Park blocks, the federal building, the South Park blocks, and several churches and clubs, and it would not be necessary to provide an additional barrier to the south. Studies of property values and the history of buildings in Portland show that the commercial area has been shrinking rather rapidly for some time. Therefore, the most serious problem seemed to be that of stabilizing and improving property values, rather than stopping further growth in the wrong direction.

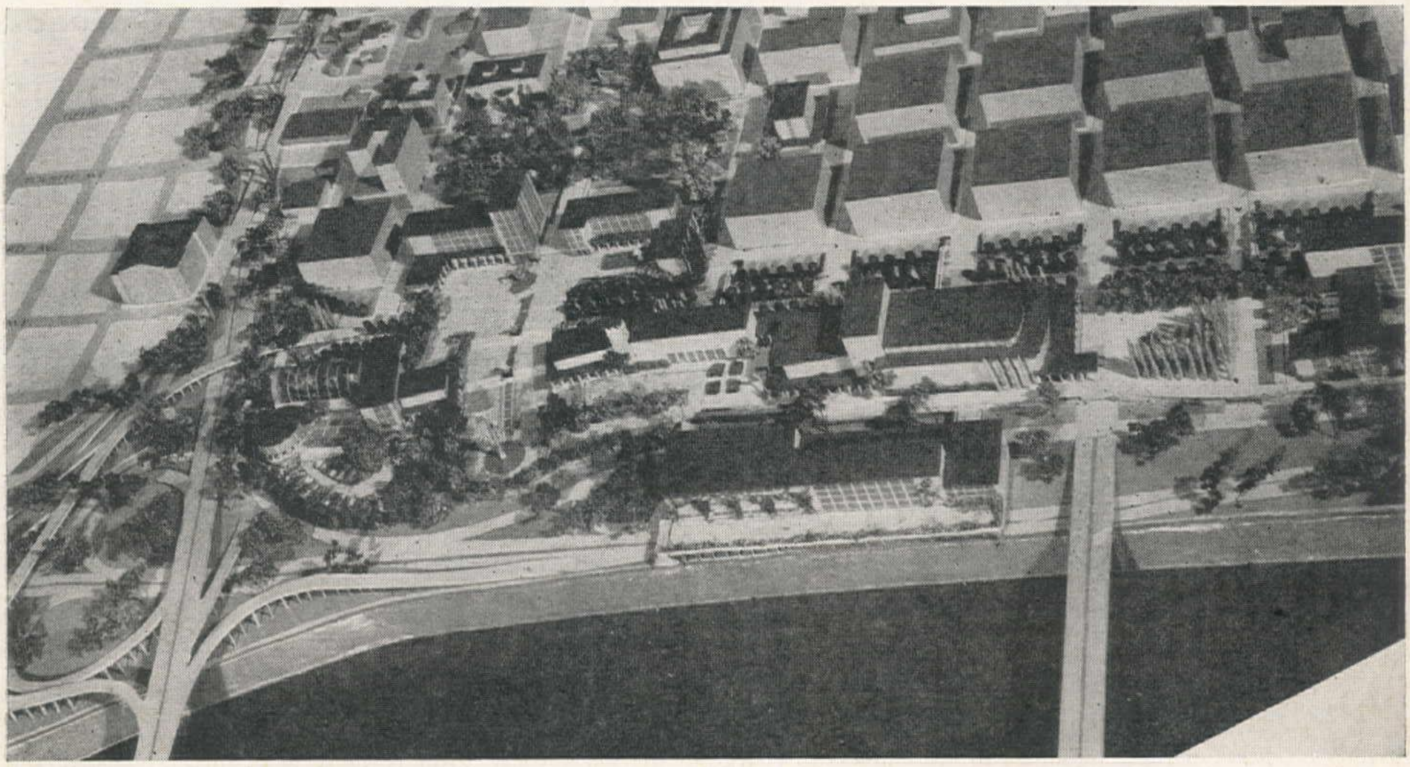
Waterfront site adopted

Having considered all of the above mentioned matters, the Commission developed a plan. It proposes that the Civic Center be established along the waterfront. It is felt that a civic development in this area would be more of a stabilizer in property values than in any other area, for the following reasons:

It would take out the most seriously and rapidly deteriorating area adjacent to the commercial section and create an attractive environment for the construction of new buildings and for the remodeling of old ones. It would help to provide a large amount of off-street parking in close proximity to the center of the commercial section. It would put parts of the Civic Center which need to be closely related to downtown Portland in proximity to it. It would assure the development of a feeder street system adjacent to the shopping district which would facilitate the movement of traffic and relieve considerable congestion within the highly built up area.

It was estimated that if property values continued to decline at the same rate after the war as for the period 1930 to 1940 it would only be necessary for the Civic Center to stabilize property values for a period of eight years for the 18 blocks bounded by Pine and Salmon Streets, Second and Fourth Avenues, to bring the tax revenue up to and slightly beyond what would be lost if the development were not built. Leading realtors of the city are convinced

PROPOSED waterfront area with wide streets, limited access freeways, off-street parking areas for public and private use, parks and buildings as shown on City Planning Commission's model.



that an even better improvement in property values is probable.

Depressed highway

As a solution of the problem of traffic and parking it is proposed that a new Second Avenue be constructed about 100 ft. east of the existing street and that this be made wide enough so that traffic can move with considerable facility in getting into and out of the streets leading into the central commercial area.

The new Second Avenue would be tied in by underpasses, where necessary, to the Harbor Drive development, making traffic access to the commercial area simple.

After considerable discussion with the State Highway Commission and the City Traffic Engineer a plan was proposed for the development of a traffic artery bounding the southern extremity of the commercial section. The Highway Commission recommended that it be developed as a depressed way, because traffic would be increased a great deal along Canyon Road as a result of the construction of the proposed new Wolf Creek Highway, and the ultimate building of a new Hawthorne Bridge with improved approaches on both the east and west sides, would increase the amount of traffic using this bridge and necessitate a more efficient traffic route. This artery was placed at Clay Street in order to make it possible for a new Hawthorne Bridge to be at right angles to the river channel, as insisted upon by the Army Engineers.

A fourth reason for choosing this location for a new artery is the fact that property values are much cheaper than farther north and that it would become a natural southern barrier for commercial development. This improvement would encourage, to the south of the new parkway, the erection of apartment houses and other multiple unit residential construction protected from commercial encroachment, but convenient to downtown Portland. The new parkway would take the place, at a much cheaper cost, of the proposed Jefferson Street tunnel.

As a recommended partial solution of the parking problem in downtown Portland, the Commission proposes a development of the Civic Center with all of the buildings on terraces. Underneath the terraces, at present ground level, it proposes to provide parking facilities. The cost, as estimated by the engineers of the Department of Public Works, seems reasonable. The total number of parking spaces which could be provided by this plan, with the addition of the proposed parking facilities on the east side of the new Second Avenue would amount to somewhere between 4,000 and 4,500.

The buildings, architecture and landscaping are still only suggestions and are subject to revision. The idea is an informal rather than a formal type of development, as being in far better keeping with the necessity of erecting these buildings one or more at a time over a long period of years, making it possible for parts of these buildings to become units until such time as the total structure is completed.

Economically the plan is believed to be sound. Property at the recommended site is comparatively cheap and would cost approximately $5,000,000. It is estimated that the city could recoup anywhere from $2,000,000 to $4,000,000 of this money by resale of land to the federal government, the state, and other agencies which might desire buildings in the area. The sale of the land adjacent to the new Second Avenue on its west side would bring in between $1,000,000 and $2,000,000 according to estimates of local realtors. The site for the federal group can be sold for considerably over $1,000,000, the state building site for some $250,000.

It is the recommendation of the Planning Commission that all existing structures remain until such time as the new improvements are ready to be constructed, and that whatever revenue the city receives from them be used to help pay for the project.

This plan has been approved by the Portland City Planning Commission, the Oregon Chapter of the American Institute of Architects, the Oregon Building Congress, the Portland Area Postwar Development Committee and the City Council of Portland. This approval, of course, is in principle rather than in detail. It is believed, however, that there are certain essentials of this plan which must be retained in order to make it a valuable contribution to the future development of Portland.

The proposed widening of Second Avenue is one of these essentials, being required for improving the traffic system of downtown Portland, for stabilizing and improving property values adjacent to the Civic Center development and as a provision for an adequate setting for civic buildings.

Another essential proposal is the provision for parking space beneath the terraces on which the buildings are to be built, in order to provide adequate parking space for the public buildings, and to relieve the streets and parking lots of downtown Portland of the necessity of providing parking spaces for public and semi-public patrons.

The further, and perhaps most essential feature, is the coordination of governmental functions, which necessitates keeping the new city hall and state building, as well as federal agencies, in the same general area suggested.

Canadian Plaster and Wall Board Factory Being Rebuilt After Fire

RAPID PROGRESS is being made in the various stages in connection with erection of the new $500,000 plant of the Gypsum Lime & Alabastine Canada, Ltd. at South Westminster, B. C., according to Norman Jessiman, British Columbia manager for the company. The new plant is being erected on the site of the former premises destroyed by fire. Total cost of plant and equipment was originally placed at half a million dollars and is now expected to exceed this total.

Piling for the two main buildings, to be used as a plaster mill and a wallboard factory, and piling in connection with rebuilding of the company's private dock has been completed, this contract having been handled by the Fraser River Pile Driving Co., Ltd., New Westminster.

A. Wallace & Son, 530 Fifth Street, New Westminster, has received the contract for the cement foundations on the mill and factory buildings and has already completed pouring of foundations for the mill. Work on the wallboard plant foundations is nearing completion.

Major W. G. Swan, prominent Vancouver engineer who has just returned to civilian life, has designed the steel frame buildings, and the contract for their fabrication and erection has been placed with the Hamilton Bridge Western, Ltd. Fabrication of steel is in progress and erection is expected to start early in January.

McCarter & Nairne, architects, 355 Burrard Street, have been named as the architects in charge of the job and are now preparing final plans and specifications to complete the work. R. Lennox Mackenzie, electrical engineer, has been named as electrical consultant on the project and is preparing full electrical specifications.

Huge Expansion Program By Navy at Port Chicago

AN EXPANSION PROGRAM, costing $20,000,000, at the Navy Ammunition depot at Port Chicago, Calif., where an explosion in July killed more than 300 workmen and destroyed a considerable number of installed facilities, will be completed early next spring, according to the Twelfth Naval District. About $5,000,000 is being spent in reconstruction and improvement at the regular loading piers and Naval barracks, and $15,000,000 for construction of an inland storage area in Clayton Valley. This storage area will be about 5,500 ac. in extent and will include a permanent civilian town, railway services and storage facilities with all known safety features for handling live ammunition.

There will be included 40 mi. of railway, 40 mi. of highway, two highway over-passes and a railroad over-pass, permanent administration building, shops, railroad buildings, and mechanical repair facilities. Side tracks for loading will be protected by reinforced concrete walls designed to divert explosions upward rather than downward.

Rough and Ready Island, near Stockton, is the scene of further expansion.

Ponton Bridge Design Improvements

Bridges built on boats used by Cyrus in 537 B. C. and have played important parts in history ever since, but new methods of placing boats, selecting lumber, and standardization of timbers have made it one of the modern-day army's most valuable tools for fighting in devasted areas

MILITARY VEHICLES using a modern ponton bridge during operations in the Italian campaign. Boats can be put into place by outboard motors in quick order, and deck, cut of standardized timbers, attached in short space of time.

By R. T. TITUS
West Coast Lumbermen's Association
Seattle, Wash.

PONTON BRIDGES have been used to cross streams for thousands of years. There are instances of their use in the writings of Homer, around 900 B. C. The Persian kings, Cyrus, Darius and Xerxes used them. The Persian army engineers under Cyrus built the first ponton bridge of actual record in 537 B. C. Xerxes made his famous crossing of the Hellespont some 50 years later using one row of 360 boats and a parallel line of 314. The flooring was "made of tree trunks sawn into planks and cut the width of the bridge."

Compared with other types of bridges—such as the storied bridge of San Luis Rey, with its knotted fibrous cables swaying high in the air—the ponton bridge is about as basically complicated as tossing a log in a stream. Out of these two early designs alone have evolved the most modern bridges in the world. One has become a great suspension span over the Golden Gate, the other has become the tool of hard-hitting armies in the field.

With military use as old as the ponton bridge itself, each war has seen its higher development. Today is a far cry from Xerxes. It is even somewhat removed from the time when the Union Army was stopped at the Rappahannock and had to wait 20 days while a ponton bridge was secured and assembled—a delay that cost them a resounding defeat at Fredericksburg. In this war, ponton bridges are on the spot and ready when needed. Blasted out bridges are sometimes crossed by superimposing prefabricated structures on the wreckage, whereas pontons come in handy for cross-country work, and fighting in primitive areas and islands.

The pontons are lined up, frequently kicked into place with little outboard motors, anchored, and the decking quickly laid down, and the crossing effected as heavy mobile guns, troops, and supplies roll forward. The same bridge can cross as many streams as necessary. Armies do not burn their bridges; they carry them with them.

Lumber carefully selected

To match the exacting demands of this up-to-date military precision, the behind the lines story reaches back to the lumber mills and to the forest itself. Ponton lumber has a specification and science of its own.

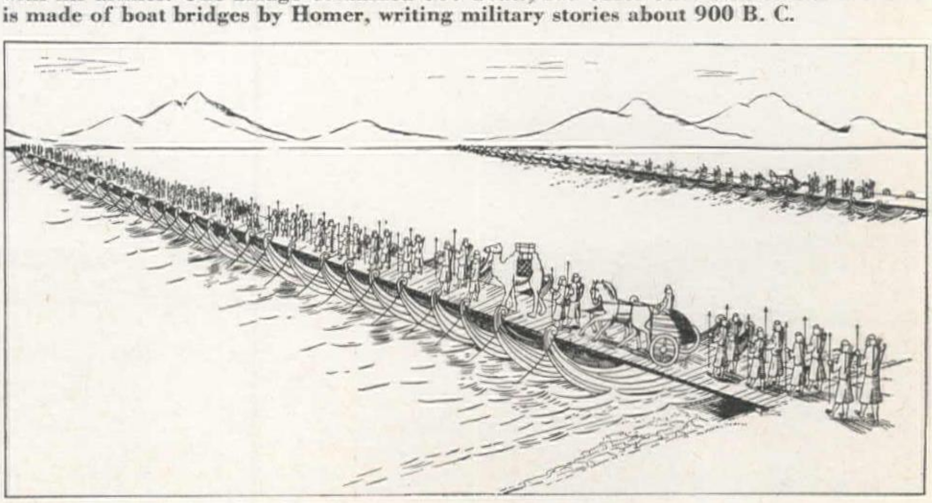
With a deviation of straightness of grain that cannot exceed one in 15 in. in slope, the first job is to find areas where Douglas firs can yield a high percentage of suitable logs. There is no precise rule to locate such an area. The lumber companies did it by noting where their straight-grained logs came from. Only those who found a good supply of them undertook to produce ponton lumber. In some cases, special devices at the sawmill's headrig were used to check for straightness of grain.

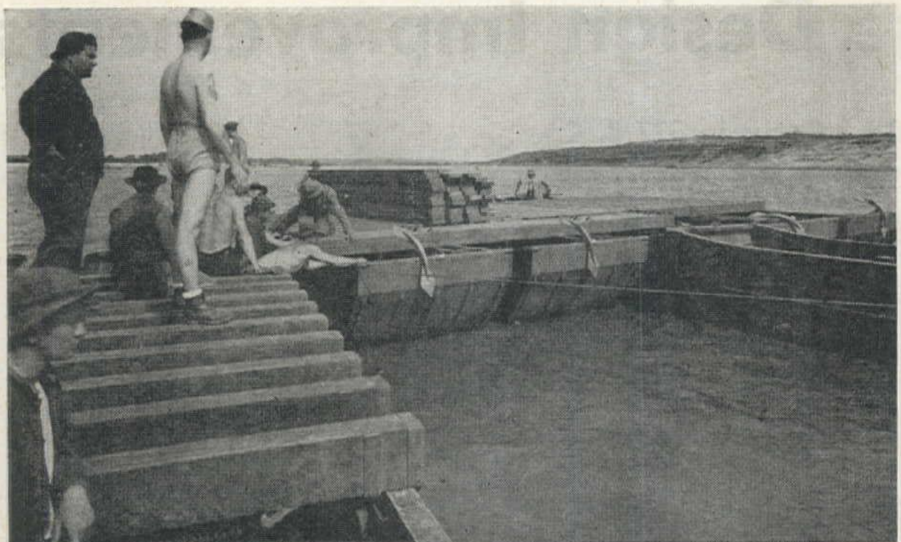
After the mill has discovered a green candidate for a ponton balk (stringer) or chess (plank), the next concern is to reduce its water content to 19 per cent or less without developing more than four moderate surface checks "not more than ½ in. deep, 12 in. long, and well distributed." Specifications like this made air drying too risky and too slow. Kiln drying at proper humidity is also slow and delicate. The manufacturers turned to chemical seasoning. In a nutshell, the purpose of chemical seasoning is to keep the surface from checking while the interior is dried by established methods. When wood dries, it shrinks. It follows that if the surface of a timber gets too small to go around its green interior, severe strains are set up that result in twisting, checking and splits. By use of certain chemicals, uniformity of drying is secured through retaining some moisture in the exterior, while the interior is drying out. While the chemical does not in itself speed the drying process, it makes possible the operation of kilns on a faster drying schedule than would be possible on untreated lumber. Some mills find that kiln drying can be speeded up as much as one-third.

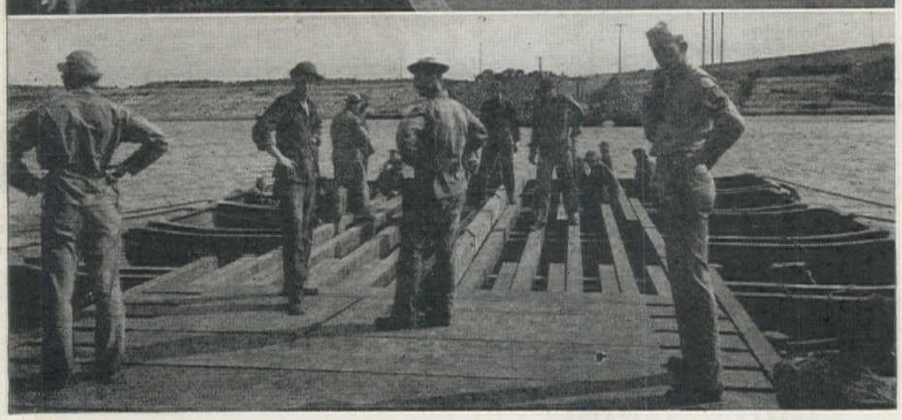
Chemical seasoning

Many chemicals have been tried, singly and in combinations. The job was to find a substance with desired hygroscopicity, or ability to attract and hold moisture, that was also easy to apply and cheap enough to use. It was known that common salt—sodium chloride—would do the trick, and some mills began using it. All of them gave it up when it was learned that its use imparted objectional residual properties to

EARLY DRAWING of the twin ponton bridge used by Xerxes to cross the Hellespont with his armies. One bridge contained 360 boats, the other 314. Still earlier mention is made of boat bridges by Homer, writing military stories about 900 B. C.







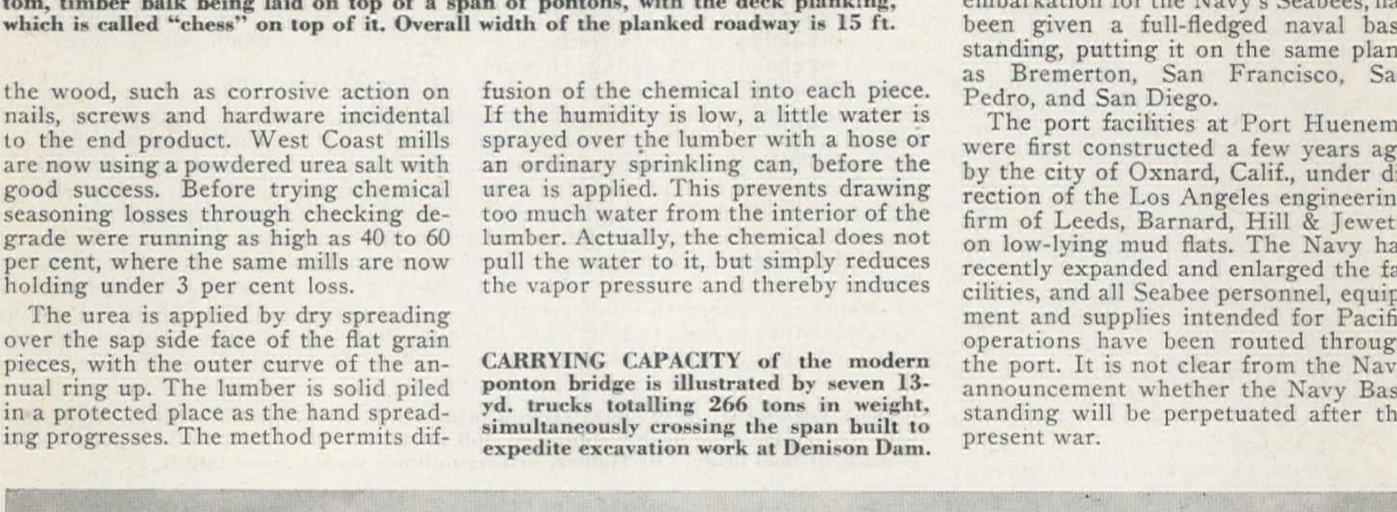
CONSTRUCTION OPERATIONS on a modern ponton bridge. Top, "balk" or bridge stringers, held in place with clamps, while 5-ponton section is moved into place. Bottom, timber balk being laid on top of a span of pontons, with the deck planking, which is called "chess" on top of it. Overall width of the planked roadway is 15 ft.

the wood, such as corrosive action on nails, screws and hardware incidental to the end product. West Coast mills are now using a powdered urea salt with good success. Before trying chemical seasoning losses through checking degrade were running as high as 40 to 60 per cent, where the same mills are now holding under 3 per cent loss.

The urea is applied by dry spreading over the sap side face of the flat grain pieces, with the outer curve of the annual ring up. The lumber is solid piled in a protected place as the hand spreading progresses. The method permits diffusion of the chemical into each piece. If the humidity is low, a little water is sprayed over the lumber with a hose or an ordinary sprinkling can, before the urea is applied. This prevents drawing too much water from the interior of the lumber. Actually, the chemical does not pull the water to it, but simply reduces the vapor pressure and thereby induces the higher vapor pressure of fresh water in the green interior of the wood to force its way out, pushing water ahead of it. The salt thereby keeps the surface moist and so prevents checking during seasoning.

Kiln drying must follow, or the pressure will come into balance before the water content is reduced to the required percentage. The general rule established is to allow one day of chemical action in the pile for each inch of thickness in the lumber. The demand for such superior stock for ponton fabrication has given this development great impetus.

A look at the sizes of ponton stock at once suggests other production difficulties. They ran: 2½ x 10¼, 2½ x 12½, 3 x 12, 4 x 8, 4½ x 6½, 6 x 8¼, 6½ x 8¼, 8 x 10, 8¼ x 10¼, with lengths of 16, 14 and 22 ft. When a piece is rejected it means that it has to go to the resaw for cutting to the nearest standard size. Often the length required can not be obtained from a given log without loss of remaining wood in useful sizes. Production has not yet reached the point where it is possible to have the bucker in the woods bear ponton lumber in mind when he works a freshly fallen tree. All of this naturally adds a good deal to the cost as well as the problems of manufacture.

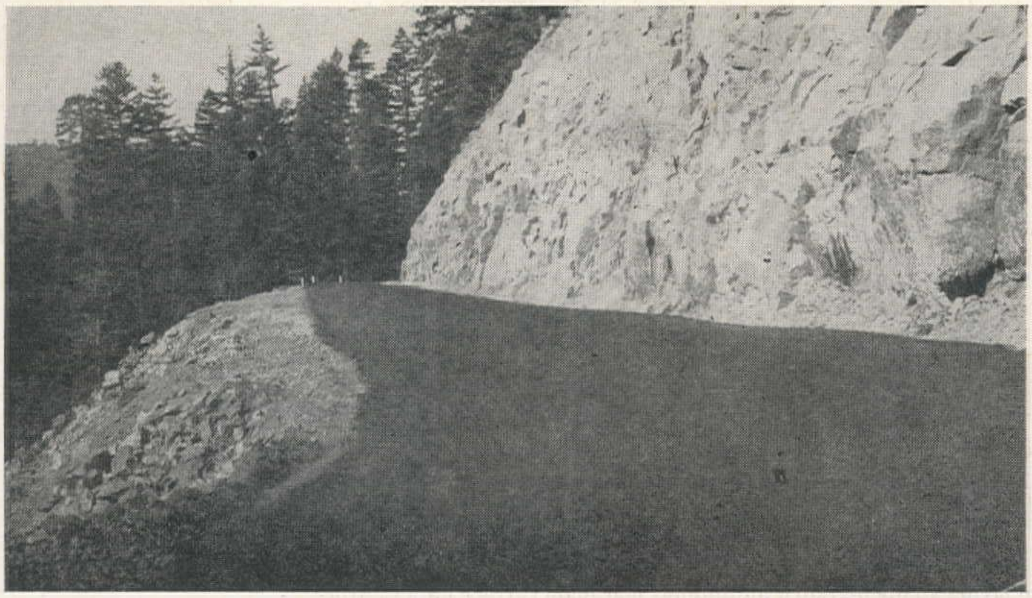


CARRYING CAPACITY of the modern ponton bridge is illustrated by seven 13-yd. trucks totalling 266 tons in weight, simultaneously crossing the span built to expedite excavation work at Denison Dam.

Port Hueneme Seabee Port Is Rated as Complete Navy Base

PORT HUENEME, which for the past year has been the West Coast port of embarkation for the Navy's Seabees, has been given a full-fledged naval base standing, putting it on the same plane as Bremerton, San Francisco, San Pedro, and San Diego.

The port facilities at Port Hueneme were first constructed a few years ago by the city of Oxnard, Calif., under direction of the Los Angeles engineering firm of Leeds, Barnard, Hill & Jewett, on low-lying mud flats. The Navy has recently expanded and enlarged the facilities, and all Seabee personnel, equipment and supplies intended for Pacific operations have been routed through the port. It is not clear from the Navy announcement whether the Navy Base standing will be perpetuated after the present war.



Open Type Surfacing—
Found Valuable on California Roads

Plantmix bituminous macadam used on California highways for resurfacing disintegrated pavements with minimum interference to traffic—Large size aggregate and thick layer of asphalt on each particle gives a surface immune to shock, impervious to water, and of good riding quality

By F. W. HASELWOOD
District Engineer
California Division of Highways
Redding, Calif.

AN OLD FRIEND under a new name is the open graded plant-mix that is being used as a durable non-skid surface for highways in California. It is essentially a plant-mixed machine-spread bituminous macadam, requires a sound support and is excellent for resurfacing old concrete roads and for use over cement treated bases, since base cracks are not transmitted through the surfacing as in the case of dense mixes. It has the further advantages of ease of construction and a smooth riding surface.

History

Bituminous macadam is probably the oldest type of road surface which has used asphalt or tar as a binder for coarse or open graded mineral aggregate. The quality and utility of this surface material is well known. In many states it is extensively used as a wearing course for all roads except those carrying heavy industrial traffic. In some states the use of bituminous macadam has declined almost to the vanishing point.

In California, bituminous macadam has been used to some extent on State highways and to a greater extent on city streets and county roads. The usual method of construction has been the application of successive alternate layers of crushed rock and asphalt between header boards on the roadway. This method of construction has several disadvantages. Besides the expense involved in providing headers, difficulty arises when no detours are available and traffic must pass through construction. Construction of one lane at a time is both costly and unsatisfactory. The best aggregate is ledge rock, although coarse gravel or boulders 4 in. and over in size have been crushed for use as macadam aggregate. Another disadvantage to this successive layer method of application is the resulting rough riding surface. Present-day drivers, having learned that smooth riding surfaces can be built are critical of the results of most bituminous macadam surfaces built by the surface application method.

Alternate types

Revolution and evolution in specification writing and construction techniques have sometimes modified standard practices. At times construction men have rebelled against the time-honored methods of bituminous macadam construction and have road-mixed and spread the main course with graders, and have placed only the choker and finish courses by surface applications. Construction difficulties involved in this method have limited its use to rare and special occasions. A road-mixed type that acquired some popularity for a time is the retread. It consists of mineral aggregate usually from 1 in. to ½ in. or ¾ in. to ⅜ in. roadmixed with emulsified asphalt. This type however, requires three surface applications of rock screenings and two of asphalt emulsion and is more commonly used for repairing and restoring old surfaces than for constructing new ones.

The usual type of bituminous-treated surface in California for roads carrying light, medium and at times heavy traffic, is made with dense graded mineral aggregate and bituminous binder, varying according to circumstances from the softer liquid road oils through the various cutback grades to the heavier paving asphalts. This material may be either road-mixed and blade-spread, or plant-mixed and machine-spread. A major reason for the high development of these types of surfacing in California is the prevalence of deposits of gravel, sand, sandy silt or disintegrated rock of a granitic nature that can be used as it is found or can be cheaply processed into suitable mineral aggregate.

Bituminous-treated surfacing originated as an inexpensive method of eliminating dusty and muddy road surfaces, but during the past eighteen years the process has been going through a process of evolution. Refinements in testing methods and specification writing have modified the selection, processing and grading of mineral aggregate, and the technique of mixing and placing to such an extent that many plant-mixed surfaces of today closely approach the quality and durability of asphaltic concrete. On the other hand, the objective of securing a low cost road surface has fallen by the wayside in favor of the more expensive construction that results from these refinements. It must be recognized however, that these refinements are necessary in order to provide the stability and durability necessary to withstand the effects of postwar increased volume and weight of traffic.

Fine material reduced

The present thought in the design of bituminous paving mixtures in California is to reduce or completely eliminate the finer portions of the mineral aggregate. In the design of the former dense graded mixes a quantity of fines was specified which was considerably above the normal output of economically-operating rock crushing equipment. Frequently the fines in the aggregate were supplemented from other sources to bring the grading into specification range. These supplemental fines, no matter how carefully selected were usually inferior to rock dust. In the customary dense graded mix of today, the larger rock particles are like phenocrysts in a ground mass of fines bound in most cases by a soft grade of asphalt. These dense mixes lose stability as the amount of moisture in the mix increases. The critical stage for a particular mix depends on the amount of water absorbed and the weight and frequency of wheel loads.

THREE STEPS in laying an open-graded bituminous macadam surface on a California road. Top, the material immediately after placing, showing the thick layer of oil; center, after rolling first course; lower, final surface after applying fine choker course.

With the softer grades of asphalt the effect of warmer weather is quite apparent. In many parts of the State the climatic influences, together with the quality of the aggregate and binder and the design of the mix, tend to limit the period of stability under service. It was with the idea of avoiding some of the characteristic faults of these dense mixes in localities where climatic conditions were particularly severe and where available aggregates in many cases readily absorbed sufficient moisture to become critically unstable, that mixes without fines have been extensively tried out.

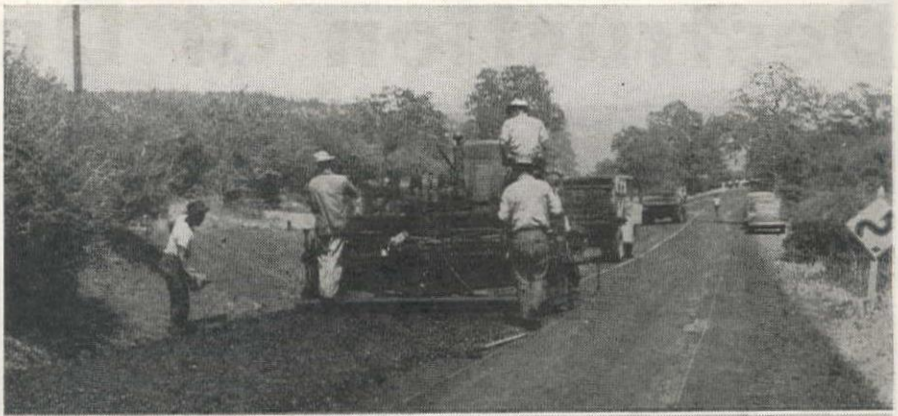
The type of surface now designated as open-graded plant-mix is bituminous macadam. The only new features are the techniques of mixing the aggregate and asphaltic binder in a hot plant and of placing it on the road with power-driven, mechanical spreading and finishing equipment. These new construction methods permit a minimum of inconvenience while surfacing roads carrying traffic, and assure a remarkably smooth riding surface. These methods avoid the difficult processes and the unsatisfactory characteristics of the earlier methods of constructing by successive surface applications.

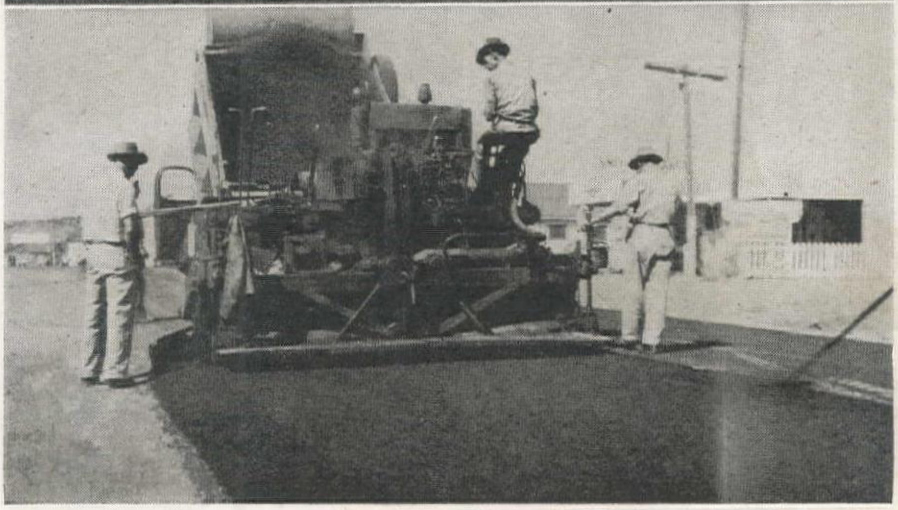
Probably the first plant-mixed macadam on State highways in California was placed in 1940 in the form of a surface or finish course over a dense graded mix. The purpose of the work was to provide a better and more durable non-skid surface with better riding qualities than could be obtained from surface applications such as armors and seals. Aggregate graded from ½ in. to ⅛ in. and paving asphalt were used. The mix was spread on the road at the rate of 55 lbs. per sq. yd. The surfaces have exhibited excellent wearing qualities under the adverse conditions of heavy rainfall, wide temperature ranges and heavy traffic.

In 1942 the Public Roads Administration constructed 29 mi. of open-graded mix on the highway between Canby and Tulelake in Modoc county. The mineral aggregate for the mix graded from ¾ in. to ¼ in. Liquid asphalt SC-6 was used as a binder. The spread was at the rate of 150 to 180 lbs. per sq. yd. In constructing this highway, the mix was spread and rolled once, the initial layer of choker crusher-run aggregate passing a No. 10 sieve was applied at the rate of 6 to 9 lbs. per sq. yd. and broomed and the road was opened to traffic; then liquid asphalt MC-2 was spread at the rate of 1/10 gal. per sq. yd. and the final layer of choker aggregate applied. As a seal, 0.2 gal. of liquid asphalt SC-6 and 15 lbs. of fine screenings ¼ in. to 1/10 in. per sq. yd. were spread over the surface.

In 1943, 55 mi. of similar surfacing was placed on State highways. In 1944 66 mi. were placed according to slightly different specifications and construction methods. The open-graded mix was spread at rates varying from 100 to 300 lbs. per sq. yd. and rolled, and traffic was permitted to use it as soon as it had cooled sufficiently. In lieu of surface applications, the ¼ in.-0 in. aggregate was plant-mixed and spread as a choker mix at the rate of from 40 to

APPLICATION of open-graded bituminous surfacing on California highways. Top, spreading the first course on an existing but disintegrating concrete pavement; this course uses aggregate up to ¾-in., with a small percentage of fines and a heavy coating of asphalt. Bottom, spreading the final choker course of finer material and liquid asphalt.





50 lbs. per sq. yd. An application of liquid asphalt RC-2 as a flush seal at the rate of .05 gal. per sq. yd. was the final operation.

Prospective future variations may involve the use of larger aggregate, the use of paving asphalt instead of road-oil and the final application of a seal with a fine screening cover. Like any other bituminous treated surface course, the open-graded mix requires a sound support. It is an excellent mix for resurfacing old concrete roads and for use over cement treated bases since transmission of the base cracks through the mix is not so pronounced or injurious as when dense graded mixes are used. When the support is sound and of a nature not to be injured by moisture, a thoroughly watertight seal is unnecessary since the mix itself is not injured by water. After a period of use, the thick coat of asphalt on the road material will squeeze together so as to give an impervious surface immune to shock, and of splendid riding quality.

Cooperative Seismological Center Suggested for Western Hemisphere

A CENTRAL EARTHQUAKE research center to coordinate and make available seismological data from all parts of America, as an aid to reducing loss of life and property damage such as was caused by recent tremors along the Eastern seaboard of United States and Canada, is one of the recommendations contained in a report just published by the Division of Geomagnetism and Seismology of the United States Coast and Geodetic Survey.

The report was prepared by the Geodetic Survey and similar services in other American republics as part of a seismological project sponsored by the State Department for the purpose of promoting greater interest and cooperation in earthquake research in the Western Hemisphere and compiling information showing the effects of earthquakes on buildings, bridges and other engineering structures. Besides the United States, cooperating nations included Venezuela, Colombia, Chile, Peru, Ecuador, Panama, Costa Rica, El Salvador and Guatemala.

All of these countries are subject to earthquakes in varying degrees of frequency and intensity, but many of them lack adequate scientific facilities for seismological investigation.

According to the report, at least 11 first-class seismological stations for recording distant shocks are needed in these countries and other parts of Latin America for the compilation of adequate data, and 26 other stations for registering nearby quakes. Of these, five satisfactory long-range stations are in existence in Colombia, Peru, Bolivia, Argentina and Brazil, requiring the modernization of 17 other stations of both types and the construction of 15 new stations. The report also suggests the installation of four accelerographs, for recording destructive earthquake motions in Guatemala, Venezuela, Colombia and Ecuador, to supplement four existing instruments on the Pacific Coast of the United States and one each in Chile and Peru.

In proposing a central seismological station for all the American republics, the report estimates that annual costs would be less than $25,000 and suggests that operating expenses and overhead might be defrayed by contributions from the American governments participating in the project. Its staff would include a bi-lingual director with a satisfactory background in seismology and engineering, a secretary general or seismologist qualified to visit observatories in various countries and aid in maintaining high operation standards, an instrument technician and a clerk.

Its tentative functions, as outlined by the Geodetic Survey report, would be as follows:

To establish, maintain and improve instruments and stations and devise new seismological equipment and methods in accordance with unusual local conditions; make regular surveys of all cooperating stations as a means to maintaining high standards of functioning; interpret seismographic records for stations lacking qualified personnel; make preliminary determinations of the foci of strong shocks.

Improvements in Streambed Of Southern California Wash

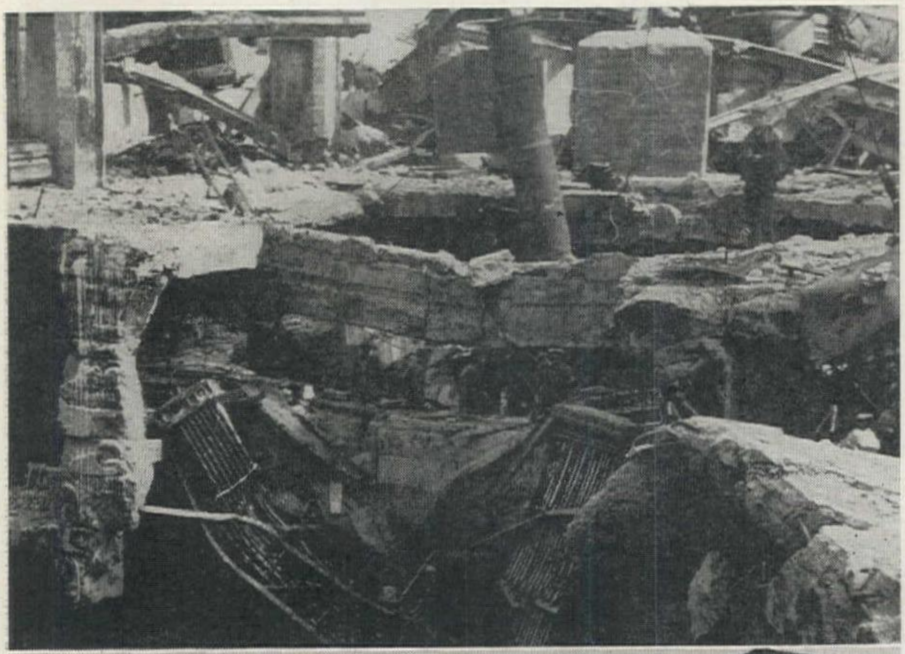
THE DEEPENING of Sawpit Wash near Duarte, Calif., together with levee improvements totaling around $50,000, have been proposed to the Los Angeles County Board of Supervisors, according to Acting Flood Control Engineer M. E. Salsbury.

In order to facilitate getting the work done as rapidly as possible, Salsbury has requested that the work be allowed by force account rather than through private contract.

The levees are to be asphalt faced except immediately downstream from Duarte Road where pipe and wire fencing will be used. Salsbury stated that the necessary funds have already been provided in the 1944-45 budget.

Authority will also be asked for improvement by force account of Santa Anita Wash near Arcadia; this work will be rail and wire protective revetments on both sides of the wash as well as repairs to gunite faced levees already in place.

Destruction at Dnieprostroi



SCENES of destruction inside the Dnieprostroi powerhouse. Top, rotor shaft of one of the turbines leans over at crazy angle. Center, all inflammable portions were burned, leaving only twisted steel frame. Lower, warped and useless tracks of the crane.

Photographs show the extent of damage to Russia's greatest dam, which was partly destroyed by the retreating Russians in Aug. 1941, and further wrecked by the Germans before it was retaken by the Reds —Most of the damage is in the powerhouse

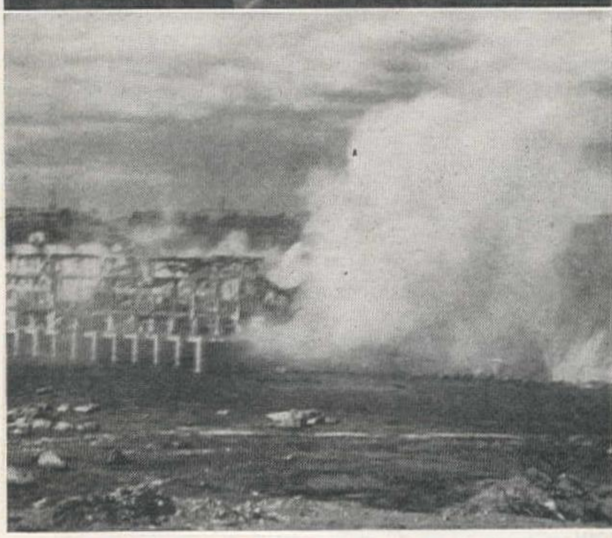
THE RUSSIAN government engineers have started rebuilding the great Dnieprostroi dam and hydroelectric power plant on the Dnieper river of the southern Ukraine, and it is hoped to have the project completed and returned to service in 18 months.

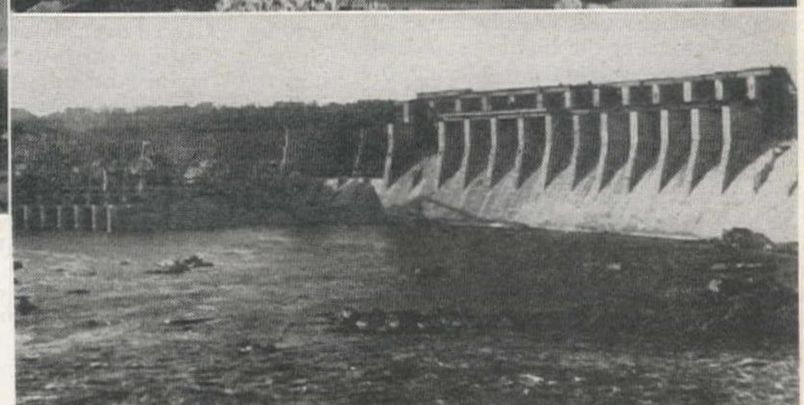
The pictures shown on these pages are the first released in the United States of the damage sustained by the massive structure, and were taken during a tour of Soviet Russia by Maj.-Gen. Philip B. Fleming, Administrator of the Federal Works Agency, who was on an assignment to study reconstruction methods and programs being employed by the Russians in war-devastated reclaimed areas.

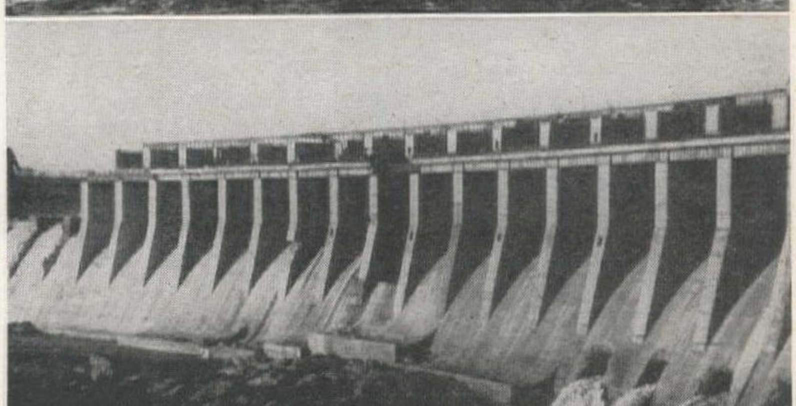
At the time the news of the destruction of the huge steel and concrete structure was announced in August, 1941, when its capture by invading Germans was apparent, it was understood that the demolition was the work of the Russians, as a part of their "scorched earth" policy. General Fleming learned, however, that the Russian engineers had only short-circuited the generators in the powerplant and removed some vital equipment. They wished to make sure the Nazis could make no use of the power potentially present at the reservoir. But it is now announced the actual destruction was accomplished by the Germans as they, in turn, were in danger of losing the structure.

The Dnieprostroi dam was the first completed project of Stalin's first Five-Year Plan in the industrial construction field. It was designed and constructed by American engineers, under the direction of the late Col. Hugh L. Cooper, of New York. Actual construction work was begun in the Spring of 1927 and was completed in 1932. By controlling the flow of the Dnieper, greatest river in the Ukraine, power was supplied to a great number of Russia's new industrialized centers and to collective farms, as well as establishing an important inland navigation system.

It has already been announced that General Electric Co. has been awarded the contract to manufacture in this country the nine new generators of 100,000 kw. each, which will be installed in the rebuilt powerhouse. The power production will thus compare very favorably with the output at the Boulder and Grand Coulee plants. The machines will take four years to build and install. They will be paid for by Russia, and are not being lend-leased to the Soviets.







DNIEPROSTROI DAM, destroyed in Aug. 1941 during the German blitzkreig into the Ukraine, is being rebuilt by the Russians and is scheduled for completion in 18 months. It was originally reported that demolition work was done by Russians as a part of their scorched earth policy, but a recent report states that they only short-circuited the generators and removed vital equipment while the Nazi invaders did the actual destruction work. Upper left, Maj. Gen. Philip B. Fleming (r.), U. S. Federal Works Administrator, and Maj. Gen. Vashiliev (l.) of Russia, toured the ruins on an inspection trip recently. Lower left, Russians use explosives to break up debris in destroyed powerhouse. Upper right, the destroyed 2,500-ft. dam showing remains of the headrace tunnels to the powerhouse. Second picture, reconstruction work is rushed by both men and women workers in 11-hr. shifts. Concrete is badly shattered. Third picture, on high ground above the destroyed powerhouse is Dneprogzs, a city of 289,000. Lower right, the dam under reconstruction. In order to lower the water level in the upper pool, tunnels have been blasted through the bottom part of dam. These will be plugged again when the dam is rebuilt.

Navy Builds Railroad Shipping Facilities in

Navy is engaged in construction of a $18,000,000 single-track railroad from Shelton to Bangor, Washington, over difficult, rugged country in order to enlarge tansportation facilities from inland Navy yards and depots to shipping and storage points on Puget Sound—Much incidental building, drilling and other work

THE UNITED STATES Navy, at home in any waters and long noted for the excellence of her permanent shore installations, is now writing an important paragraph in a new chapter on dry land operations in the vicinity of Bremerton, Wash. In short, the Navy has gone railroading in the Pacific Northwest, at least so far as supervision is concerned, in the construction of some 100 mi. of standard gauge track over difficult terrain. The new road together with its spurs, classification yards and appurtenant facilities add up to an $18,000,000 job.

Beginning at Shelton, where the new road hooks up with Northern Pacific's Grays Harbor line, the grades ascend the high ground and follow generally the direction, but on a route of its own, of State Highways 14A, 14 and 21 to Bangor, terminating at what will be known as the Marginal Pier on Hood Canal. All right-of-way has been or is being acquired by the Navy. Branch lines are being extended to Bremerton, the new Naval Ammunition Depot, and Naval Magazine areas set up near the terminus. Classification or switching yards will be available at both ends of the run, with a large one at Bay Shore, about three miles from Shelton. These will go far to admit the orderly flow of different types of freight—when, where and as needed—over the single-track main line.

While the rail for this job came from all over the country, some of it salvaged from as far away as the Florida Key West Railroad, the steel is in remarkably good condition and in weights from 72 to 90 lb. It allows a construction that compares very favorably to the best secondary lines. Ties are 7 x 9-in. creosote-treated Douglas fir. The cuts, fills and bridges meet the highest standards of any line, and even considering the spectacular nature of America's railroad history, some phases of this Navy road are impressive. Statisticians have not yet had an opportunity to proclaim what features of this job are the largest in the world, nor what records have been broken. It is sufficient to say that, matched with any of the building accomplishments of a nation at war, this railroad holds its own. It differs from many projects in that it is all permanent construction done on a schedule usually associated with emergency work. This factor perhaps is the high point of the story, for there are involved girder steel, reinforced concrete, precast piles, treated ties, brick, lumber and plaster—all materials of permanence—assembled into a finished product in what may be little more than six months time, in time, probably, to serve out this war and to complement the existing Puget Sound Navy Yard in its active peacetime operations.

Contracts awarded

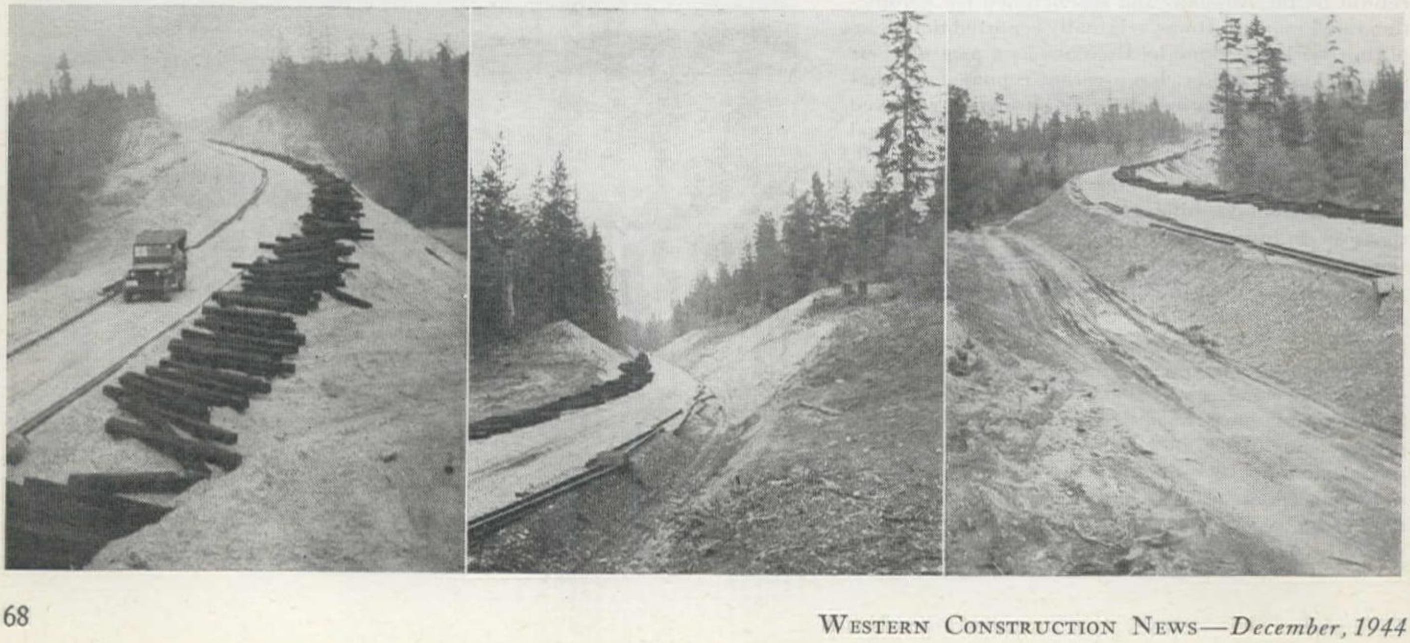
Behind what seems to the visitor a confusion of men and equipment scrambling in and between areas of intense activity scattered over about 60 miles of clearing, blasting, earth-moving, building, track-laying and unloading barges is the precise division of labor into seven major contracts and the thoughtful timing of notices to proceed. The history and nature of these prime contracts—showing number, date of notice, contractor, type of work and per cent of completion by November 1 — may be briefly described as follows:

Noy 9489—August 1, to Sound-Kiewit, Seattle, for classification yards, barricaded reinforced concrete sidings and magazines, in the depot area, including the last five miles of main line railroad, a few structures such as a brick incinerator, concrete sorting buildings having steel roof trusses and an open-shed sawmill. The magazines on this contract are a supplement. Fifty-three per cent complete.

Noy 9490—May 1, to General Construction Co., Seattle, for the first section of main line railroad from Shelton to the Kitsap - Mason County line. Includes all grading, bridge work and classification yard at Bayshore, as relates to this section; 90 per cent complete. This contract also carries a change order directing General Construction to furnish precast concrete piles for the wharf on Noy 9492.

Noy 9491—July 1, to Sound-Kiewit, Seattle, for 36 mi. of railroad, picking up the main line from General's contract at the Kitsap-Mason County line

MAINLINE near magazine area (left) is ready for track laying after filling to a maximum height of 60 ft. Right, 3 deg. 6 min. curve near Allyn bridge showing a long section of fill, and center, the same section looking in the opposite direction.



To Augment Existing Puget Sound Region

and extending it to the magazine area, with branches to the Puget Sound Navy Yard at Bremerton and the Naval Ammunition Depot. This includes bridges and grading similar to the first section out of Shelton; 48 per cent complete.

Noy 9492—June 15, to Manson Construction Co., Seattle, for construction of marginal wharf, to include driving piles and pouring reinforced concrete deck; 60 per cent complete.

Noy 9742—July 1, to N. C. Jannsen Drilling Co., Seattle, for well drilling; 95 per cent complete.

Noy 9885—A recent award to C. C. Moore, San Francisco, for the installation of power house equipment, including a standby power unit and heating.

Noy 10346—September 1, to Lease & Leigland and Kuney-Johnson, both of Seattle, for buildings—such as 2-story brick barracks and a single story administration building, bachelor officers' quarters and a number of temporary barracks, mess halls and other essential utility buildings.

There is the normal amount of subcontracting, which on a project of this size would entail quite a listing. However, prominent among them is Guerin Bros. of San Francisco, handling the grade work for Sound-Kiewit.

The combined effort of these contractors adds up to some really impressive quantities. As already mentioned, 85 mi. of standard gauge track will be laid. Excavation will hit seven and one-half million cubic yards of earth, and 75,000 cubic yards of reinforced concrete will be poured in place.

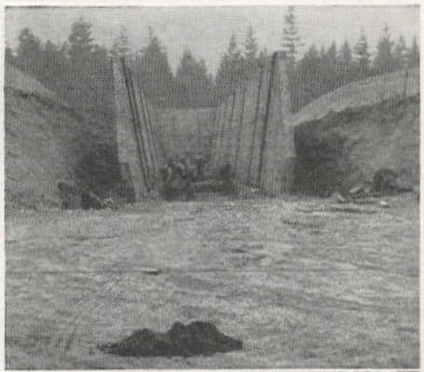
Round number job costs when lumped together reach some pretty substantial figures: In the magazine area alone, railroad work comes to 2½ million; magazine contracts, 2¼ million; buildings, 3 million; equipment, $100,000; the well, $25,000; materials furnished by the Navy, 1 million; overhead, to include Navy construction personnel, plant and equipment, $500,000 — totaling 9⅓ million. Adding the Shelton end, the wharf, the architect-engineer and the Navy headquarters for 8⅔ million, and the big job totals 18 million dollars.

Geographic handicaps

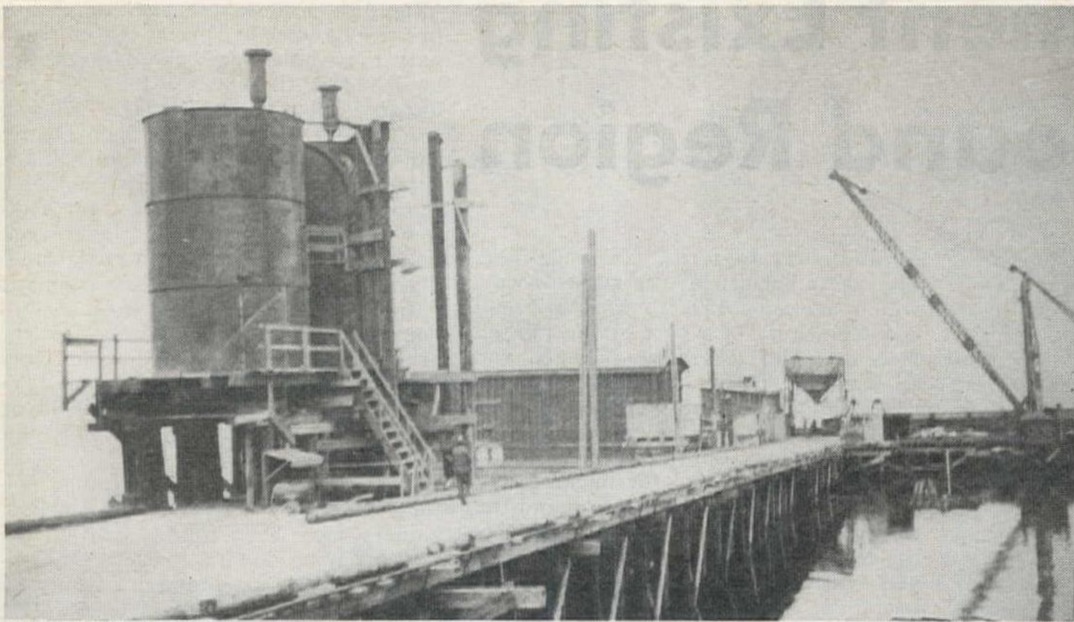
Mason and Kitsap counties, Washington, are a part of that well-watered region west of the Cascades that supports the heavy commercial forests of the Pacific Northwest. The job site area, being accessible to tidewater, was logged early and second growth timber, mostly the dominant Douglas fir, has made a pretty thorough come-back over the stumps of the original forest. Filling in yet more is the understory tangle of smaller trees, bushes, and a jungle ground-cover of ferns. Clearing, then, for the full width of the right-of-way, which averages 150 ft., was no small consideration. As a part of the job, all merchantable trees were salvaged and all slashing, waste, and miscellaneous vegetation cleaned up and disposed of. On the Shelton end the contractor sold the useable logs. On the Bremerton end the contract provided for bucking and cold decking along the clearing and the erection of a small sawmill. With this the Navy will turn out lumber, packing and crating material for its own use when the project is put in operation. Besides the right-of-way there was, of course, necessary clearing for buildings, yard space and motor roads; as, for example, 950 ac. grubbed off for the depot alone. For a gigantic job of clear-cutting these construction contractors became creditable foresters.

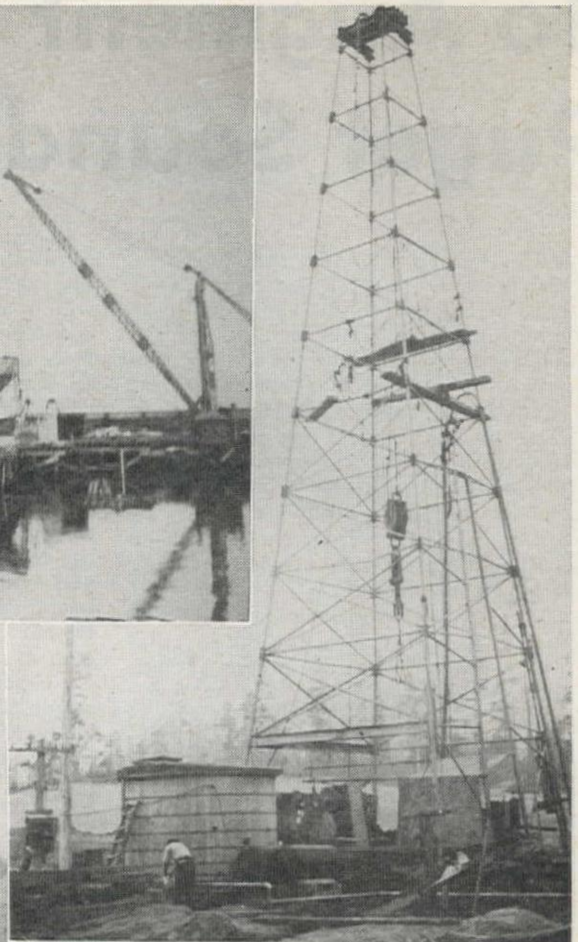
Then, as if the obstacle of vegetation were not enough, the ground underneath offered the utmost resistance to grading operations in many places. In common with the whole Puget Sound area, this land had in the course of its geologic history been periodically submerged, elevated and overrun with glaciers. The result is a compaction of sand and gravel, a large portion of which is cemented into a stubborn hard-pan that calls for extensive ripping. In other places, pockets of clay were encountered, bringing with it problems of stabilization and drainage. These are the same sort of pockets that are contributing to the present breaking up of the Pacific Highway between Seattle and Tacoma. Today, of course, the problem is being countered with better drainage to handle subsurface water.

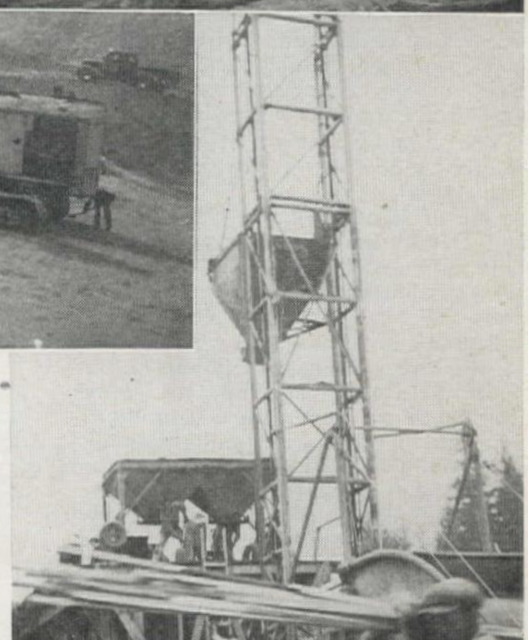
Despite these natural resistance factors, men and heavy earth-moving machinery have been found equal to the task of laying down a roadbed that tolerates a maximum gradient of only 1.5 per cent and curves of 6 deg., except one near Shelton of 12 deg. 30 min. This meant numerous cuts and fills in order



TOP, REINFORCED concrete revetment being constructed for ammunition cars, to deflect explosive forces upward in case of accident. Middle, fill material from old stream bed is placed in benches over the deeper gullies. Bottom, reinforced concrete bridge and retaining wall for overpass.







CONSTRUCTION SCENES along the Navy's Shelton-Bangor railroad. Top left, a Fuller-Kenyon suction system is used for unloading bulk cement from covered barges into steel bins. Top right, 690-ft. water well reaches depth 300 ft. below sea level to bring up fresh water at the rate of 488 gpm. Lower left, typical drainage installation under a deep fill, using 48-in. concrete pipe Y. A special truck crane was built in the shops of Guerin Bros., excavation contractors, to handle this pipe. Lower right, Mixermobile, a complete traveling concrete mixing plant, was used to mix concrete for revetments. Center, shovels and trucks in action as they cut through the hills and flatten out the rugged country in preparation for placing ballast and laying track. The cut at this point is 55 ft. deep. Besides the right-of-way, clearing and grading were necessary for buildings, yard space, and motor roads. Glacial action has cemented a large part of the sand and gravel found in the Puget Sound area into tough hardpan that necessitates the use of heavy earth-moving equipment.

to balance the contour of the route, to say nothing of approaches to the several highway overpasses. It meant that at one point the fill reaches a height of 65 ft. This particular fill is completely deposited, there being no sidehill to bolster one side. The result is an elongated pyramid of more than 200,000 cu. yd. of filled material. By contrast, the deepest cut is 70 ft. Generally, the nature of the topography does not admit the ready complementing of cut and fill, and extensive overhaul was necessary.

A typical cross-section of the roadbed shows a prepared surface of 16 ft. to receive the ties and ballast. Drainage ditches take up 6 ft. on each side to extend the lateral top profile to 28 ft. In cuts through clay, silt or hard-pan a 1:1 slope is used, in sand and gravel it is increased to 1½:1.

Clearing and grading was not confined to railroad work alone. Within the magazine area there are some 60 miles of patrol roads, a boundary road and firebreaks which are themselves roads —a quite necessary feature in this country that is so heavily vegetated.

Bridges and overpasses

Of the bridge structures, the largest is an overpass north and east of Shelton, where the road climbs up from sea level to make its first of three crossings over State Highway 14A and 14. This bridge is 221 ft. long, having a main span of 97 ft., with end spans of 62 ft. each. Mounted on reinforced concrete piers, which are in turn supported by subsurface creosoted piling, the bridge itself is of structural steel construction and carries a box type reinforced concrete deck slab supported on 8-ft. plate girders. A wood hand rail is provided on each side of the deck.

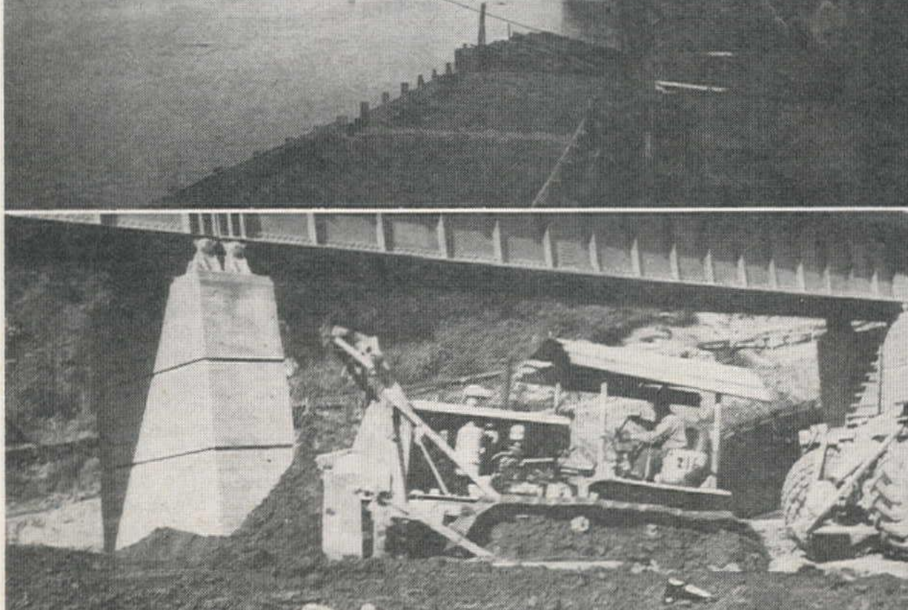
Throughout the rest of the project, approaches permit the economy of uniform design for the remaining bridges. These are all concrete structures using beam reinforcing. They have an overall length of 28 ft. 8 in., use a single span with a minimum vertical clearance of 14 ft. 8 in. (one bridge has 23 ft. 4½ in.), and a horizontal clearance of 40 ft. It is noted that the span supports form a solid retaining wall that allows the fill to be brought up flush, and the severity of this design is relieved by a block effect and stepped construction, topped off by ornamental slabs. Substantial concrete guard rails or walls rise from the deck and are sufficient for normal protection of motor traffic below. The railroad goes over the highway in all cases. There are no subways nor underpasses on the job.

The cement and aggregate quantities required for this job are sufficient to warrant the construction of temporary docks to which these materials are barged in and trucked off to the batch plants that have a capacity of 100 cu. yd. per hr. One such dock, for the Sound-Kiewit operation, is at Chico, 5 miles north of Bremerton. Supervised by Foreman Ray Hallock, the aggregate is dipped out of open barges with a clam shell, swung on a turntable mounted boom and dumped into hoppers for delivery to the trucks. A more elaborate means of handling cement is employed for this region subject to unexpected rainfall. Here the bulk cement is drawn out of covered barges by pipe, with a Fuller-Kenyon suction system, and stored in towers near the foot of the dock, from which it can be transferred to waiting vehicles as needed. Similar dock facilities are under construction near Silverdale to supply the building work under Lease & Leigland and Kuney-Johnson.

The little well contract, while thoroughly shaded by the magnitude of abutting activity, is none the less worthy of comment, for in supplying water for the utilities now building, it goes down 690 ft.—300 ft. below sea level—to bring up sweet and clear fresh water at the rate of 488 GPM (maximum with a 75-ft. drawdown). A 250 GPM pump will be installed as sufficient to meet the anticipated needs.

Organization

As might be expected, a job of this magnitude has called out some of the top hands in the construction business and for the prime contractors we find Ben Williams doing the general superintending for Sound-Kiewit, with F. C. Bartholomew as chief engineer; Earl Todd, superintendent of buildings; and Gordon Shattuck as office engineer. The firm's field office is at Silverdale. General Construction Co. has Tom Moyer



A CLAM SHELL was used for hoisting aggregate at a temporary dock built near Chico, 5 mi. from Bremerton. Right, the bucket lowering a load of aggregate into a hopper preparatory to hauling it to different parts of the job for mixing.

for general superintendent, with Dick Jones assisting. Office Engineer Fisk shares space with the Navy in a former garage in Shelton. Manson Construction Co. has Superintendent Peterson busy on the wharf, and General Superintendent Stinson is in charge for Lease & Leigland and Kuney-Johnson. Bert Lee is doing a good job for the subs on grading with Guerin Bros. It is not unusual to see the principals for the prime contractors personally supervising different portions of this important work site.

Rear Adm. C. A. Trexel (CEC) USN, represents the Chief of the Bureau of Yards and Docks on all Naval construction in the Northwest.

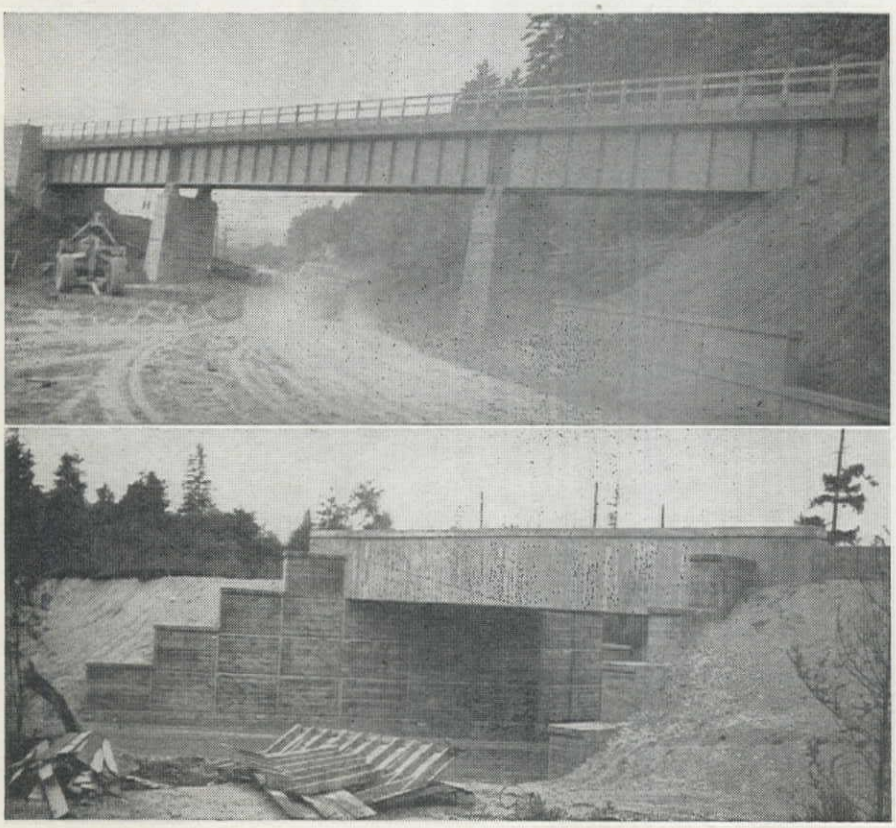
Supervision of the contracts let under the Bureau of Yards & Docks falls first on Capt. E. B. Keating, Officer in Charge of Construction at Bremerton. With him, as Resident Officer in Charge of Construction, is Lieut.-Cmdr. E. F. Koerner. His assistant, in charge of all field operations, is Lieut-Cmdr. J. C. Bronson. Working under these officers as a part of the Bremerton staff are Lieut. R. W. Long, charged with priorities, procurement, supplies, and Navy-furnished materials—a substantial assignment for a job of this character—and Lieut. F. H. Dueno, who attends the preparation of all plans, specifications and design as may originate in the field or at the local office. He also works with subsequent matters of change orders and the legal detail. Assisting these officers is Carson Riddle, civilian civil engineer.

The Navy's prime-movers on the job site are the resident engineers of its civilian staff. They are: Charles F. Beattie on the Shelton end, covering contract 9490; Howard MacC. Rigler, handling the second railroad section on 9491; Howard Flannagan on the wharf, doing 9492; and Otto R. Lunn, handling the balance in the magazine area, the Bangor depot area. Like their officers, all of the resident engineers are thoroughly seasoned in the business. Lunn recently came down from Alcan and Canol with the U. S. E. D. and transferred to the Navy Engineers for this job. The others also are used to Bonnevilles, Mud Mountains, and Fort Pecks. The Shelton - Bremerton - Bangor railroad isn't proving a let-down.

Adequate though the supervisory personnel may be, the actual labor problem has been a considerable handicap. The turnover has been quite severe and is very likely due to inclement weather, coupled with heretofore inadequate facilities. However, that is being rectified by the conversion of abandoned Army camps to provide housing for the workers. Throughout the fall around 1,800 men have been pushing this big job along. In December maximum employment reached 3,000. Arrangements have been made to accommodate them.

According to the Seattle Post-Intelligencer there has been some local speculation as to who is going to operate this railroad, and whether or not civilian freight for Bremerton will be carried. At present, of course, commercial rail shipments have been extended to Bremerton by car ferries from Seattle. So far no official answers have been given. The Navy may operate the road itself, or it may elect to contract the service to a railroad company. As far as this article is concerned it can be said that when completed the road will serve its prime purpose well and no one will be able to contend that our Navy isn't amphibious.

SAFETY MEASURES necessitated construction of many bridges along railroad right-of-way. Top, Shelton overpass, having reinforced concrete deck supported on 8-ft. steel girders. Lower, typical block-marked reinforced concrete 28-ft. 8-in. bridge.



San Francisco Votes to Build Sewer Extensions

THE CITIZENS of San Francisco, Calif., have voted favorably on a $12,000,000 sewer bond proposition. Projects contemplated and their estimated costs follow:

Lake Merced sewer system	$3,500,000
Lake Street sewer	1,300,000
Eighteenth Street sewer	700,000
Richmond-Sunset treatment plant enlargement	600,000
Upper Army St., Sec. B and C	500,000
La Playa-West Sunset, Sec. C	350,000
Lower Islais Creek (Alemany extension)	250,000
Napoleon St. sewer (Jerrold to Selby Sts.)	140,000
Pine & Broderick Sts. sewer	100,000
Ingleside Dist. sewers, Sec. C	100,000
Laguna St. diversion (sanitary)	40,000
46th Ave. & Lincoln Way (sanitary)	35,000
Army St. sewer (Connecticut St. to Mississippi St.)	25,000
North Point treatment plant, plans	$ 390,000
North Point treatment plant, lands	1,400,000
Lower Market St. Dist., sewers	580,000
Islais Creek District sewers	560,000
Jackson St. District sewers	450,000
Vicente outfall, W. Sunset Dist.	300,000
Commercial St. District sewers	170,000
Front & Green Sts. Dist. sewers	170,000
29th St. (Upper Army St. Dist.)	100,000
14th St. (Valencia to Dolores)	80,000
23rd St. (Third to Iowa St.)	45,000
Potrero Ave. (25th to Army Sts.)	35,000
Caselli Ave. (Douglass-Market)	35,000
Guttenberg St. sewer extension	30,000
Seventh St. sewer extension	15,000

These constitute the beginning of a comprehensive program of sewer renewal and expansion in the city of San Francisco, the total plan of storm and sanitary sewers in view for the post-war period costing in the neighborhood of $60,000,000. The engineering department of the city's Public Works department is now engaged in the design work.

Boise Plans Sewage Disposal Plant for Septic Tank Areas

THE CITY COUNCIL of Boise, Idaho, is laying plans for a sewage disposal plant to be built as soon as bonds are sold and priorities obtained. A plan for the development has been prepared by C. R. Stockman, consulting engineer of Baker, Ore. A thickly populated suburban area has grown up on the mesa south of the city of Boise and this section is not included in the city limits. Sewage disposal in this area is by means of septic tanks and it is anticipated that residents would desire the services of the new plant. Procedure for this outside use is currently troubling the city council, but will probably be solved by the formation of a sanitary district which will obtain use of the plant's facilities through a rental agreement.

Pre-stressed Tanks—
New Method at Oregon Alumina Plant

Pre-stressing of cylindrical concrete tanks for liquid storage usage sets up compressive forces in the walls so that cracks do not develop during curing period or when loaded—Strands of wire, applied at a stress of 150,000 lb. per sq. in., are wound as a spiral around outside of tank

By J. M. CROM
Pre-stressing Engineer
The Preload Corporation
New York, N. Y.

CYLINDRICAL CONCRETE tanks for liquid storage, when pre-stressed with strands of wire applied at a stress of 150,000 lb. per sq. in., do not crack as do tanks constructed by conventional methods of reinforcing, and the new process, in addition, offers a considerable saving in the amount of steel needed for construction.

The Preload Corporation, designers of the Preloader winding machine, has discovered that pre-stressing done with high tensile wire, fully stressed, overcomes a fundamental difficulty of making steel and concrete work together as a tensile unit. When bonded by ordinary methods of rod reinforcing the combined effect of concrete shrinkage and load subject the concrete to stresses that often cause cracks in cylindrical tanks.

At the Salem, Oregon, alumina plant, now under construction by the Chemical Construction Corporation of New York, it was planned to construct liquid storage tanks by gunite methods. During initial stages concrete and reinforcing steel were separated. After the concrete had been cured the tanks were compressed by the Preloader, using strands of high tensile wire stressed at 150,000 lb. per sq. in. Finally the tanks were covered with a coating of mortar pneumatically applied.

Pre-stressing concrete tanks for liquid storage usage overcomes the loss of compression caused by shrinkage of the concrete and the plastic flow within the material.

The specialized wire winding machine called the Preloader, designed for the purpose of compressing cylindrical concrete tanks, consists essentially of a carriage and a resistance mechanism. The carriage travels around the rim of the tank at a rate of three miles an hour. Suspended from the carriage is the coil of wire and a resistance mechanism, consisting of a die slightly smaller in diameter than the winding wire, and a hydraulic jack. A dial actuated by pressure sustained by the jack registers the stress applied to the wire being wound in spirals around the tank.

At the Salem alumina plant, where the Preloader gave the first demonstration of its efficiency, tanks with an outside diameter of 62 ft. were prestressed in eight hours of operating time with 11 mi. of No. 8 wire.

The Salem plant is being erected by Defense Plant Corporation as a pilot plant to determine the best methods and probable costs of extracting alumina from aluminum-bearing clay, which is abundant in parts of Washington, Oregon and California.

PRELOADER (lower), designed to lay pre-stressing wire on concrete tanks, travels around the rim at 3 mi. per hr. and sustains an even pull on the wire as it is wound in spirals around the tank. After the wire is in place (upper), a cover coat of mortar is applied pneumatically.

Reclamation Men in Wartime Meeting

Important gathering at Denver considers interrelation of reclamation and flood control, studies the regional Authority problem, hails the unified Army-Reclamation Bureau report on Missouri river, and urges passage of Elliott and O'Mahoney Amendments—Warden resigns presidency after nine years in the office

THE SECOND WARTIME convention (13th annual meeting) of the National Reclamation Association met in Denver, Colo., on Nov. 15-17, with about 800 delegates in attendance from all sections of the irrigated West, and a number of visitors from Washington, D. C., and the extreme northeast states. All meetings were presided over by President O. S. Warden.

Warden retired as executive officer at this convention, after serving nine years in the post, and Ora Bundy, of Utah, was elected to be the 1945 president. Judge Robert W. Sawyer, of Oregon, was named first vice-president, Harry E. Polk, of North Dakota, will be second vice-president and J. A. Ford, of Washington, was re-elected treasurer. Floyd O. Hagie continues as secretary-manager.

All meetings were well and attentively attended, and a large number of interesting and important papers were delivered. The first day was largely taken up with caucuses of the several state delegations, opening ceremonies and reports by the various officers and committees.

OFFICIALS of the National Reclamation Association. Front row, left, ORA BUNDY, of Utah, formerly first vice-president, now president; right, JUDGE ROBERT SAWYER, of Oregon, elevated from second to first vice-president. Back row, l. to r.: FLOYD O. HAGIE, secretary-manager; O. S. WARDEN, of Montana, who retires from the presidency after nine years' service; HARRY E. POLK, of North Dakota, elected second vice-president; JAMES A. FORD, of Washington, re-elected treasurer of the organization. About 800 delegates participated in the deliberations of the 1944 Denver convention.

Main address

The second day was filled with messages dealing directly with the irrigation problems of the West. The first address was by Harry W. Bashore, Commissoner of Reclamation, who outlined the plans of the Bureau of Reclamation for the post-war era, and while he did not detail the 236 individual projects proposed for construction after the close of hostilities, he gave a comprehensive statement of their importance. Following Bashore, Carl H. Wilken presented an outstandingly careful analysis of "The Place of Irrigation Agriculture in Our Future Economy." Congressman Jed Johnson of Oklahoma analyzed the attitude of Congress to the reclamation program, evaluating its possibilities of acceptance.

James O'Sullivan, of the Columbia Basin Commission, outlined the problems and progress of the Columbia Basin Project at the luncheon on the second day, illustrating with maps the plan for use of Grand Coulee water to irrigate about one million and a quarter acres. In the afternoon session, Dr. John Lee Coulter, of Washington, D. C., with extraordinary clarity related the number of acres of productive agricultural land to the population of the country, and showed by what means food production had been able to keep abreast of population demands — factors have been, the original expansion of pioneer days; reduction of farm animals, with transfer of the acres originally devoted to production of fodder, to human food; lowering of food exports and increase of food imports; changes of the diet of Americans. As population continues to increase, it will be found that these indirect means of increasing acreage of production will prove inadequate, and it will be absolutely necessary to increase acreage by the only other available method, namely, increase of irrigated farm land.

At the same session, W. G. Sloan, assistant director of Region 6 of the Bureau of Reclamation, told of the unified plan for development of the Missouri River Basin, outlined elsewhere in this magazine. It demonstrated that there is no real antagonism between the Bureau and the Army Engineers, and that such minor differences as do exist are capable of solution. Following Sloan, there was a round-table discussion of the O'Mahoney - Millikin amendments proposed for the Flood Control and Rivers and Harbors bills then pending in Congress, and subsequently passed. Participants in this discussion were: Judge Clifford Stone of the Colorado Water Conservation Board; Alban J. Parker, Attorney General of Vermont; James H. Allen, Delaware River Commission; and Philip Shutler, of the Vermont State Planning Board. In all these states, the preservation of state's rights in handling of both intra- and interstate water problems is of prime importance.

On the final day of the convention, S. O. Harper, chief engineer of the Bureau of Reclamation, told of the engineering problems involved in preparing the great post-war program of the Bureau, and William E. Warne, Assistant Commissioner of the Bureau, explained the advantages of basin-wide water development, as contrasted to local projects which may in time be actually a handicap to an over-all program. Maj. Gen. Eugene Reybold, Chief of the Army Engineers, told of the post-war program for the West, which has been developed by his department, and expressed satisfaction that it and the Bureau were at last finding grounds for mutual achievement.

James Fauver, Director of the National Reclamation Association from California, spoke at the luncheon on this day, about the Central Valley project in his state, giving a brief history of its development and showing the injurious effects of the 160-ac. land use limitation on the land to be irrigated by supplemental water.

In the afternoon session, E. W. Rising, of Idaho, and Prof. S. T. Harding of the University of California, told of modified policies that must come in reclamation thinking in the post-war period. Some of these suggestions are indicated in the resolution passed by the convention, listed below. Final speech of the gathering was by Floyd O. Booe, secretary-manager of the San Francisco chapter of Associated General Contractors, who directed thinking to some of the changes anticipated for "The Coming World."

Resolutions

The business session was the final meeting of the convention, and was principally devoted to passage of 17 resolutions and a proposed amendment to the constitution of the Association. This latter is of particular importance, as indicating a broadening viewpoint for the group, which formerly concerned itself only with irrigation. The amendment broadens the stated purposes of the Association to include the development, control, conservation and utilization of water in the West, thus including flood control and all uses in the considerations of the organization.

In brief, the purport of the resolutions is as follows: No. 1 approves the forest investigation work of the Forest Service, and urges expansion of activities by that agency in management of forested watersheds for maximum yields of usable water; No. 2 urges expansion of the stream-gaging activities of the Geological Survey, so as to have a vast fund of information on water supply to facilitate the management of reclamation projects; No. 3 again suggests a public land policy which will protect the rights of the individual states; No. 4 suggests the restoration of the Division of Power to the Bureau of Reclamation; No. 5 asks that in cases where interest-bearing bonds of a water district are owned by the government, and the district finds itself able to re-finance elsewhere at a financial saving, that it be permitted to do so.

In Resolution No. 6, Congress is asked to repeal the excess land provisions of the reclamation law in cases where the water supplied is to be of a supplemental character, and specifically asks passage of the Elliott Amendment, affording this relief to the Central Valley Project of California; No. 7 indorses the O'Mahoney-Millikin amendments to the Flood Control and Rivers and Harbors bills; No. 8 asks that all interests receiving benefits of any kind whatsoever from an irrigation project, be required to pay their proportional and just portion of the cost of the project, to the end that the irrigator may not be required to pay a disproportionate share.

Immediate delivery of operation and maintenance of projects to properly organized bodies of water users who have met all legal requirements for such delivery is asked in Resolution No. 9, inasmuch as some districts have been delayed in such delivery for years after meeting all necessary requirements; No. 10 commends the engineers of the Bureau and the Army for reconciling their differences on the Missouri River, and urges similar consultation on all streams; No. 11 asks a maximum use of the Water Facilities act, the Wheeler-Case act and the Reclamation Act of 1939, in order to develop many of the smaller communities of the West.

In Resolution No. 12, the generation of incidental power is discussed and it asks that rates charged for such power be fixed so as to afford sufficient revenue as to assist in payment of project costs, and that rates for power be not so reduced as to subsidize power users to the detriment of water users; No. 13 urges early completion of the regionalization started a year ago by the Bureau of Reclamation; No. 14 reiterates the inter-dependence of flood control and irrigation; No. 15 decries the formation of Regional Authorities; No. 16 expresses thanks to various persons and organizations who had assisted in making arrangements for the convention, and No. 17 is an expression of gratitude to retiring President O. S. Warden for his years of service to the Association.

FPC Receives a Request To Sell Power Property

THE FEDERAL POWER Commission announced its receipt of a joint application by the California Public Service Company for authority to sell and the California-Oregon Power Company to buy, the properties of California Public Service located in Lake County, Oregon, and Modoc County, California, or in the alternative, an order of the Commission dismissing such application on the ground that the FPC has no jurisdiction over the sale. The California Public Service Company and the California-Oregon Power Company are both incorporated under the laws of California, the former having its principal office in Portland, Oregon, and the latter in Medford, Oregon.

According to the application California Public has agreed to sell its facilities in Lake County, Oregon, and Modoc County, California, for a cash consideration of $470,000. The facilities to be disposed of consist of all the electric production, transmission and distribution facilities of California Public in Lake County, Oregon, and Modoc County, California, including approximately 183 mi. of electric transmission and distribution lines, and two small hydroelectric generating plants. The facilities supply electric service to approximately 2,250 customers in six small communities including Lakeview, Oregon, and Alturas, California. The facilities to be sold by California Public are connected with those of California-Oregon Power, and are adjacent to territory now served by this corporation. On completion of the sale California Public intends to liquidate and cease doing business.

The California-Oregon Power Company renders service in the counties of Modoc, Shasta, Siskiyou, and Trinity, California, and in the counties of Douglas, Jackson, Josephine, and Klamath, Oregon.

Highway Building Costs Cut By Heavy Equipment

HIGHWAY CONSTRUCTION costs reached a war peak in the spring of 1943 and since have consistently receded, according to bid price data reported by the Public Roads Administration. Prices are still 43.1 index points above the 1940 level but even with this increase they are about at the level of 1923.

The Public Roads index of 100 corresponds to the cost of a mile of road composed of units of work representative of 1925-29 construction at the average unit bid prices of that period.

The remarkable advance in the development of road-building machinery and in the efficiency of contractors' operations produced a decline in the cost index from 117.9 in 1923 to 71.6 in 1940. War activity pushed the index up to 131.0 in the spring of 1943 but it receded to 114.7 in the spring of 1944.

Actual costs per mile are considerably higher than indicated by the index as the quantities of the composite mile remain fixed, whereas, gradual raising of standards has greatly increased the quantities in the average mile of highway.

The general downward trend in highway costs per unit of work between World War I and World War II was accomplished in spite of the upward trend of prices in general and more exacting requirements introduced in the past 25 years such as the placing and compacting of fills in thin layers, accurate proportioning of aggregates for concrete, and smoother finishing of road surfaces.

The great advances made in grading equipment are reflected in the average price per cubic yard for grading. The average price dropped from 47 cents in 1923 to 18 cents in 1932, rose to 29 cents in 1934, dropped to 21 cents in 1938 and remained constant at that figure until war preparations caused a general upswing in prices. The war peak of 47 cents per cubic yard has already declined to 38 cents.

Western Restriction in Road Oil Use Continues in Effect

RESIDUAL FUEL OIL may be used again for road building and maintenance operations in all parts of the country except the West Coast States, according to the Petroleum Administrator for War.

Action permitting these uses of residual oil was taken by amending Directive 72, which prohibited the use of road oil as a paving material or dust palliative anywhere in the continental United States. The amendment is effective immediately.

Road oil is used mostly from April through September when the demand for residual oil for other purposes is lightest. Restrictions on the use of road oil were lifted at this time, however, so that State and municipal bodies may plan next year's road-building programs now, while refineries can program their production of residual oil.

The restrictions on the use of road oil remain in effect in Arizona, California, Nevada, Oregon, and Washington.

State Engineers' Convention

The Association of Western State Engineers held its 1944 annual convention in Denver, Colo., on Nov. 13 and 14—After studying problems concerning water allocation, the Engineers passed a resolution opposing formation of Valley Authorities

THE 1944 CONVENTION of the Association of Western State Engineers met in Denver, Colo., for two days preceding the meeting of the National Reclamation Association.

The State Engineer of each of the seventeen Western states was present except Texas and South Dakota, and meetings were presided over by L. C. Bishop, of Wyoming, 1944 president of the organization.

As usual, the majority of the papers and reports dealt with problems of water allocation in interstate streams, and within state borders. The first day's sessions were largely devoted to individual reports by the members concerning the works of his department. Of particular interest were the reports of Don McBride of Oklahoma, who told of his department's intention of checking existing water rights in the state every two years with institution of suits against those holders who are not making use of the right, and Ed Watson of Utah, who explained the difficult water situation in his state, which finds the principal source of water, the Colorado River, in a deep canyon in the southeast corner of the state, while most of the arable land lies in the central and western part of the state. His office is working with the Bureau of Reclamation in preparation of plans to raise and convey the water to the land. Arizona, whose report was made by O. C. Williams, faces a rather similar situation, with the Colorado River water deep in the canyons of the northwest part of the state and the irrigable land in central and southern Arizona.

On the second day, numerous very interesting addresses were given, mostly dealing with post-war plans for different phases of Western development. The speakers included Chas. Bartholet, state engineer of Washington, who outlined the Columbia Basin irrigation plan, under which over 1,250,000 ac. of land will receive water from Grand Coulee Reservoir; O. S. Warden, president of the National Reclamation Association, who told of that organization's objectives; Harry Bashore, Commissioner of Reclamation, outlining in brief the post-war program of that Bureau; Glenn Parker, Chief of the Water Resources Branch of the Geological Survey, telling the tasks ahead for that organization, which measures runoff of streams and groundwater, thus enabling accurate forecasting and use-planning for the water which is the West's greatest asset.

Other speakers were Brigadier General R. C. Crawford, U. S. District Engineer at St. Louis, who outlined the special problems involved in planning for flood control; Carl A. Gould, regional engineer of the Forest Service, who mentioned the post-war objectives of that agency, which is looking forward to increasing the serviceability of the forests, both commercially and for recreation. Leland Olds, deputy commissioner of the Federal Power Commission, told the post-war connection of power development with the work of the state engineers; and Geo. Knapp, state engineer of Kansas, who reported on the status of development plans for the Missouri River basin, outlined elsewhere in this magazine.

Business meeting

At the annual business meeting the 1945 officers were elected, and resolutions were adopted. Elected to be president was Fred Buck, state engineer of Montana, and Ed Watson, state engineer of Utah, was named vice-president. Bishop, retiring president, was elected a member of the executive board.

Resolutions included a re-statement of a resolution adopted in 1937, disapproving the formation of Valley Authorities. Another resolution urging continuation of the cooperative stream gaging program of the states and the Geological Survey, was adopted after a considerable discussion on an amendment offered by M. C. Hinderlider, state engineer of Colorado, asking that states be given credit on the survey financial allotment for stream gaging work performed by state employees. Glenn Parker explained the position of the survey on this matter, indicating that standards vary in different states, and that the system in force for a number of years past has resulted in some confusion and given disproportionate financial aid to certain states. Following this explanation, the amendment was withdrawn and the resolution passed.

OFFICERS for the coming year were elected at the annual business meeting. Right, FRED BUCK, state engineer of Montana, was elected president of the Western State Engineers for 1945; center, ED WATSON, state engineer of Utah, was elected vice-president; and left, L. C. BISHOP, retiring president, was elected member of the executive board.

State Park Proposed For Santa Monica Coast Area

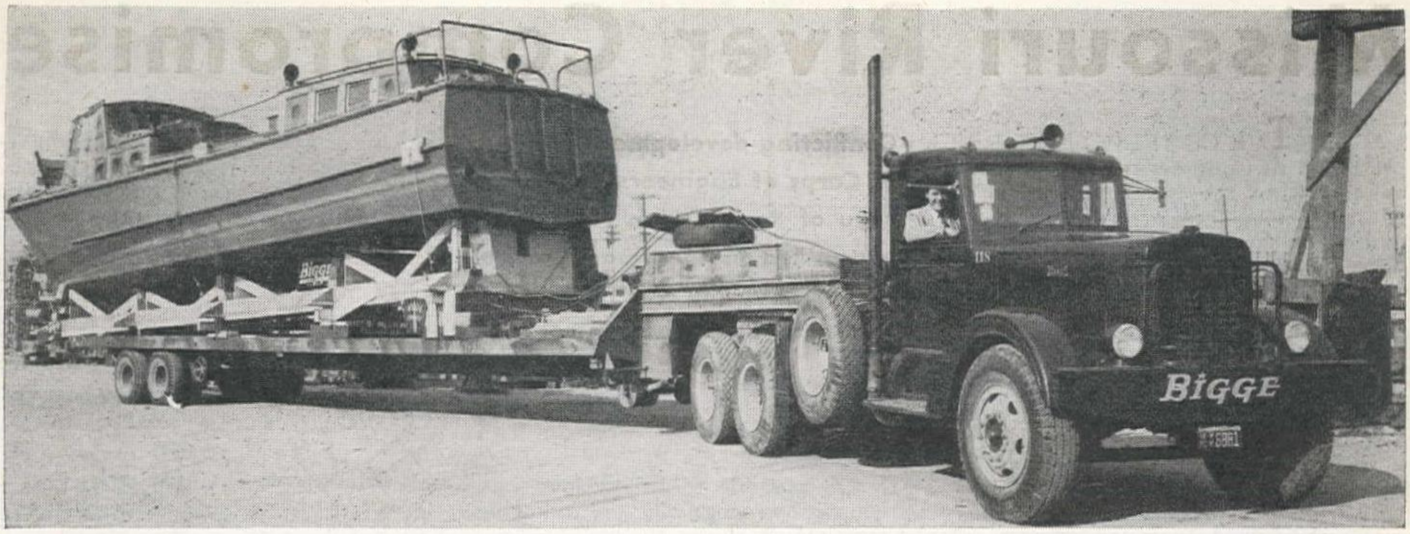
REPRESENTATIVES of the city of Los Angeles and other interested agencies have proposed the establishment of a vast state-owned coastal park ringing Santa Monica bay from Topango Canyon to San Pedro.

The plan is a compilation of several proposals for coastal development formulated by the Los Angeles City Planning Commission, Los Angeles County Regional Planning Commission, the Greater Los Angeles Citizens Committee and the Long Beach Harbor Department.

The plan envisions building of new beach by construction of groins and other devices, ample parking area, extensive swimming facilities, a yacht harbor and a parked beach frontage for the entire length of the project. Accurate cost estimates are not available, but it is believed that a substantial part of the investment could be refunded through parking and yacht harbor charges and concession rentals.

Fresno Underground Garage Suggested to Aid Parking

AN UNDERGROUND garage, similar to the Union Square Garage in San Francisco, has been proposed for Court House Park in Fresno, Calif., by the City and County Planning Commission, H. Rafael Lake, architect, and A. Segal, city engineer. Down-town parking conditions in Fresno are very serious at the present time and it is anticipated that they will be aggravated after the war. The proposed underground garage could be built for $1,500,000. A special committee has been appointed to investigate the proposal.



Transport Navy Rescue Boat

Navy launch 45 ft. long and weighing 18 tons, was hauled from Alameda, Calif., to Pyramid Lake, Nev., on specially equipped trailer—Boat was unloaded several times during journey and pushed on rollers under low obstructions — Shallow water along shore necessitated building of rock mole in order to launch boat 300 ft. out from shore

A UNIQUE HAULING problem was solved recently by the Bigge Drayage Co. of Oakland, Calif., when the company was asked by Naval authorities to convey an 18-ton, 45-ft. Navy rescue boat from Alameda, Calif., to Pyramid Lake, Nev., and to launch it safely on that lake. The entire trip was about 350 mi.

Difficulties encountered included a load height greater than many of the underpasses, low wires, and trees, a tortuous highway over steep mountain grades, an extremely heavy load, and the launching of the boat.

The height of the load, when cribbed on the lowest available trailer, was 15 ft. 9 in. above the pavement. The loaded truck and trailer were preceded for the entire journey by a pilot car, to the front bumper of which a bamboo pole, cut to the exact height of the load, was lashed. Whenever the pole failed to clear obstructions, special operations were undertaken to assure safe passage of the boat.

In the case of low-slung power lines, telephone wires, and trees, the passage was generally accomplished by the use of a long, flexible wooden stringer running lengthwise over the apex of the boat. The obstructions would be lifted by this skid as the load passed under, thus skidding clear.

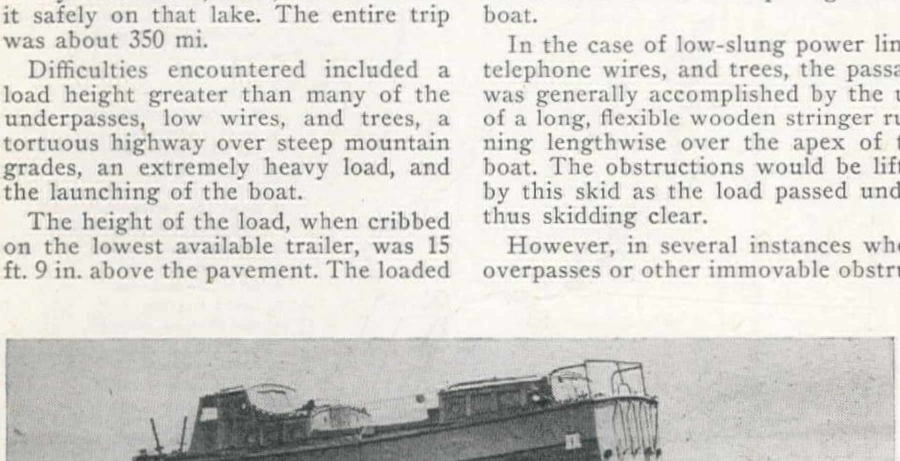
However, in several instances where overpasses or other immovable obstructions were found it was necessary to completely unload the boat on its cribbing and pass it under the obstruction on rollers, after which it was reloaded onto the trailer. The motive power for the transportation over the rugged Sierra Nevada was furnished by a Peterbilt diesel tractor, powered with a 150 hp. motor and equipped with the largest rear end assembly that is manufactured for legal highway width.

In several instances, it was necessary to shore up small bridges. Weak culverts were sometimes by-passed by using county roads or fire trails.

For the launching operation, the Navy had built a 150-ft. rock mole, but this was insufficiently long to launch the rescue boat. The shores of the lake are exceedingly flat and drop to deep water very gradually. Since the boat drew 5 ft. of water it was necessary to get the boat more than 300 ft. out from shore before it could be dropped safely into the water.

To accomplish this, a 150-ft. rock-weighted underwater skidway was constructed and placed at the end of the rock mole. The trailer was then backed onto the mole and the boat, still on its cribbing, was pulled over rollers on the skidway and eased into the water. Anchors 200 ft. out served as guys for the winch cables on the truck.

Empty oil drums were lashed to the bow of the boat to increase its buoyancy until it was pulled out into water of safe depth. The entire launching operation consumed about 8 hours.



LAUNCHING of Navy rescue boat was handicapped by shallow water along shore. Boat is being unloaded from trailer, at the end of 150-ft. rock mole, onto underwater skidway that extends another 150 ft. out from shore. Anchors 200 ft. out served as guys for truck winch cables that pulled the boat to end of skidway. Empty oil drums were lashed to boat to increase buoyancy.

Missouri River Compromise

Conflicting development plans of Corps of Engineers and Bureau of Reclamation resolved in a unified engineering report, giving irrigation responsibility to Bureau and flood control to Army

THE CONFLICTING plans presented to Congress for ultimate development of the waters of the Missouri River by the Corps of Engineers and the Bureau of Reclamation were presented to readers of *Western Construction News* in the July, 1944, issue. Subsequently, Congress ordered the two agencies to compose their differences and return with a plan to which they had both agreed.

It will be recalled that the Bureau of Reclamation program called for 93 reservoirs, impounding over 40,000,000 ac. ft. of water, and that the Army plan provided for 23 specified and numerous other unspecified reservoirs to impound nearly 45,000,000 ac. ft. of water. The primary objective of the Bureau was irrigation, while the first consideration of the Army was navigation, with power development and flood control eventuating under either program.

A committee of four—Brig.-Gen. R. C. Crawford and Gail A. Hathoway, representing the office of the Chief of Engineers, U. S. Army, and W. G. Sloan and John R. Ritter, representing the Bureau of Reclamation—met at Omaha, Neb., on Oct. 16 and 17, discussed the various features of both plans, examined the supporting data for each plan and prepared a joint engineering report. The report points out that by making appropriate modifications it is possible to eliminate existing technical and engineering differences between the two plans.

It was possible to bring them into agreement by recognizing the following basic principles:

a. The Corps of Engineers should have the responsibility for determining main stem reservoir capacities and capacities of tributary reservoirs for flood control and navigation.

b. The Bureau of Reclamation should have the responsibility for determining the reservoir capacities on the main stem and tributaries of the Missouri River for irrigation, the probable extent of future irrigation, and the amount of stream depletion due to irrigation development.

c. Both agencies recognize the importance of the fullest development of the potential hydroelectric power in the basin consistent with the other beneficial uses of water.

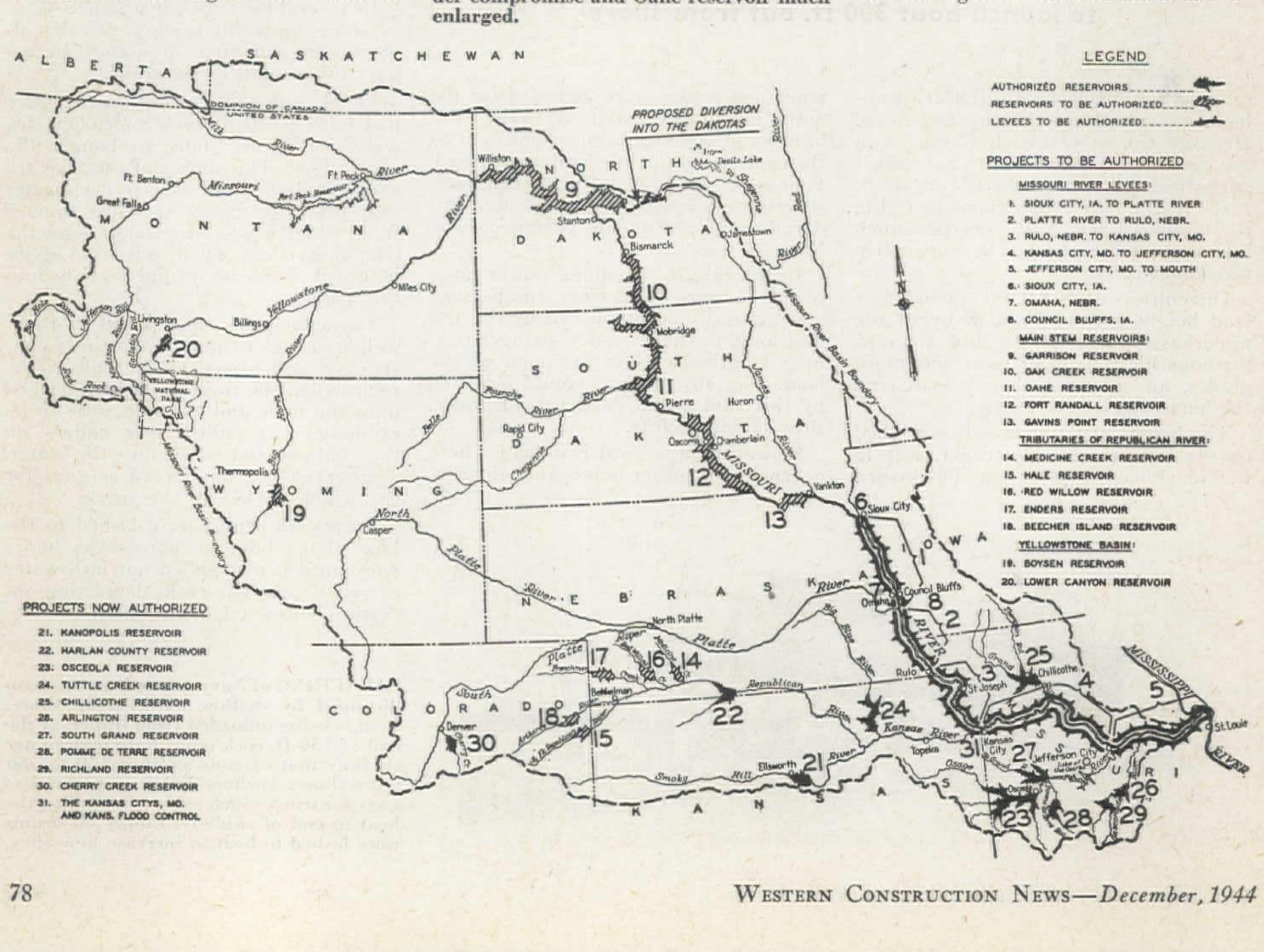
For convenience in referring to the joint engineering report, six subdivisions have been used:

1. Upper Missouri River Basin.
2. Yellowstone River Basin.
3. Missouri River—Fort Peck to Sioux City.
4. Minor Western Tributaries.
5. Niobrara, Platte and Kansas Rivers.
6. Lower Missouri Basin.

Upper Missouri River Basin

The Army plan does not specifically designate any units in the Upper Missouri River Basin subdivision, although provisions are made for desirable and necessary projects in this area. The Bureau plan contemplates the construction of 19 reservoirs with a total storage capacity of 3,359,950 ac. ft. for flood control, silt control, the development of hydroelectric power, the irrigation of 460,900 ac. of new lands, and the provision of a supplemental water supply for 208,700 ac. of land now being served with an inadequate water supply. There is no conflict in the proposed plans of the two agencies for this subdivision.

MISSOURI RIVER basin, showing original Army projects. Garrison reservoir, omitted by Bureau of Reclamation, will be built under compromise and Oahe reservoir much enlarged.



Yellowstone River Basin

The Army plan provides for the construction of Boysen reservoir with a storage capacity of 3,500,000 ac. ft. and the Lower Canyon reservoir with a capacity of 2,250,000 ac. ft. to be operated for flood control, irrigation, navigation, power and other purposes. The Reclamation plan provides for the construction of 27 reservoirs located on various streams in this subdivision with a total storage capacity of 4,285,200 ac. ft.; the reservoirs to be operated for flood control, silt control, the development of hydroelectric power, the irrigation of 509,560 ac. of new lands, the provision of a supplemental water supply for 204,500 ac. of land now being served with an inadequate water supply. It was concluded that the plan proposed by the Bureau would be adequate to accomplish the objectives of the Army Engineers in this area.

Missouri River— Fort Peck to Sioux City

The plan presented by the Army contemplates the construction of five additional multiple-purpose reservoirs on the main stem of the Missouri River for flood control, navigation, irrigation, power, domestic and sanitary purposes, wildlife and recreation, as shown in the following table:

Project	*Location*	*Approx. gross storage capacity (acre feet)*
Garrison	Near Garrison, N. Dak.	17,000,000
Oak Creek	Near Mobridge, S. Dak.	6,000,000
Oahe	Near Pierre, S. Dak.	6,000,000
Fort Randall	Near Wheeler, S. Dak.	6,000,000
Gavins Point	Near Yankton, S. Dak.	200,000

The plan also provides that as soon as substitute storage is built on the main stem of the river, the Fort Peck Reservoir will be operated as a multiple-purpose reservoir primarily in the interest of irrigation.

The plan presented by the Bureau of Reclamation contemplates the use of Fort Peck Reservoir primarily for irrigation purposes, also for navigation, flood control, silt control and power, and the construction of main stem reservoirs to be operated for flood control, irrigation, navigation, power, silt control and other purposes as follows:

Project	*Location*	*Approx. gross storage capacity (acre feet)*
Oahe	Near Pierre, S. Dak.	19,600,000
Fort Randall	Near Wheeler, S. Dak.	5,100,000
Big Bend	Near Joe Creek, S. Dak.	250,000

This plan also includes four inland reservoirs to assist in regulating the water diverted from the main stem and the irrigation of 2,292,900 ac. of new lands.

After discussion of various features of the two plans in this subdivision the following main stem reservoirs were recommended in the joint engineering report in order to more fully utilize the water resources of the basin and to most effectively serve the present and ultimate requirements of flood control, irrigation, navigation, hydroelectric power and other uses.

Project	*Location*	*Approx. gross storage capacity (acre feet)*
Garrison	Near Garrison, N. Dak.	17,000,000
Oahe	Near Pierre, S. Dak.	19,600,000
Fort Randall	Near Wheeler, S. Dak.	5,100,000
Big Bend	Near Joe Creek, S. Dak.	250,000
Gavins Point	Near Yankton, S. Dak.	200,000

The final storage capacities to be selected for the above reservoirs will be jointly agreed upon after more detailed plans and cost estimates have been made.

The Garrison dam, reservoir and power plant was included in the coordinated plan as it provides a large volume of useful storage capacity for flood control, navigation, and irrigation and permits the utilization of approximately 160 ft. of head for the development of hydroelectric power in an area capable of absorbing the potential output and which, otherwise, has no prospective source of abundant low-cost power. A large reservoir at the Garrison site, situated immediately below the Yellowstone River with its large silt contribution, will prolong materially the life of downstream reservoirs.

The selection of the high Oahe dam, reservoir and power plant floods out the Oak Creek dam, reservoir and power plant of the Army. The high Oahe dam is required in connection with the irrigation of 750,000 ac. of land in the James River Basin as well as to provide useful storage for flood control, navigation, the development of hydroelectric power, and other purposes. If the Oahe Reservoir is constructed to the elevation proposed by the Bureau, a greater storage capacity will be provided than contemplated in the low Oahe and Oak Creek reservoirs at considerably less cost.

The use of the Garrison, high Oahe, Big Bend, Fort Randall and Gavins Point dams and reservoirs as outlined and agreed upon in the joint engineering report will provide the desired degree of flood control, supply the needs of irrigation as well as furnish cyclic storage for navigation during prolonged drought periods. The plan also utilizes practically all of the available power head in the Missouri River between the mouth of the Yellowstone River and the Gavins Point dam.

Minor western tributaries

The plan of development presented by the Army does not specifically designate any units in this subdivision, although provisions are made for desirable and necessary projects in this area. The Bureau plan provides for the construction of fifteen reservoirs with a total storage capacity of 1,237,000 ac. ft., the reservoirs to be operated for flood control, silt control, the development of hydroelectric power, the irrigation of 212,980 ac. of new lands, and the provision of a supplemental water supply for 11,300 ac. of land now being served with an inadequate water supply. There is no conflict in the proposed plans of the two agencies.

Niobrara, Platte and Kansas Rivers

The Army plan of development contemplates the construction of nine reservoirs (of which four have been previously authorized) for flood control, irrigation and other purposes. The lands to be irrigated were not specified in the report and were to be determined by later detailed investigation. The plan of the Bureau contemplates the construction of 22 reservoirs on various streams in this subdivision with a total storage capacity of 5,650,400 ac. ft.; the reservoirs to be operated for flood control, silt control, the irrigation of 1,284,060 ac. of new land and the provision of a supplemental water supply to 21,804 ac. of land. The following substitutions were found to be desirable in the Kansas River Basin:

a. On the South Fork of the Republican River the Bureau's Bonny Reservoir was substituted for the Army's Hale Reservoir, to permit the irrigation of approximately 6,500 ac. of additional lands. The two reservoir sites are located within 4 mi. of each other and for all practicable purposes would provide a comparable degree of flood control.

b. On the Arikeree River the Pioneer Reservoir of the Bureau was substituted for the Beecher Island Reservoir of the Army, inasmuch as the former controlled a larger drainage area, therefore was more advantageous for flood control, and reconnaissance studies indicated that there were no lands suitable for irrigation between the two sites.

c. On Frenchman Creek the Enders Reservoir, proposed by the Army, was substituted for the Bureau's Harvey Reservoir, because the Enders Reservoir could be built to a greater capacity and would furnish additional flood protection for the Frenchman Creek Valley in Nebraska. Both sites are suitably located to serve all potential irrigation developments.

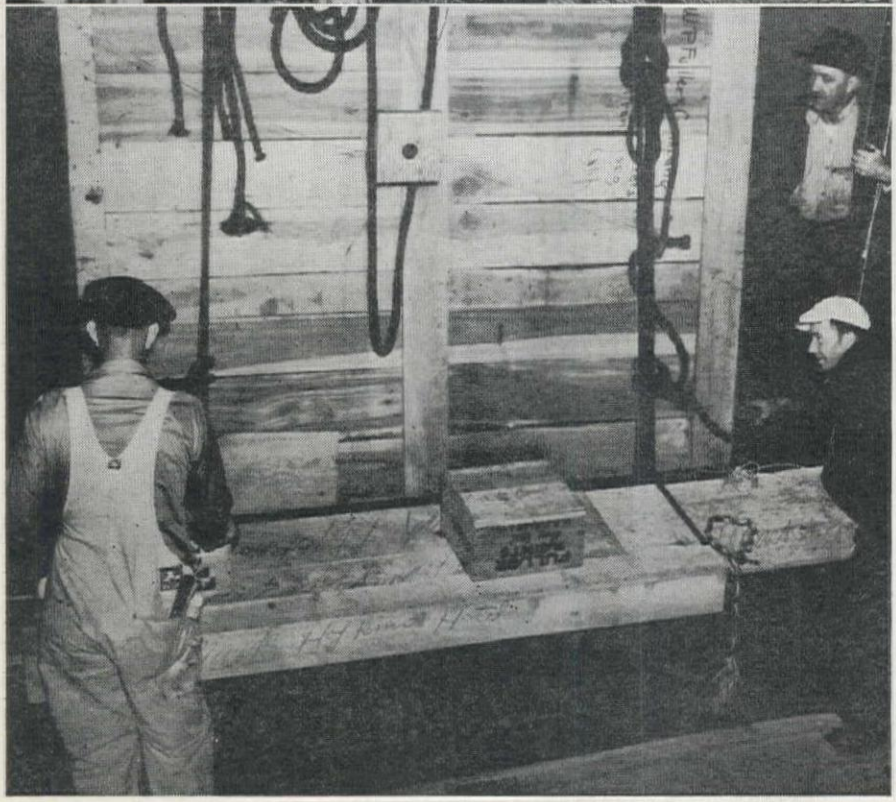
Lower Missouri Basin

The plans of development as presented

by the two agencies for this subdivision are identical; therefore, no conflict in the engineering features of the two plans exist. The plans include seven reservoirs and a series of levees and appurtenant works along both sides of the Missouri River, from the vicinity of Sioux City, Iowa, to the vicinity of the mouth of the Missouri River.

This joint report was regarded by the recent convention of the National Reclamation Association at Denver as a major step in the progress of development of water, the principal natural resource of the West; hopes are entertained for similar agreements on other watersheds. It is noteworthy, however, that the report refers only to the technical aspects of the Missouri dispute, and does not completely clear up the operational and administrative differences. Until these matters are adjusted, the threat of an "Authority," similar to TVA, hangs over the Missouri Basin.

Plate Glass Replaced in Skyscraper



ONE OF THE MOST famous spots on America's West Coast is the Top of the Mark Club of the Mark Hopkins Hotel at San Francisco. The hotel is situated high on a hill above the city and the club is 19 stories above the street.

From the Top of the Mark visitors look through plate glass windows out over the San Francisco Bay and see all the activity of the nearby shipyards, the steady traffic over the bay bridge, and the hustle and bustle of the city below. "I'll see you at the Top of the Mark," has become a familiar phrase with San Francisco visitors.

The installation of the plate glass windows in the Top of the Mark involved some careful handling, because these pieces of glass—each 91⅛ x 144¼ in.—were too large to go into the elevator shaft inside the building. It was necessary to place hooks on the tower of the building and hoist the cases of ½-in. plate glass up 19 stories, swinging them through the open windows, and do the glazing work from the inside. Some of the workmen had to take precarious positions outside on the window ledge before the glass was permanently in place. The Pittsburgh Plate Glass Co. furnished all the glass for this job and the W. P. Fuller Co., its West Coast distributor, handled the entire installation.

A short time ago an over-enthusiastic patron of the skyscraper cocktail lounge cracked one of the sections of plate glass and to replace this plate, the Fuller organization had to prepare hoists and again follow the original glass-installing procedure. As a result this one plate of glass cost nearly one-third as much as the original job. In order not to disrupt the club's business, the replacement work was done early in the day, starting at 6:00 o'clock in the morning. During this delicate operation, the hotel courtyard below was cleared for six hours while workmen dangled 500 ft. above the street and the crated glass hung suspended from the tower hoist over the entrance areaway. Guide ropes from the street below kept the crate from hanging against the building as it was being lifted.

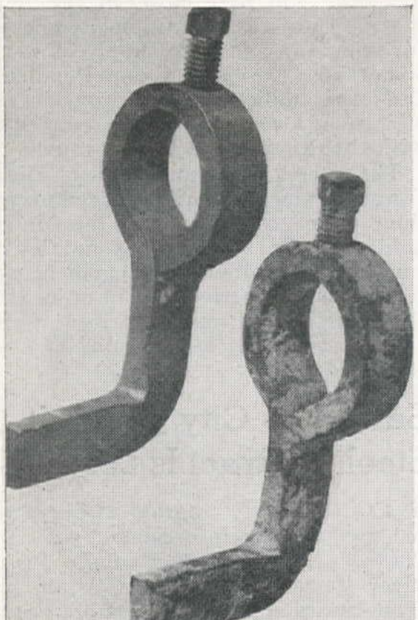
NEW PLATE GLASS, 91⅛ x 144¼ in., for the Top of the Mark, was too large for the elevator shaft. Upper, glass is hoisted to the 19th floor of the hotel. Lower, cracked window about to be replaced as workman stands on outside ledge to guide new plate glass into position.

HOW IT WAS DONE

JOB AND SHOP TIPS FROM THE FIELD EDITOR'S NOTEBOOK

Clean Form Clamps By Chemical Means

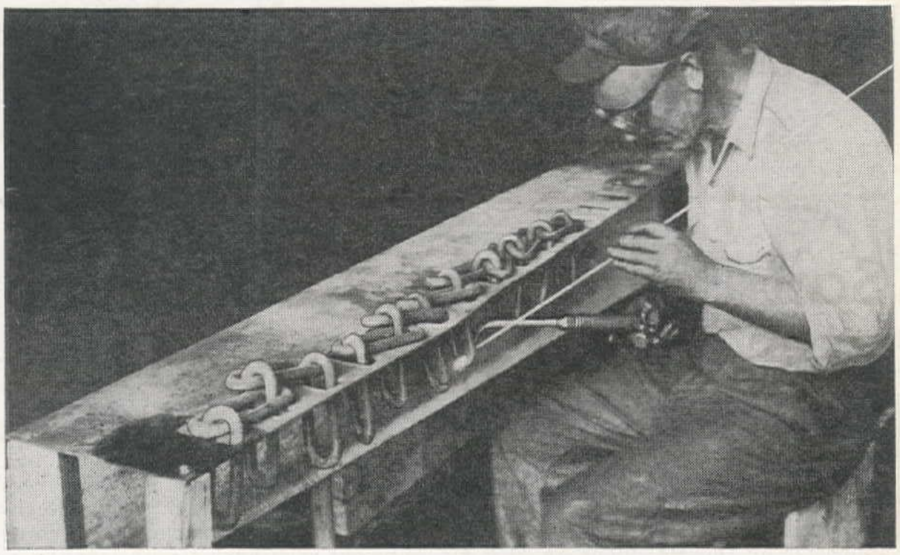
STIMULATED by wartime shortages of iron and steel, Kelite Products, Inc., has developed a method for reclaiming iron and steel construction parts, such as screed hooks and form clamps which are covered with concrete, paint, rust, scale, or dirt. The common method used in the past has been by "rattling" or sand blasting. Sometimes this method has proven



unsatisfactory because of poor cleaning and damage to the parts being cleaned.

Citing C. P. Concrete Equipment Co. as an example of a company that is using the Kelite method, the management reports that the procedure is being run at low cost by unskilled help. While temperature is a factor, the limits of operation are quite wide and 3 simple tanks without thermostats are used. The parts are given baths in three different solutions, each followed by a rinsing bath. This cleans the parts, and a final bath in another solution for inhibiting rust, followed immediately by cold or hot air drying, results in a clean, rust-inhibited, new-looking piece with accurate edges and free working parts.

Rust free inserts, pipe hangers and other permanent pieces insure long lasting installations. If these pieces are rusted when they are set in concrete, they will continue rusting and eventually loosen, while practically no rusting occurs if clean "phosphatized" equipment parts are used by the contractor in the building and placing of forms for concrete.

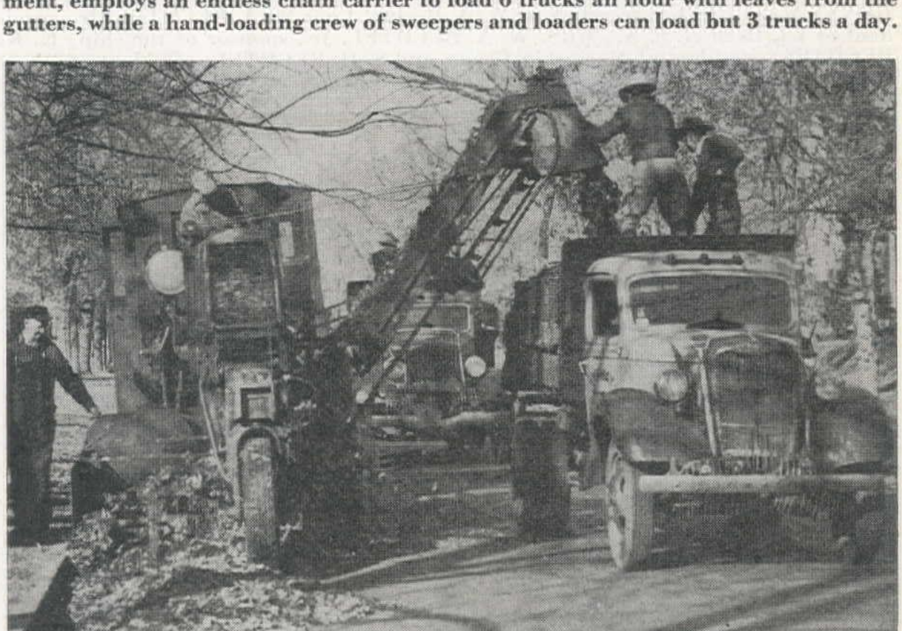


Hard-Facing Links Found to Lengthen Life of Heavy Chain by Several Times

HARD-FACING of wearing parts to prolong their lives assumes greater importance than ever before because of the necessity of keeping all-important machinery in operation. Surfaces should be cleaned first, then preheated to a faint red heat, using excess-acetylene flame. Apply the hard-facing alloy after base metal reaches "sweating" temperature, by holding rod and blowpipe tip at angle of 45 deg. to work, not stirring puddle with rod, and removing the flame from the puddle gradually. Such applications on the inside of each end of chain links have been found to lengthen their lives from 3 to 5 times. Material sent by G. C. Becker of Linde Air Products Co., New York, N. Y.

ENDLESS CHAIN CARRIES LEAVES FROM SCOOP TO TRUCK

LEAF-SWEEPING unit, designed and built in shops of Denver, Colo., street department, employs an endless chain carrier to load 6 trucks an hour with leaves from the gutters, while a hand-loading crew of sweepers and loaders can load but 3 trucks a day.



NEWS OF WESTERN CONSTRUCTION

DECEMBER, 1944

San Diego Water Connection To Be Built by Army and Navy

IMMEDIATE CONSTRUCTION by the Federal Government of a $17,500,000 aqueduct to furnish Colorado river water to the city of San Diego and military reservations adjacent to that city, was approved by the President on December 1.

The Bureau of Reclamation and San Diego city officials have been conducting a joint survey upon two alternate plans for supplying water to the city. One of these involved the construction of a new aqueduct from some point on the lower Colorado to the city; while the other anticipated extension of the aqueduct of the Metropolitan Water District of Southern California. No report has yet been issued as a result of this joint survey.

The Presidential order instructs the Army and Navy to proceed with construction of the connection to the Metropolitan Water District supply, tapping it in the vicinity of the town of San Jacinto. Costs will be borne by the War and Navy Departments. The Reclamation Bureau is instructed to continue present relationship with local agencies in order that work already begun may be completed in preparation for the provision of a permanent supply of water for the area.

The order was based on the following facts: (1) an emergency exists which demands immediate relief; (2) the Colorado river offers the only available source for an adequate and dependable supply; (3) requirements of military and naval facilities and war industries amount to 45 per cent of the total water demand in San Diego, which demand exceeds by 40 per cent the safe yield of the present San Diego water system; (4) the connection to the Metropolitan supply can be completed much sooner than a route from the Imperial Valley and an adequate supply of electric power is available for whatever pumping may be required. An additional factor is that the new line will pass close to the huge Marine Corps base at Camp Pendleton, for which an adequate supply of water is not now available. Camp Pendleton and other military installations in the vicinity of Oceanside are not connected with the existing San Diego system.

The recently organized San Diego County Water Authority is urged to continue its negotiations with the Metropolitan Water District to the end that an equitable permanent arrangement for service may be arrived at "in order that the value and permanent utility of this emergency work may be realized."

BECHTEL FAMILY ALL PRESENT AT MARINSHIP TANKER LAUNCHING

FOUR MEMBERS of one of the West's greatest contracting families were present at the launching of the tanker McKITTRICK HILLS at Sausalito on Nov. 26. L. to R., BRANT M. EUBANKS, secretary of W. A. Bechtel Co..; W. A. BECHTEL, Jr., president of Ca. Bechtel, S. A.; MRS. W. A. BECHTEL, Jr., sponsor of the ship; K. K. BECHTEL, president of Marinship Corp.; and S. D. BECHTEL, president of W. A. Bechtel Co.

Salt Lake City Conduit Steel Contract Is Let

A CONTRACT, approximating $64,000, to supply reinforcement steel for the Salt Lake Aqueduct of the Provo River Reclamation Project, Utah, has been awarded to the Republic Steel Corp., Cleveland, Ohio.

Because of the need for an increased water supply in the congested wartime area in and around Salt Lake City, authorization was granted to the Bureau of Reclamation, October, 1943, to continue construction of the aqueduct. This water system will be approximately 40 mi. long and the pipe capacity will be about 150 cu. ft. per sec.

The aqueduct will convey water from the Deer Creek reservoir, formed by Deer Creek dam completed in 1941, to a point near Salt Lake City. In general the aqueduct will follow the river in Provo Canyon below Deer Creek dam to avoid the hazards of snow and mud slides which enter the canyon from adjoining areas. The conduit will continue northwest from the Olmsted tunnel, 3,600 ft. long, at the mouth of Provo Canyon toward the Alpine-Draper tunnel 15,000 ft. long. The aqueduct will extend north from the Draper portal of the tunnel to the Thirtieth South reservoir near Salt Lake City.

Both tunnels were completed in 1939. To date about 23 mi. of pipe line have been placed under construction. The pipe line has an inside diameter of 69 in. Pipe units, 20 ft. long, weighing more than 20 tons each, are manufactured locally.

The Salt Lake Aqueduct is part of the Provo River Project which is the largest reclamation development in Utah. Original settlement of these lands was made by Mormon pioneers in 1847. They were the first Anglo-Saxon irrigation farmers in America.

New Hetch Hetchy Power Sale Plan Is Suggested

ANOTHER PROPOSAL for disposition of Hetch Hetchy power has been made by the city of San Francisco to the Department of the Interior. The power is manufactured at O'Shaughnessy dam in Yosemite National Park, and under the provisions of the Raker Act, no part of the power may be sold to any private utility company.

Although exceptions were made for some time to permit the city to construct its own distribution lines, such was not done. During the war period, the entire output of power has been sold to the aluminum reduction plant at Riverbank, Calif., and its sale netted $2,400,000 annually to the city. However, with the shutdown of that plant a few months ago, the problem of distribution was again in the foreground. A temporary respite from enforcement of the Raker Act was granted until March, 1945, while several proposals have been suggested to the Interior Department.

The latest suggestion is that the city make a contract with the Turlock and Modesto Irrigation Districts to deliver the entire output of electricity to them, who would in turn distribute it to their own district activities and to private users within the districts. The districts already generate power at Don Pedro dam, and any excess of this over that used for their own purposes, would possibly be sold to Pacific Gas & Electric Co., the organization at which the orders of the Department of the Interior are particularly directed.

Clifford Plummer, engineer of the Modesto District, took the new proposal to Washington on Dec. 1. Two alternate plans are also suggested, but neither would use the entire output of the municipal plant, and some portion of the power would be sold to the districts.

WPB Relaxes Control On Sale of Tractor Parts

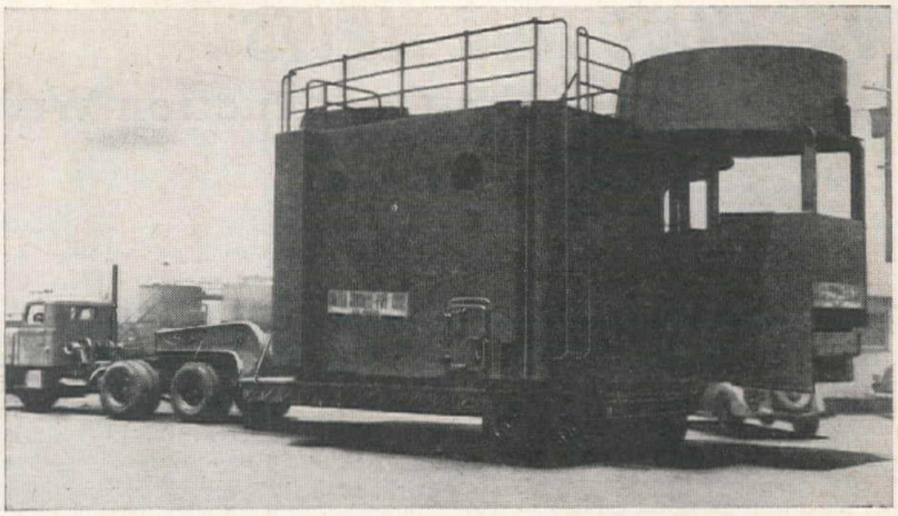
CONTROL OVER the sale of non-critical repair parts for track-laying tractors has been relaxed by the War Production Board by an amendment to Order L-53-b.

Manufacturers of track-laying tractors who also manufacture repair parts are no longer required to reserve 65 per cent of all repair parts production for the military.

To insure filling of military requirements for critical parts, all manufacturers are still required to ship up to 65 per cent of production to the armed services if necessary to fill orders. A repair part is considered critical when a producer has unfilled purchase orders calling for immediate delivery exceeding his inventory of that part.

Removal of the allocation of 65 per cent of all repair parts for military use will result in a better flow of non-critical parts for civilian use, simplify producers' scheduling of total parts production, and still assist the military in obtaining urgently needed parts. Flexibility in filling military demand, as different parts become critical, is possible under the amended order without unnecessary control over non-critical parts.

Quotas of shipments to dealers in the United States and Canada were formerly set at $10,000 worth of parts in any calendar quarter, or 50 per cent of total shipments during the preceding two quarters, whichever was greater. This quota provision, designed to prevent the building up of large inventories, is no longer considered necessary.



DECKHOUSE MANUFACTURED BY PIPE COMPANY 35 MI. FROM SEA

A 43-TON DECKHOUSE for a FP-S (freight, passenger and supply) ship, built by United Concrete Pipe Corp., at its Baldwin Park, Calif., yard, 35 mi. from the shipyard at Long Beach, is carried to the assembly point on a Fruehauf trailer. At the yard they are lifted bodily by crane hooks and put into place on the 175-ft. vessel.

List of Available Architects And Engineers Made by A.G.C.

AS A FURTHER ACTION in its market development program, the Los Angeles Chapter of A.G.C. has forwarded to the Los Angeles County Board of Supervisors a list of names of available architects and engineers in the county, with an accompanying letter outlining the desire of the construction industry to be prepared to meet any post-war employment emergency.

The list of available technical men was prepared by the American Society of Civil Engineers and the American Institute of Architects. Inasmuch as the county's engineering forces are badly depleted due to the effects of the war, they are unable to perform alone all the urgent post-war planning work that should be undertaken, and A.G.C. is proposing that the possibility of utilizing these available skilled men be explored by the supervisors at once.

Kaiser Reduces Price of Cement to Stimulate Increase in Construction

HENRY J. KAISER, president of the Permanente Cement Co., announced that effective Dec. 6, the company would reduce the base mill price of cement by the amount of $.20 per barrel for Northern California and Western Nevada.

Modern equipment and improved methods at the Permanente plant, together with economies in distribution, have made this reduction possible. The price advantage will be extended to the undelivered portion of previously contracted barrelage.

In making this 12 per cent reduction, Mr. Kaiser is supporting his contention that increased purchasing power should flow from low prices. He emphasized his belief that it would help to counteract the present inflationary trend in the cost of home building. "We shall do all in our power," he said, "to check the advance in building materials costs." Although home builders should enjoy the principal benefit, all types of construction will be stimulated by this action, particularly highways and those projects where cement is directly employed.

He gave it as his opinion that essential volume of employment after the war would be seriously curtailed by a general rise in prices. He expressed the conviction that all industry should maintain prices at the existing levels or to reduce them to the end that the widest possible market may be developed.

WASHINGTON NEWS

. . . for the Construction West

By ARNOLD KRUCKMAN

WASHINGTON, D. C.—There is doubt, at this writing—late November—whether or not the Flood Control Bill, the Rivers and Harbors Bill, and even the Highway Bill, will be made into law by Congress before this session goes the final way of all flesh. The waters have been so persistently, insistently and so thoroughly muddied by differing elements that one wonders if there is somewhere a paramount desire to throw everything into the new Congress which starts life in January. That body, it is no secret, will be definitely more New Dealish and it also is no secret that the present Administration strategy in relation to the coming Congress is reported to be similar to that which marked the opening phases of the New Deal Administration, namely to load it with a rush of "must" legislation and to push and drive and lay down a barrage (based on the recent PAC-dominated election showing) to stampede the legislators, many of whom are freshmen, into swift action. The mechanics might stem from the CIO-PAC organization which, we are frankly told, will be held together permanently, everywhere, to influence legislation, whether it has anything to do with labor or not. The situation is intriguing when you recall that the English have made up their minds they must accept a trades union government in the United Kingdom after the war because the complexion of European politics and socio-economics is expected to be most closely related to the system of thought the British call trades unionism.

At the present writing, the billion dollar flood control bill has passed both Senate and House. Some direct conflicts must be ironed out in committee but expectations are that these differences will be composed. However, there are so many hair-trigger factors involved that no absolutely sure prediction can be made. An amendment was finally voted into the bill by the Senate which specifically and precisely gives irrigation clear and definite priority over navigation west of the 97th Meridian. This success was attained by a coalition of Western Senators and an overwhelming majority from eastern states. A similar amendment was voted by the Senate into the Rivers and Harbors bill, although thus far the completed bill has not been adopted. The chief opposition to the irrigation amendment came from Sen. Overton of Louisiana, who spent many days dickering with Floyd Hagie, secretary of the National Reclamation Association, and Judge Clifford Stone of Colorado. Eventually, Sen. Overton gracefully abandoned all opposition.

It is illuminating to know that Senator Overton also is fighting vigorously against the effort to make the St. Lawrence waterway project ($500,000,000 worth of improvements for the joint benefit of the Canadians and the United States) a part of either the Flood Control law or the Rivers and Harbors bill.

The St. Lawrence project, involving improvements which would permit an added 20,000,000 tons of shipping to move from the lakes to the Atlantic and which would create another 13,000,000,000 kw. of power annually, is sponsored by Sen. Aiken of Vermont, a Republican, who launched his amendment campaign after apparently getting the green light from the President during an hour's conference. It apparently is hoped to rush the final legislation through Congress in the guise of an agreement between the Canadians and the Americans, which could be put over by a simple majority. The St. Lawrence project has heretofore twice met defeat because it was brought before Congress as a treaty. Sen. Overton, usually a New Dealer, insists the transaction requires a formal treaty.

Army Engineers displeased

With these and other amendments in the hopper, it also is generally felt that the situation is not pleasing to the Army Engineers. They cleared their differences with the Reclamation people on engineering problems along the Missouri River at the Omaha conference in October. The joint report, detailed elsewhere in this issue, specifically underlines that Reclamation should have full responsibility for irrigation, and that the Engineers should have the same responsibility for determining reservoir capacites for flood control and navigation.

Whether the Engineers are actually withholding the positive force they can exert in any legislation connected with flood control and other problems affecting rivers and harbors is not known to this reporter. It is reasonable to assume that any group of people experienced in the affairs of the capital would logically reason that it will be easier to go places when the next Congress goes into action. A new broom may sweep clean, but it takes experienced hands to use the broom.

Regional Authorities

They say the Engineers are definitely unfriendly to the idea of creating a series of TVAs around the United States. It would be consistent, according to reports, for the Engineers, in purely civil matters, to maintain their own point of view, even though the Executive champions the plan of placing the various sections of the United States under a sort of regional Federal Government. We are told by responsible persons in government that there are from fourteen to twenty basin and plains areas which it is intended to organize and operate as TVA has been organized and operated. The people who come here from the Missouri River basin states are vigorous in their assertions that there is no real public sentiment out there in favor of the creation of a Missouri Valley Authority. They tell us the point of view represented by outgoing Sen. Truman and the St. Louis Post-Dispatch is a minority approaching the disappearing point. But it is a very vigorous and vocal minority.

We hear, moreover, that David Lilienthal, who helped to slay the Goliath of power in Illinois, and now head of TVA, with his lesser Goliath-vanquishers, has done a lot of missionary work in recent months among kindred spirits of the Missouri Valley who yearn for an Authority. Also, David recently has been at the White House again, and they say he convinced the President he should not be appointed as head of the Surplus Property Board but should remain on the job as the general of all the armies of the prospective Authorities.

It was shortly after David came to pay his post-election tribute at the White House that the President told us in a press conference that we must have seven regional developments like TVA, notably in the valleys of the Missouri, Mississippi, Arkansas, Ohio and Columbia Rivers. The Colorado River Basin is considered to be already so definitely on the way to TVA-zation that apparently it is not regarded as a major conversion job. It was not long thereafter that some of the Interior Department enunciations, possibly reflecting the palace guards, were in terms that anticipated the extension of the primary idea of the TVA. Sen. Gillette had already put his Missouri River Valley Authority bill in the hopper. When it was found the recent PAC campaign had left him out, and that he would not come back to the capital, Sen. Murray came along with an MVA bill as an amendment either to the Flood control bill or Rivers and Harbors bill. Bear in mind, this MVA is so close to the heart of Mr. Roosevelt that if any legislation —be it Flood Control, Rivers and Harbors or anything else—were found to be questionable in the MVA sense, it would be logical for the President to exercise the implied resource of the veto.

The most interesting feature of all maneuvering is the emphasis which developed after the election on the creation of TVAs. You may have noticed that during late October and in November a number of books were published by highly reputable publishers and placed on the market with a wide fanfare of reviews, telling in glowing terms about the extraordinary success of the TVA. These books, written by reasonably well known persons and reviewed by wholly sympathetic commentators, were pitched to appeal to different layers of society. It is not unreasonable to assume, coming as they did upon the eve of the proposal to create seven more TVAs, that the appearance of the books was planned that way.

TVA is big business

This efflorescence of beauty and truth about the TVA is interesting. It has not always been so bountifully accessible. Even on the day this was written, the TVA apparently was cautious about giving facts. This reporter sought to find out for your information how many persons officially are carried on TVA payrolls. He asked the TVA Washington representative, Miss Marguerite Owen. She said she did not know, she would have to make inquiries and would supply some information later. So far as the TVA is concerned the information is still unavailable, 72 hours later. But it was promptly available from the Civil Service Commission, within a few minutes after the inquiry had been addressed to TVA. Civil Service reports in September, this year, there were 19,271 persons on the TVA payrolls; but that on November 27 the number had been reduced to 18,500. Presumably this number is all-inclusive. In the earlier days of TVA there were certain business organizations which carried on merchandising of electrical equipment and similar supplies for the farm and home; and there is an impression that there were other units operating more or less cooperatively. Technically these enterprises had nothing to do with TVA or its payrolls. But it is undoubtedly true that all units of this kind belong to the Federal Government, and that they would come under the operating or the investment budget.

According to the Congressional Directory the TVA has major offices at Wilson Dam, Ala.; in Washington, D. C.; at Knoxville, Tenn.; and at Chattanooga, Tenn. The major parts of the organization are listed as the Office of the Board of Directors; the Office of the General Manager; Engineering and Construction Departments; Power Departments; Chemical Engineering and Conservation Departments; and Staff Services, the latter embracing the Legal staff, Comptroller's staff, Treasurer's staff, the Director of Personnel, the Director of Health, the Director of Materials, the Land Acquisition Department, the Office Service Department, Regional Studies Department, Commerce Department and Reservoir Property Management Department. There is also a section headed by the Chief Conservation Engineer, the Chemical Engineering Department, the Agricultural Relations Department, and the Forestry Relations Department. And there are power engineers, office engineers, power managers, power utilization personnel, power engineering and construction personnel, and power operations personnel. Elsewhere there is a water control planning department, a design department, a construction department, and a group of project managers as well as various supervisory engineers.

What is an Authority?

The regional Federal unit we know as an Authority is composed of a number of states, and the states are brought within the powers of the Authority either wholly or in part. The region included logically derives a paramount benefit from a stream or some other unifying over-all common interest or resource. The concentration of interests results in practical benefits under a system of cooperation or collectivism. Naturally this spells the surrender of something. Presumably the lesser is given up for the greater good; the few sacrifice for the many. And the many accept whatever leveling is necessary to obtain greater certainty, more security, more stability, in the assured supply of the comforts, the ease, the better standards of living. Presumably greater unification makes available more assets and services at lesser costs, whether you are part of a combine, a cartel, or an Authority.

It would seem as if some of the social, economic and political sovereignty must pass from the state to the Regional Authority, which is obviously another term for the function we call government. Apparently the creation of these units would eventually form fourteen or some other ultimate number of regional groups which will compose the nation. It would be decentralized government still centralized. This is more and more an age based ultimately on water and electric power. The supervisorial authority over the utilization of these resources logically spells authority over the things for which they are used and over the people who use them.

Highway bill

There is some doubt about the enactment of the postwar highway bill because it is under attack from a number of sources. The farmers seek more funds for the roads they wish to use; the rural mail carriers seek benefits for the highways over which they operate. The oil companies are battling vigorously to prevent any tax increases; and the northeastern states are reported to insist that greater weight in computation be given to population. Apparently, there is a reversion to the old formula which, generally, it was assumed had been settled for all time during the classic highway aid battles in 1916.

The House accepted the Senate's fifty-fifty fund matching ratio and also the Senate's formula allocating funds in accord with traffic needs, first to the federal aid systems, second to secondary roads, third to urban areas. The House version permits federal aid for right-of-way costs, eliminates funds for flight strips, authorizes federal funds for grade crossing elimination and directs that the three-year program shall start in 1945. It is expected that the committee conferees will make concessions and that the bill will be enacted by the time this letter reaches your hands.

The charge was made that 30 states could not match the Federal-aid funds. Subsequent investigation revealed that only Montana and Nevada appear to be unable to match the funds. The special survey by the American Association of State Highway Officials showed that at least 44 of the 48 states can match the federal-aid authorization within the time permitted, without increasing present highway taxes. Under the terms of the proposed act, HR 4915, the state making an agreement with the Public Roads Administration for its share can qualify two years after the contract is signed and is able, therefore, to meet the expenditures over a period of five years. The survey also revealed that states may obtain funds to match federal-aid from cities and towns. The states which at this writing are unable to match federal-aid funds apparently propose to wait until Congress has acted before they make plans to finance their share.

Public Roads Administration has let it be known that several hundred new and replacement bridges still are needed along the 3,356 mi. of the Inter-American Highway, between Texas and Panama. Public Roads Administration also has approved the appeal of San Diego to WPB area production urgency committee for widening of the 9 mi. north of San Diego on U. S. 101 from 3 to 4 lanes. It will cost $1,206,000.

Miscellaneous

FWA has been picked by the President to plan national public works and is to spend initially $125,000,000 when Congress makes the appropriation. Local governments are to do the planning and FWA is to advance the money to get the ideas out of the blueprint stage. FWA anticipates it will take eight months to get the blueprints prepared. The authority which makes FWA the nations planner was embodied in the recently enacted George Reconversion Law.

The United States-Mexican treaty, proposed to allocate the waters of the Colorado and Tia Juana rivers and the Rio Grande, will not come up for consideration until the new Congress convenes in January. The Senate Foreign Relations Committee decided the whole subject was too full of dynamite to attempt any discussion in this closing session. Late in November the President presented to the Senate a protocol signed by the Mexican and United States authorities which will be presented to Congress for ratification with the treaty. It provides that works to be constructed or used along the boundary shall be under the jurisdiction of the Joint Mexican-U. S. Commission.

Congress is expected to provide $339,112,455 for the Bureau of Yards & Docks, Navy Department, apparently to be spent primarily in the West. A bill jointly introduced by Rep. Vinson and Sen. Walsh, each head of the Naval Affairs Committee of the House and Senate, provides $50,000,000 to build additional ordnance manufacturing and production facilities, also apparently primarily in the West. . . San Diego and Seattle, late in November, were declared by McNutt as among the dozen most critical labor areas in the United States. Army Engineers have completed a field investigation for a large flood control project on the Green River in Washington, ordered in 1936 by Congress. The report is expected to discuss the feasibility of placing a dam six miles above Auburn, near Tacoma, for flood control.

Central Valley Project Work Reviewed After Seven Years

ON OCTOBER 19, 1944, the Central Valley Project celebrated its seventh birthday by a record of substantial achievements in irrigation, power, and other benefits.

Seven years ago the first dragline began excavating the Contra Costa canal near Antioch, first unit to be constructed under the huge government project. Today, in spite of wartime restrictions on manpower and materials, the initial authorized features of the project are about one-half completed. Out of an estimated cost of authorized features totaling $316,500,000 for the project, $155,540,000 has been expended.

Shasta Dam is at work. Although only filled with 1,175,000 ac. ft. out of a possible total of 4½ million ac. ft., the water stored this year was released to provide needed supplemental water for irrigating 255,000 ac. of rice and general crops in the Sacramento valley. The release of this supplemental water maintained under irrigation and cultivation approximately twice the acreage that would have been maintained had only the natural flow of the river been available.

The water being released for irrigation also generated power. Since last July, when the Shasta power plant was placed in operation, 200 million k.w. hr. of electric energy have been delivered.

The 100-mi. Shasta-Oroville transmission line is complete and in operation.

Serving the area on the south side of Suisun Bay, Contra Costa canal is complete from Rock Slough to Walnut Creek, a distance of 38 mi.

Keswick dam is 65 per cent complete, with the fish trap in operation.

Keswick power plant is partially built, but awaits a War Production Board green light for completion and installation of equipment.

Coleman fish hatchery in Shasta County is complete and in operation.

Friant dam is finished, except for control gates on the spillway, and permanent valve installations in canals and river outlets.

Millerton Lake this year stored a maximum of 302,510 ac. ft. of water. Its capacity will be 520,000 ac. ft. when Friant dam is completed.

Madera Canal is complete to the Fresno river. This spring Millerton Lake supplied irrigation water to some 30,000 ac. of land in the lower San Joaquin Valley during an unseasonable spring drought. Throughout the summer water was supplied under interim contracts to 32,500 ac. of land. In addition, irrigation water was made available to about 110,000 ac. of grasslands on the west side, providing pasture for more than 140,000 head of cattle.

The initial authorized features of the project yet to be completed are:

The 160-mi. Friant-Kern canal, to carry Millerton Lake water to the Upper San Joaquin valley near Bakersfield.

The Contra Costa canal to be extended from Walnut Creek to Martinez; distribution system for irrigating some 20,000 ac. in Contra Costa County.

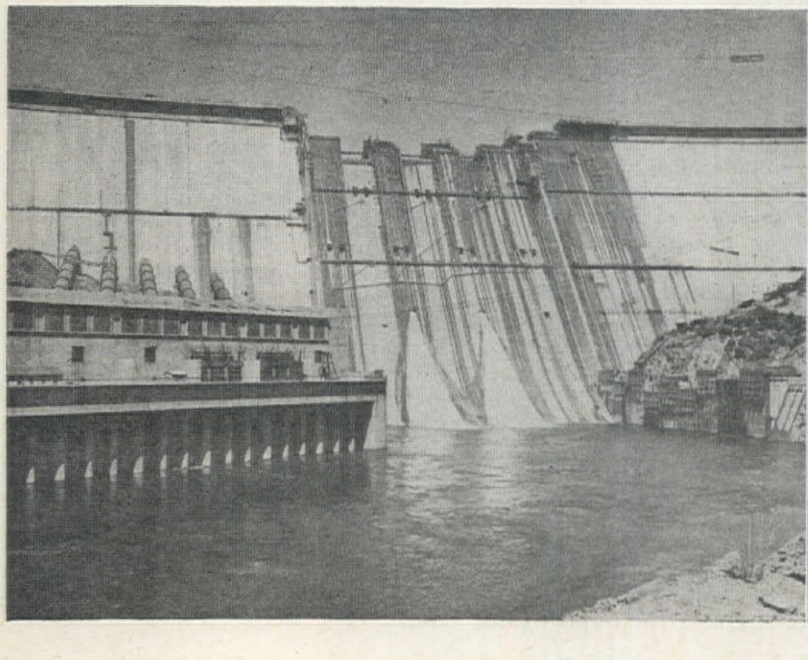
Keswick power plant to develop 75,000 kw. of power.

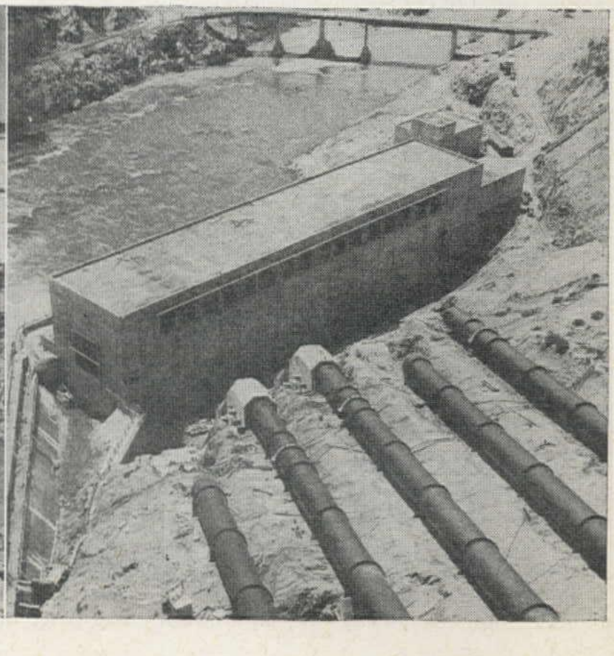
Delta cross channel to carry Sacramento River water across delta.

Delta-Mendota canal, to carry this water a distance of 105 mi. along the west side of the San Joaquin valley to Mendota pool.

Much of this work has been halted by orders of the War Production Board because of shortage of manpower and materials. It will be resumed as soon as these are made available.

PRESENT STAGE of construction work on the Central Valley Project finds Shasta dam complete except for a few remaining blocks in the spillway section. The powerhouse is completed, except for installation of three additional generators held up by War Production Board. Two of the 75,000-kw. units are installed.





Construction Work Continues Decline

NEW CONSTRUCTION activity in the United States during October, 1944, totaled $308,000,000, the War Production Board has reported. This volume was 6 per cent under the September, 1944, level and 40 per cent below the volume of October a year ago.

Continuation of construction controls and seasonal factors are expected to restrict the volume of work put in place during the remaining two months of the year, resulting in an estimated $3,700,000,000 volume for the year 1944—less than half the construction volume of 1943. This estimate excludes repair activity, and in this respect differs from construction activity estimates compiled by other Federal agencies.

Privately-financed construction activity during October totaled $121,000,000, a 7 per cent decline from the previous month and 12 per cent under the October, 1943, activity. In this category, residential work accounted for $39,000,000; industrial, $14,000,000; utilities, $40,000,000; farm, $15,000,000; and community buildings (commercial, hospitals, social and recreational, etc.), $13,000,000.

Work financed by public funds in October amounted to $187,000,000, a 6 per cent over-the-month decline and 50 per cent under the $377,000,000 volume of October a year ago. Military construction totaled $57,000,000 in October; Government-financed plant construction, $55,000,000; Government-financed housing, $8,000,000; and all other non-industrial construction (community buildings, highways, sewer and water, conservation, etc.), $67,000,000.

OBITUARIES . . .

George R. Wade, general manager of the Long Beach Water Department, died Nov. 24 at the age of 63. During his many years of active engineering work he held positions as chief engineer and general superintendent of the San Diego Mutual Water Company, chief engineer for the Imperial County Highway Commission, city engineer and manager of Brawley, and city manager of Tucson, Ariz.

Walter Innes, representative of the Pacific Portland Cement Company in the Oakland, Calif., area since 1928, died at the age of 57. He was an active member of the Oakland Builders Exchange and the Berkeley Rotary Club. He was a native of Alameda, Calif.

Frederick H. Richardson, lieutenant-colonel, U. S. Army, retired, died at his home in Salt Lake City, Utah, Nov. 5, at the age of 61. He served in both the first and second World Wars in the Engineer Corps and was a past district engineer in Salt Lake City.

John P. Erickson, 54, valuation engineer for the Utah State Tax Commission, died Nov. 19 in Salt Lake City. He had been a resident of this city for the last 30 years and was a past city engineer. He was also a past president of Theta Tau, honorary engineering fraternity.

Harry W. Truesdell, 66, civil engineer with the City of Los Angeles, died Dec. 3, in that city.

Harry W. Shipman, veteran civil engineer who has been active in mining and oil developments in the West and who for the past six years has been associated with the Los Angeles office of U.S.E.D., died Nov. 28 at the Sawtelle Hospital, Los Angeles, Calif.

Dugald H. Duncanson, retired general contractor and civil engineer, who built many California dams, died at his home in Santa Barbara, Calif., at the age of 83. He was a native of Ontario, Canada.

Harold E. Bierce, 59-year-old mining engineer and construction man of Pasadena, Calif., died Nov. 4. A native of Fargo, N. D., he came to California 30 years ago and had been active in construction, mining and engineering fields.

William L. Eppler, draftsman for the San Francisco Water Department, died Nov. 24. He was 42 years old and had been employed by the water department for the past 21 years.

Walter Cooper, 52, city manager of San Diego, Calif., was killed in an airliner crash at Van Nuys, Calif. on Dec. 1. He was formerly a public utilities consultant for the city of Oakland, Calif.

Merrill M. Goodnow, a junior engineer for the city traffic engineering division and a city employee for 30 years, died in Seattle, Wash., at the age of 60.

LeRoy Forbes, independent contractor of Los Angeles, Calif., was accidentally killed, Nov. 9, while repairing a dragline cable. He was 27 years old.

Elmer L. Stump, resident engineer and superintendent of the Red Bluff Division of Highways, died in Red Bluff, Calif., Nov. 7.

NEW BOOKS . . .

AIRPORT ENGINEERING, by Sharp, Shaw and Dunlop—Published by John Wiley & Sons, Inc., New York, N. Y. 152 pages, 8½ x 11. Price $5.00.

The authors have attempted to present a complete picture of the engineering work involved in the planning and design of a modern air terminal. Airport engineering must keep pace with the development of planes and the rapid increase in the use of the airways. The basic aspects of planning the site and the relation of the location of the site to the regional plan are considered first. Then attention is given to the grading, paving and drainage problems. The solution to these problems must take into consideration the size of the landing areas, provision for year-round operation, and services required for safe and comfortable operation of regular schedules for freight, mail and passengers. Soil stabilization is studied with particular emphasis placed on possible manipulation and treatment of soils for immediate and future heavy plane loads. Considerable thought is given to the theoretical and practical aspects of the design of flexible - type and rigid - type pavements. The final chapters of the book are devoted to a detailed study of the problems of airport lighting, buildings, and construction and maintenance equipment. The book contains many photographs and diagrams picturing the actual work involved in laying out and constructing a modern airport.

NEW ARCHITECTURE AND CITY PLANNING, a symposium edited by Paul Zucker—Published by the Philosophical Library, Inc., New York, N. Y. 694 pages, 6 x 9. Price $10.00.

The plan of a house, the form of an office building, and the layout of a town represent nothing else than the crystallization of a living cultural situation. Architecture reveals a whole civilization in the same way that the whorls of a sea-shell reveal the biological habits of a marine animal. The most aesthetically minded architect, scarcely less than the sociologist or housing expert, is thinking and conceiving in terms of social function rather than in terms of stylistic form. To give the right initial direction to this momentum, architects and engineers, sociologists and philosophers, artists and business men were invited to participate in the symposium, in the hope of adding something to the common effort. The symposium represents realistic suggestions for the future of architecture and city planning by the leading experts in the United States. Each contributor approaches his specific problem on the basis of his professional experience, thus anchoring his vision of future possibilities on factual research recognizing the foremost needs of our time. A few of the problems considered in the book are: the possibilities of plywood in future building; effect of newly built dams on regional planning; influence of standardization in the building industry; future of world fairs; possibilities of skyscrapers; influence of interstate traffic on city planning; and future of glass as a building material.

FEDERAL AGENCIES—Published by the Citizens National Committee, Inc., Washington, D. C. 70 pages, 5½ x 8½. Price 25 cents.

This descriptive tabulation of 428 functional units of the Federal government is designed to provide interested citizens with sufficient factual information to permit them to consider intelligently the government's problems in postwar demobilization. The study defines the functional units of the Federal government in existence on June 30, 1944, and provides a partial guide to their structures. The name, function, method and year of creation, appropriation and average number of employees are given for each of the agencies. A complete index permits the material of the guide to be located quickly.

A SUGGESTED STREET LIGHTING PLAN BOOK FOR UTILITIES — Published by the National Electrical Manufacturers Association, New York, N. Y. 58 pages, 8½ x 11. Price $1.00.

The Street Lighting Section of the association has selected this manual for utility executives and street lighting specialists who are now planning for postwar street and suburban lighting. The section appeals to city officials and citizens and encourages them to plan better lighting in order to eliminate a great deal of property damage and traffic accidents, and to curb crime. The book presents an illustrated discussion of the present street lighting condition and the importance of good visibility. It furnishes supporting evidence of the benefits of good street and highway lighting and describes procedure that could be followed in preparing lighting plans.

Restrictions On Cement Manufacture Are Lifted

RESTRICTIONS on Portland cement, which formerly limited manufacture to three specified types, have been removed by the War Production Board through revocation of Order L-179. When the order was originally issued in August, 1942, requirements for Portland cement for military and other essential construction work were unusually high and were expected to go higher.

Total 1942 consumption was 185,000,000 bbl., the highest consumption figure on record. The order was designed to increase production of the three most commonly used types by prohibiting manufacture of modifications of these types. Other provisions of the original order, subsequently removed, had prohibited the earmarking of storage bins for individual customers. This restriction was intended to promote full utilization of all available storage space.

Total actual capacity of the cement industry is approximately 215,000,000 bbl. per year, according to War Production Board Building Materials Division officials.

Consumption in 1944 will amount to an estimated 40 per cent of this capacity or 88,000,000 bbl., while 1945 consumption, if present construction restrictions remain unchanged, is estimated at from 50 to 60 per cent of capacity.

Utah Earthfill Reclamation Dam Approaching Completion

THE 109-FT. EARTH-FILLED Newton dam, newest irrigation and reclamation project in Utah, is just about completed and storage of water will start this winter to supply demands of the 1945 irrigation season, I. Donald Jerman, reclamation engineer in charge, has announced.

When the reservoir is filled with 5,200 ac. ft. of water, enough to bring more than 500 ac. of new land under cultivation, the water will submerge the site of Utah's first water storage reservoir, started by the Mormons in 1847 as the first major reclamation and irrigation project in North America.

The dam is about 600 ft. thick at the base. The upstream side is rip-rapped with rock, while there is a stone masonry and curb wall across the top of the structure.

The main outlet is through a 36-in. concrete pipe siphon located near the downstream toe of the dam. An additional 24-in. siphon feeds water into an auxiliary high-line canal.

Will Use Gypsum Walls In Oregonship Building

HENRY J. KAISER will rebuild the administration building of his Oregon Shipbuilding Corporation plant at Portland, Ore., which was destroyed recently in a $600,000 fire, with fireproof gypsum materials. He has recently purchased interests in West Coast gypsum plants.

When fire broke out in the building, it spread so rapidly through highly inflammable materials that the entire structure was razed in less than an hour, not allowing time for fire-fighting equipment to arrive. As a result, all equipment and many important records were destroyed.

Previous fires in dormitories at the Kaiser shipyards, which were highly destructive because of inflammable materials used, led to the use of fireproof gypsum boards in rebuilding and as protection in other units not yet affected by fire. These boards are manufactured in large panels and they can be used in quick, mass building as readily as the inflammable boards previously used.

Kaiser's entrance into the gypsum field is as a partner of Sam A. Perkins of Standard Gypsum Co.

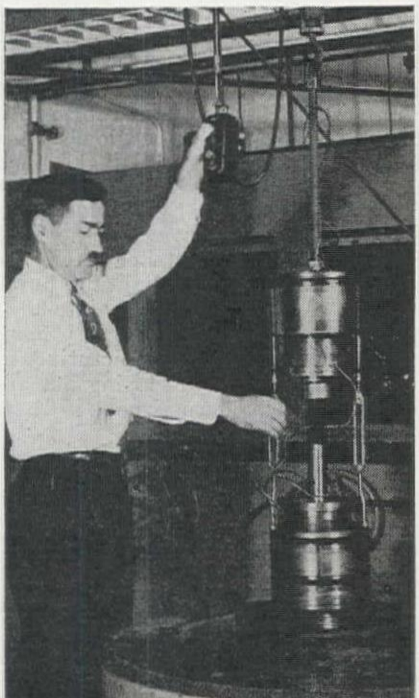
PERSONALLY SPEAKING

H. H. Johnson, Smith Bros. & Wilson Ltd. of Vancouver, B. C., is the new president of the Vancouver General Contractors' Association. He succeeds **John Bennett** of the Bennett & White Construction Co. Ltd. **Ralph C. Pybus,** Commonwealth Construction Co. Ltd., was elected first vice-president and **F. J. Dawson,** Dawson Wade & Co. Ltd., was appointed second vice-president. Directors of the association are: **J. Tucker,** Dominion Construction Co. Ltd.; **P. A. Jones,** Fraser River Piledriving Co. Ltd.; **J. L. MacDougall,** Coast Construction Co. Ltd.; **L. G. Murray,** B. C. Bridge & Dredging Co. Ltd.; and **A. E. Jenkins,** Columbia Bitulithic Ltd.

The Washington Irrigation Institute was reorganized into the Washington State Reclamation Association. The organization meeting was held at Yakima and **Thomas D. Potwin** of that city was elected president. Receiving the endorsement and support of all sections of the state, the new program includes the consideration of irrigation of arid Eastern Washington lands, supplementary irrigation in Western Washington, drainage, diking, flood control, land clearing, reforestation, and utilization of cleared lands for agricultural purposes.

W. T. Wright, Inc., 504 West Monkbridge Road, Albuquerque, N. M., is purchasing and reconditioning used equipment for reshipment to Venezuela, Colombia and Egypt. The work is being handled through the Export Equipment Corporation, with **W. T. Davis** as engineering contractor. His associates include **Earl Pound, George Gaines** and **Red Triplett.**

DOUGLAS McHENRY, Bureau of Reclamation engineer at Denver, Colo., is shown removing a specimen from a triaxial concrete-testing machine in the Bureau's laboratory. Recently he has received British and American awards in recognition of his valuable scientific research work.



Harold Zent is the secretary-manager of the recently organized Spokane Construction Council. The council was organized to represent the building and construction industry in the Spokane area and will maintain offices on the second floor of the Spokane Hotel Building.

O. D. Keese, office engineer, heads a group of seven employees of the Los Angeles County Surveyors' Office who have returned to the organization from the armed forces of the United States. The other men are: **Richard Darling, Herbert W. Dawson, Lew Morgan, Gordon Porter, James V. Rhee** and **Clark Wallace.**

Almond Godfrey, employed by Lockheed at Burbank, Calif., received a $500 award for a work simplification suggestion. He suggested the use of a hoist instead of a goose in unloading pallets, flats and mercury baskets. This method permits trackless trains to move with greater dispatch and increases the safety of operators.

Engineer J. R. Luper of the Seattle federal works agency office has left for Fairbanks, Alaska, to aid in exploratory drilling for the $1,750,000 Fairbanks water system. He will be accompanied by **A. V. Ferry,** chief engineer for Black & Veatch, Kansas City, Mo. This firm is preparing plans and specifications for the project.

E. E. (Earle) Duffy is now on the staff of the Automotive Safety Foundation, Washington, D. C. His years of experience include positions as public relations director of the American Road Builders' Association, planning secretary for the Wayne County Road Commission, Detroit, and public relations man with the Portland Cement Association, Chicago.

Harold Polling is resident engineer for the Federal Works Administration on a contract awarded to Paul N. Odegard of Everett, Wash. The contract calls for the construction of a high school building at Kennewick. **Bob Denmore** is foreman of the job and **Paul N. Odegard** is superintendent.

Duffy Murry, Bureau of Reclamation project engineer on the Dodson pumping unit of the Milk River irrigation project near Great Lakes, Mont., has been transferred to become project engineer of the Bitterroot irrigation project. **Merle Savage** of Williston, North Dakota, will succeed Murry at Great Lakes.

Lt. Col. K. Charles Bean, former chief engineer and general manager of the city Board of Public Utilities and Transportation, Los Angeles, Calif., arrived home recently after 29 months in England with the Army Engineers Corps. He expects to receive an honorable discharge and return to his former city job.

The southwestern section of the Idaho Society of Engineers has elected officers for 1945. **T. S. Flood**, Sawtooth Co., Boise, has been elected chairman; **George E. Tucker**, U. S. Grazing Service, Boise, vice chairman; and **Orland C. Mayer**, Idaho Power Co., Boise, secretary-treasurer.

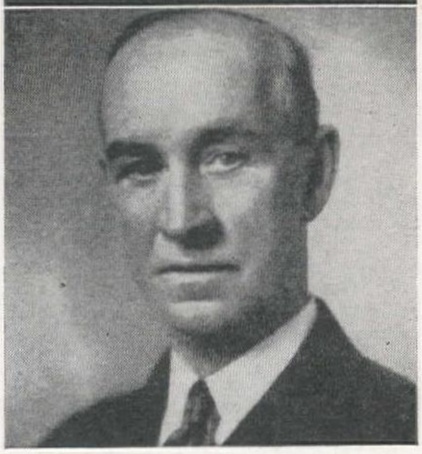
Frederic F. Hall and **M. V. Pregnoff** have received the U. S. Navy Meritorious Civilian Award in recognition of the excellent work that this firm of structural engineers has done in the design and development of the great Naval Advance Base at San Bruno, Calif.

The 300 members of the Builders Exchange, 31-year-old building trades cooperative, are moving on Jan. 1 to a 3,300-sq. ft. set of offices on the third floor of the 6-story Railway Exchange building, Portland, Ore. The name of the building will be changed to the Builders Exchange.

Carl E. Nelson and **George E. Skaggs**, San Francisco office of the Donald R. Warren Co., have been awarded meritorious service medals by the Navy in recognition of the excellent engineering designs that they have prepared for the San Francisco Bay area.

W. L. Conrad is general manager for the Stockton Ship Works, 391 Sutter St., San Francisco, Calif. This company, a joint venture of Ford J. Twaits and E. T. Haas, construction contractors, handles ship repair work.

Conrad O. Mannes is the new King Co., Wash., engineer, succeeding **A. S. Leeper**. A civil engineer with offices in Seattle, Mannes has handled many railroad projects in his 40 years of engineering experience.



FRANCIS T. CROWE, top, and WILLIAM V. McMENIMEN

Francis T. Crowe, constructor of Boulder Dam, and **William V. McMenimen**, builder of Pacific naval bases, will receive awards in recognition of their outstanding contributions to construction progress. These awards are given each year to a non-member and member by the Moles, New York organization of tunnel and heavy construction men. Crowe, non-member winner, has been a key man in the construction of such great dams as Guernsey, Deadwood River, Boulder, Copper Basin, Gene Wash, Parker and Shasta. As general superintendent for Six Companies, Inc., he completed Boulder, a 726-ft. dam and the world's highest, over two years ahead of schedule. McMenimen, Mole member winner, is chairman of the executive board of the group of eight contractors known as the Pacific Naval Air Base Contractors. This PNABC group has been awarded contracts totaling more than $1,125,000,000 and has built bases at Guam, Wake, Midway, the Hawaiian Islands and other secret locations, and has operated huge procurement bases covering Chicago, Joliet, Port Hueneme, Oakland, Alameda, Seattle and Tacoma. McMenimen is vice president and general manager of the Raymond Concrete Pile Co. and has supervised work on the Lake Pontchartrain and San Mateo Bridges and the piers for the San Francisco-Oakland Bridge.

W. L. Hoffeditz is now on the engineering staff of the Factory Insurance Association, with western regional offices in San Francisco and local offices in Los Angeles, Calif. For many years he has been active in Southern California engineering work and recently was field executive engineer for the M. W. Kellogg Co. during the construction of a butadiene plant for the Defense Plant Corporation.

William J. Archer is the new Chief Engineer and Manager of the San Francisco, Calif., office of Howes and Whitaker, mechanical engineers and contractors. This firm engineers and constructs heating, ventilating, plumbing, and industrial work.

H. P. Boardman, civil engineer and former University of Nevada professor, is coordinating data on sewage, flood control, drainage, and related problems concerning the cities of Reno and Sparks in Washoe county, Nev.

Col. Claus A. Tornell is now chief of the Price Adjustment Division of the U. S. Engineers for the Pacific Division and is stationed in San Francisco, Calif. He succeeds **Col. Frank V. Ragsdale**, who has been transferred to New York.

Samuel D. Clinton, formerly with Basic Magnesium, Inc., Las Vegas, Nev., is in the engineering department of J. A. Terteling & Sons, Inc., Brennan & Cahoon on the Naval Ordnance Plant job at Pocatello, Idaho.

H. J. Brunnier, past president of the Structural Engineers Association of Northern California, is now president of the American Automobile Association.

A. L. Connell has resigned as city engineer of Denison, Tex., to become a member of the engineering department of the Missouri-Kansas-Texas Railroad at Dallas, Tex.

George M. Burns, partner in the construction firm of Knutson & Burns, Lakewood, Colo., has bought a 367-ac. cattle ranch 5 mi. from Columbia, Mo., to which he is retiring.

Harold Lindgren is manager for the M. H. Golden Construction Company, San Diego, Calif., in the new company office at 710 Architects Bldg., Los Angeles.

Harold C. Miller is associate airways engineer for the Civil Aeronautics Administration at Anchorage, Alaska. He has been transferred to Seattle, Wash., and is purchasing materials for Alaskan operations.

Col. Joseph A. Bayer, principal engineer of the price adjustment section in the Pacific Division of the U. S. Engineers, San Francisco, Calif., has retired after 37 years of distinguished service.

J. Gregory, Corps of Engineers, and **Lt. Ben G. Bartholomew**, Corps of Engineers, Springville, Utah, were awarded Silver Stars for gallantry in action during landings on the French coast.

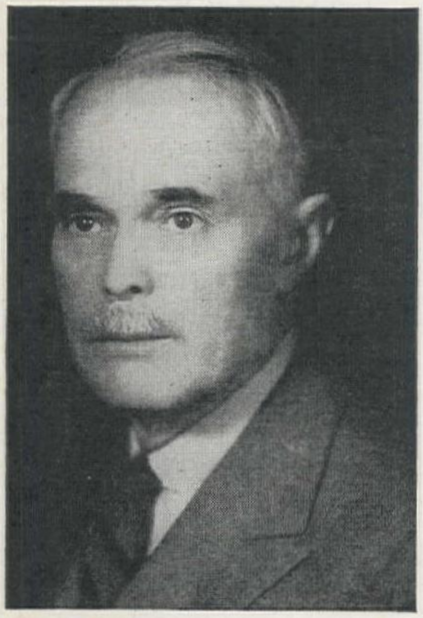
Col. Peter P. Goerz, former Seattle District Engineer, was awarded the Legion of

Merit for services as Liaison Engineer with the Air Force headquarters in the South Pacific where he frequently undertook long, fatiguing and hazardous aerial missions over combat zones to obtain first-hand information.

A. R. Arledge was appointed Chief Civil Engineer of the Department of Water and Power, Los Angeles, Calif., on Nov. 1, 1944.

Frank J. Currie, chief administrative assistant of the Los Angeles office, U. S. Engineer Department, has retired after 37 years of service.

James L. McNamara is the new building inspector and city engineer of Juneau, Alaska. During the paving of the city streets he was PWA engineer in Juneau.



J. S. BRIGHT was appointed Deputy Commissioner in charge of the Department of Construction and Maintenance of the Public Roads Administration. He organized the Public Roads office in Honolulu in 1924 and recently has directed American and Canadian contractors in the construction of the Alaska Highway.

E. H. Thomas is construction engineer for Robert E. McKee, general contractor, on construction work at the El Toro Marine Base, Calif.

Col. Francis K. Newcomer, Corps of Engineers at Schofield Barracks, Hawaii, has been promoted to the rank of Brigadier General.

W. A. Metz has been appointed to fill the unexpired term of the late **Frank O'Leary** as county surveyor of Humboldt County, Nev.

A U. S. Maritime ship has been named after **John Hays Hammond,** the celebrated San Francisco, Calif., engineer.

SUPERVISING THE JOBS

Ed. Ferguson is general superintendent for Theodore A. Beyer Corp. and J. K. Thomas Co., Los Angeles, Calif., on their $580,000 contract to build the St. Francis Hospital at Imperial and Century Blvds., Lynnwood, Calif. **D. O. Wright** is carpenter foreman and **Larry Cunningham** is office manager. **R. E. Kelly** is superintending the placing of the reinforcing steel for the Ceco Steel Products Corp., Los Angeles, Calif. Earl O. Stice Co., Los Angeles, Calif., has the plumbing subcontract.

Harry D. Page is general superintendent for Shannahan Bros., Inc., Huntington Park, Calif., on a contract calling for improvements on the Alamitos Bay and Ocean Beach project at Long Beach. This is a joint project by the State of California, the County of Los Angeles and the City of Long Beach. **Harold F. Convoy** is rock superintendent, **C. D. Holmes** is timekeeper, **George E. Baker** is the city engineer of Long Beach and **H. M. (Dick) Crooker** is resident engineer for the State.

Neal Folger, superintendent for Macco Construction Co., Oakland, Calif., is in charge of the construction of a levee at the Oakland Municipal Airport. Other key men working on this $176,990 contract are **Trace Baker** as job superintendent, **Bob Poss** as paymaster, **J. G. Rawhouser** as engineer, and **Charles Prosser** as purchasing agent. This veteran crew for Macco has worked together on several important construction jobs.

Harry Woods is superintendent for Peter Kiewit Sons' Co., A. Johnson Construction Co. and H. Everist, San Francisco, Calif., on a $769,007 contract. The contract calls for the construction of a parking apron, taxiways and runway extension and the installation of water service at the Fairfield-Suisun Army Air Field, near Fairfield. **M. K. Young** is paving superintendent and **E. W. Weatherman** is office manager.

George Bacus, veteran superintendent on airport construction, is in charge of the construction of a NW-SE runway at the Oakland Municipal Airport, Oakland, Calif. The $389,953 contract was awarded to Piazza & Huntley, San Jose, Calif. **Roy Copley,** who has had considerable experience in this type of work, is the assistant superintendent.

Charles Holman is superintendent for subcontractor L. S. Hutchinson Co. on excavation work for the United Concrete Pipe Co. at Seal Beach, Calif. The Hutchinson Co. has specialized on dam construction and dirt moving.

A. W. (Bill) Poulton, general superintendent for the Austin Co., Oakland, Calif., is in charge of alterations and additions to the White Motor Co. Building, Los Angeles. Poulton was formerly general superintendent on the Morro Bay Amphibian Landing Project and several buildings for North America in the Inglewood area. **Frank Matchette** is general foreman on the White Motor construction.

Jack Moore is superintending a $147,992 contract awarded to Ford J. Twaits Co., Los Angeles, Calif. The contract calls for the construction of officers' quarters and Wave housing at the U. S. Navy Advance Base Personnel Depot, San Bruno. Other key men include **Leo P. Raffaell** as job engineer, **J. L. Cooley** as field engineer and **Robert W. Hoggan** as purchasing agent.

Claude Elsea is superintending a $119,164 contract that was awarded to Stolte, Inc., Oakland, Calif. The contract calls for the paving of areas around two warehouses at the Naval Air Station, Alameda. **B. Hedberg** is project manager of the work. Elsea and Hedberg have been working together in these same capacities for some time and are veteran construction men for Stolte.

George Baxter is general superintendent for Wesco Construction Co., Los Angeles, Calif., on the Western Terrace project. The contract calls for the construction of a community building and 500 portable dwelling units at San Pedro. **William Rheaume** is the general foreman and **Arthur Smith** is the engineer of the job. C. W. Cook Co. is in charge of general engineering on the project.

W. J. Darkenwald is superintendent of construction for Morrison-Knudsen Co., Los Angeles, Calif., on a job at the Fairfield-Suisun Auxiliary Air Field. The $181,241 contract includes grading the apron and taxiway areas, placing a base course and installing drainage facilities. **M. D. Muller** is office manager.

Olen E. Evans is superintending a $700,000 job for the Griffith Co., Los Angeles, Calif., calling for the construction of additional facilities at the San Diego Naval Repair Base. Carpenter foremen are **Wm. F. Booker, Art Andrews** and **Fred Carlson. Emil Sheldon** is equipment superintendent and **E. N. Milnor** is the office manager.

Dan Pace, formerly superintendent on the Alamitos Bay and Ocean Beach project, is now superintendent for Shannahan Bros., Inc., Huntington Park, Calif., on dredging work below Parker Dam on the Colorado River.

Oscar Nyberg is superintending the surfacing of 12.0 mi. of the Jones Prairie timber access road in Oregon. The $68,900 contract was awarded to the Nyberg Construction Co., Yardley, Wash. **Charles P. Hall** is general foreman of the job. If

Official U. S. Navy Photograph.

New beachheads are being established through coordination of many different branches and divisions of our armed forces. Air Corps . . . Navy . . . Marines . . . Army . . . Seabees and every other command that operates with them. It is teamwork that makes the landing possible.

Coordination in Industry, too, has contributed mightily to the war effort. Faced with the many difficulties requiring "increased production with reduced man power," the Construction Industry has performed miracles through coordination of their own facilities.

We salute our Fighting Men, and pay tribute to those on the home front who have provided the essential materials and equipment. American teamwork will never be defeated.

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

WIRE ROPE MAKERS — ESTABLISHED 1857

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

"HERCULES" (RED-STRAND) WIRE ROPE

NEW YORK	90 West Street
CHICAGO	810 W. Washington Blvd.
DENVER	1554 Wazee Street
SAN FRANCISCO	520 Fourth Street
PORTLAND	914 N. W. 14th Avenue
SEATTLE	3410 First Avenue South

weather permits, the work will be completed this year.

Superintendent **Hakes** is in charge of the transporting and erecting of 24 prefabricated cemesto dwelling units for the Naval Petroleum Reserve No. 1, Elks Hills, Tupman, Calif. Drycemble Houses, Inc., Los Angeles, Calif., was awarded this $90,000 contract. **Charles Lentz** is the project manager.

Emil Lindstrom is to be superintendent of the reconstruction and redecking of the Hawthorne St. bridge and approaches in Portland, Ore. The $303,715 contract, awarded to L. H. Hoffman of Portland, is being held up because of delay in the delivery of materials. The actual reconstruction work will begin about Feb. 1, 1945.

Connie Clewis is superintendent and **W. A. Harrison** is job engineer on a $44,359 contract awarded to R. W. Hampton Co., Inc., Los Angeles, Calif. The contract calls for the grading and surfacing of about 1.0 mi. of road between the north reservation gate and Muroc School in Kern County.

Harry J. Rilinger is a veteran general superintendent for J. A. Bryant, contractor and builder of Vallejo, Calif. The company is constructing a 40-bed infirmary building in Vallejo with **Greg Gaunt** as superintendent and a 60-unit housing project at Vacaville with **William L. Magill** as superintendent.

KNUD JENSEN

Knud Jensen, superintendent for Carl N. Swenson Co., San Jose, Calif., is in charge of the construction of a factory at Newhall St. and Campbell Ave. in San Jose. The $165,000 contract calls for an 85,000 sq. ft. floor area to be used in the processing of foods. **George Lauer** is another key construction man on this job. Jensen supervised the construction of shop structures and a hangar at Moffett Field recently and is a veteran superintendent for the Swenson Co.

Walter S. Goodman is superintending the construction of freight warehouses and the installation of utilities at the Ogden arsenal in Utah. Robert E. McKee, Los Angeles, Calif., was awarded the $159,855 contract.

Oscar Meyers is the superintendent of construction on a $186,450 contract awarded to Carl N. Swenson Co., San Jose, Calif. The contract calls for the construction of a motion picture theater, chaplain's office, additions to the barracks, and recreation building at Hunter's Point, San Francisco.

S. N. Foster, superintendent for Uvalde Construction Co., Dallas, Tex., is in charge of the construction of additional parking aprons at the airfield near Pyote, on a $220,684 contract. **S. B. Willis** is accountant on the job.

M. J. Abrahamson is superintending a $150,209 contract awarded to Trewhitt, Shields & Fisher, Fresno, Calif. The contract calls for the construction of an apron and a hangar at Mather Field, near Sacramento.

Howard R. Post is superintending the construction of a market and receiving dairy plant in Salem, Ore. The $105,532 contract was awarded to Ed. R. Viesko, Salem. **Claude H. Post** is the general manager.

D. H. Skatzes is office manager for Hunt & Frandsen on excavation work at Rough and Ready Island, Stockton, Calif. Other key men are **Ben Walton** as superintendent, **Otis Fox** as master mechanic, and **Ding Turner** as foreman.

Leonard Nothaft, superintendent for the Grinnell Co., Kansas City, Mo., is in charge of the furnishing and installation of a sprinkler system at the Pueblo Ordnance Depot, Pueblo, Colo. **John F. Stebe** is general superintendent of the work.

H. W. Calder is superintendent on a job calling for the supplementing of the water supply on Treasure Island, San Francisco, Calif. **David Love** is project manager and **O. L. Lewis** is purchasing agent of this $127,500 contract that was awarded to Miller & Stoutenberg of Oakland.

Wm. Crane, superintendent for Allison Honer Co., Santa Ana, Calif., is in charge of a $406,500 contract to complete the radio-radar building at the San Diego Naval Air Station. **R. H. Wallace** is office manager.

Wm. M. Willis, superintendent for Halvorson Construction Co., Salem, Ore., is in charge of the construction of 115 dwelling units at Pasco, Wash. **Emmett Nelson** and **Ed. Norskog** are carpenter foremen on this $348,780 contract.

Eric Salem is superintending the construction of 500 portable dwelling units on the Western Terrace project at San Pedro, Calif. This contract was awarded to Shumaker & Evans, Los Angeles.

J. J. Foote is superintendent in charge of the construction of receiving barracks and personnel facilities at Camp Shoemaker, near Oakland, Calif. M. J. King, Inc., San Francisco, was awarded this $285,356 contract.

T. E. Harris is superintending the construction of a nurses' home in Ogden, Utah. The $239,051 contract was awarded to Edw. L. Eckman of Salt Lake City. **S. H. Richards** is the general foreman.

George Keys is superintendent and **Don E. Parrott** is engineer for the Olympic Construction Co., Los Angeles, Calif., on a contract calling for the grading and paving of the Western Terrace project at San Pedro.

George R. Putnam is project manager for the Utah-Pomeroy Construction Cos. on the construction of a warehouse at the Naval Supply Depot, Clearfield, Utah.

UNIT BID SUMMARY

Bridge and Grade Separation...

Washington—Clallam County—State—Bridge & Surf.

The Sound Construction & Engineering Co., 1403 West 45th St., Seattle, was awarded a $138,932 contract by the State Department of Highways, Olympia, to clear, grade, surface and construct a bridge and drainage facilities on 9.4 mi. of State Highway 9 from Station 90+10 to 586+90 in vicinity of Lake Crescent. Bids were as follows:

(1) Sound Constr. & Engr. Co. $138,932
(2) Hawkins & Armstrong 140,639
(3) L. Coluccio Co. 144,759
(4) J. D. Shotwell Contractor $148,681
(5) M. P. Butler 158,133

	(1)	(2)	(3)	(4)	(5)
1.06 ac. clear	650.00	600.00	250.00	150.00	300.00
0.84 ac. grub	600.00	200.00	300.00	150.00	300.00
500 cu. yds. unclass. excav.	2.65	.50	.60	.75	1.00
150 cu. yds. special excav.	2.65	2.00	1.25	2.25	2.00
2,520 cu. yds. com. borrow	1.00	1.00	.60	.75	1.00
1,000 cu. yds. com. trench excav.	2.65	2.00	1.25	1.50	2.50
2,905 cu. yds. struct. excav.	2.65	3.00	2.00	2.25	2.50
8.1 stas. (100 ft.) finish roadway	30.00	15.00	12.00	15.00	15.00
2,740 cu. yds. gravel backfill	1.25	2.00	1.75	2.25	3.00
9.2 mi. scarify and shape road	350.00	500.00	750.00	$1,000	400.00
187 cu. yds. conc., Class A	50.00	50.00	42.00	48.00	50.00
26,400 lbs. steel reinf. bars	.075	.07	.08	.10	.06
330 cu. yds. loose riprap, Class "A"	5.00	2.50	2.50	4.50	3.00
4 cu. yds. hand placed riprap	15.00	30.00	10.00	7.50	5.00
14 only conc. r/w markers	4.00	5.00	3.00	9.00	7.00
9,580 cu. yds. stone surf., top course	1.89	2.25	2.20	1.90	2.50
14,670 cu. yds. stone surf., base course	1.48	1.75	2.10	1.70	2.50
2,170 cu. yds. stone filler	2.00	2.25	2.20	2.20	2.70
500 M. gals water	2.00	2.50	3.00	2.00	2.00
2,350 cu. yds. cover stone in stockpile	1.65	1.50	2.10	1.30	1.50
MIN. AGGREG. FOR NON-SKID SEAL TREATMENT, SCHED. A, IN STOCKPILES					
1,550 cu. yds. coarse screenings, 5/8-in. to 1/4-in.	2.00	2.25	2.40	2.30	1.50
470 cu. yds. fine screenings, 1/4-in. to 0	2.00	2.50	2.40	2.10	1.50
LIGHT BITUM. SURFACE TREATMENT, METHOD A					
9.4 mi. prepare, construct and finish	350.00	350.00	450.00	450.00	360.00
263 T. bitum. cement, MC-2	35.00	35.00	38.00	35.00	36.00
2,140 cu. yds. place cover stone from stockpile	2.30	1.65	2.00	2.00	1.75
MISCELLANEOUS ITEMS					
Lump sum, construct and remove detour bridge	$3,800	$2,500	$3,500	$4,500	$3,000
12 lin. ft. relay conc. pipe, 18-in. diam.	1.00	5.00	1.00	1.35	1.00
40 lin. ft. plain conc. or V.C. drain pipe, 6-in. diam.	.60	1.00	.60	1.12	1.00
726 lin. ft. plain conc. or V.C. culv. pipe, 18-in. diam.	2.70	3.00	2.40	3.25	2.50
429 lin. ft. std. reinf. conc. culvert pipe, 18-in. diam.	3.20	3.60	3.00	4.00	3.50
126 lin. ft. std. reinf. conc. culvert pipe, 24-in. diam.	5.25	6.00	3.90	6.22	4.50
BRIDGE					
250 cu. yds. struct. excav.	3.00	3.50	5.00	1.50	15.00
212 cu. yds. conc., Class A	60.00	38.50	38.00	53.00	45.00
30 cu. yds. conc., Class F	38.00	38.50	35.00	40.00	45.00
55 cu. yds. conc., Class H	30.00	38.50	30.00	40.00	45.00
71,000 lbs. steel reinf. bars	.068	.07	.08	.10	.06
184 lin. ft. reinf. conc. bridge railing	6.65	6.00	5.00	9.00	5.00
2 only bridge drains	65.00	50.00	30.00	45.00	25.00
Lump sum, remove exist. struct.	2,400	500.00	350.00	$1,500	.....

Highway and Street...

Washington—King County—State—Surf.

Northwest Construction Co., Seattle, Wash., bid low at $105,641 to the Washington Department of Highways for the construction of 1.0 mi. of bituminous surfaced highway from sta. 504+03 to sta. 557+59 from the Duwamish River south. The units bids were:

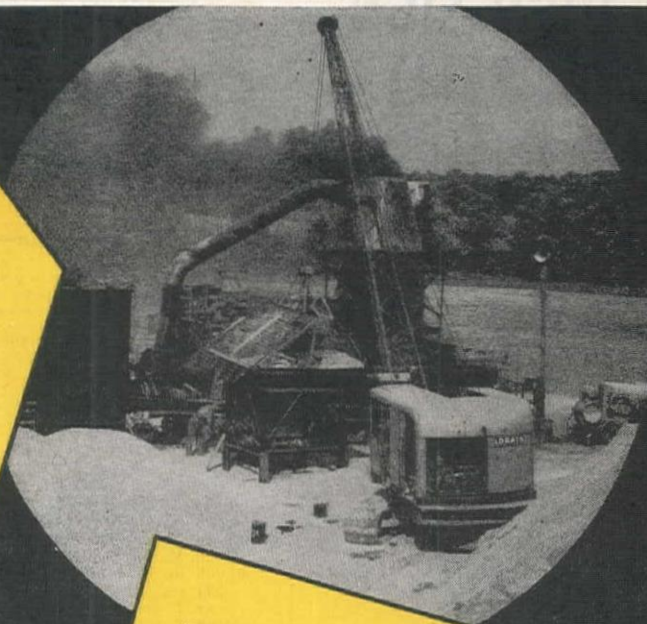
(1) Northwest Construction Co. $105,641
(2) Fiorito Bros. $111,186

	(1)	(2)
1,340 cu. yd. uncl. excav., incl. haul	.75	.75
40 cu. yd. trench excav., incl. haul	2.00	2.00
240 cu. yd. structure excav., incl. haul	2.00	2.00
53.6 sta. (100 ft.) finish roadway	10.00	15.00
3,980 cu. yd. crush. stone, 1½ in. - ¼ in., in place	1.80	3.20
6,320 cu. yd. crush. stone, 1½ in. - 0, in place	1.80	3.20
230 cu. yd. crush. stone filler in place	2.00	3.20
25 M. gal. water	3.00	4.00
25,719 sq. yd. cem. conc. pav. (8 in. section) in place	2.55	2.11
444 sq. yd. cem. conc. pav., early strength	2.83	2.35
BITUM. SURF. TREAT. "PLANT MIX" TYPE—CLASS F		
1,110 sq. yd. prep. of untreat. roadway	.09	.075
2 T. bitum. cem. MC-2 (prime coat)	42.00	40.00
14 cu. yd. furn. and place. fine min. aggre.	3.25	3.15
229 T. furn. mix. and plac. bitum. mix.	13.00	12.00
LIGHT BITUM. SURF. TREAT.—METHOD A		
14,060 sq. yd. prep. const. and finish. shoulders	.06	.05
32.9 T. bitum. cement MC-2 in place	32.00	30.00
303 cu. yd. furn. and plac. cr. cover stone	3.25	3.15
NON-SKID SINGLE SEAL TREAT.—SCHED. A		
17.3 T. bitum. cement RC-5 in place	37.00	35.00
197 cu. yd. furn. and plac. crse. screen ⅝ in. - ¼ in.	4.00	3.75
60 cu. yd. furn. and place fine screen ¼ in. - 0	4.00	3.75
MISCELLANEOUS ITEMS		
2,833 lin. ft. std. beam gd. rail, Type No. 2, Des. No. 5, in place	.50	.70
2 only std. conc. or brick manhole (under 10 ft.)	150.00	170.00

(Continued on next page)

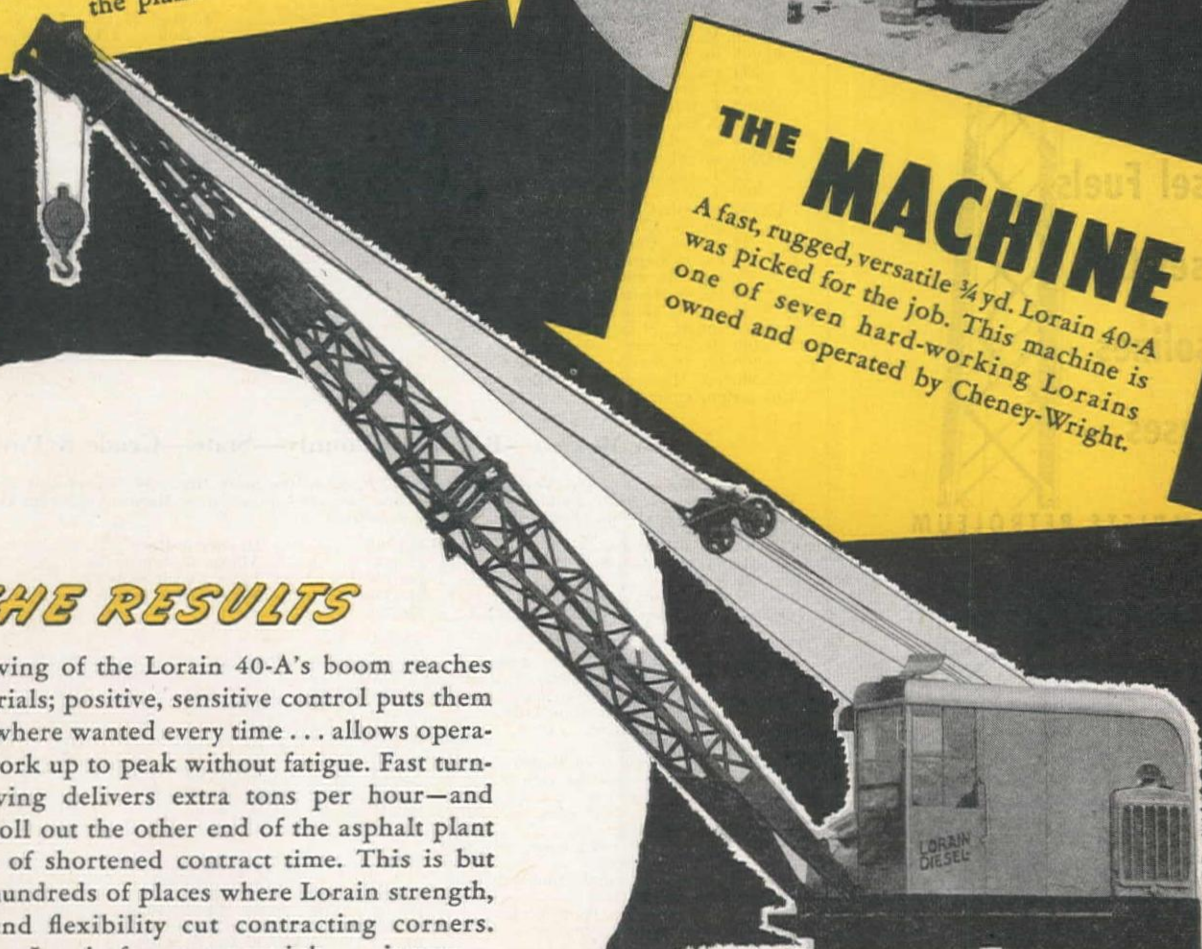
THE JOB

The job was to add new mileage to General Motors' famous Proving Ground at Brighton, Michigan. To do this swiftly, economically, Cheney-Wright Company moved a portable asphalt plant and materials out right onto location. The big problem then was to keep a heavy flow of materials moving swiftly and continuously from separate stock piles into the plant.



THE MACHINE

A fast, rugged, versatile ¾ yd. Lorain 40-A was picked for the job. This machine is one of seven hard-working Lorains owned and operated by Cheney-Wright.



THE RESULTS

Wide swing of the Lorain 40-A's boom reaches all materials; positive, sensitive control puts them exactly where wanted every time . . . allows operator to work up to peak without fatigue. Fast turntable swing delivers extra tons per hour—and profits roll out the other end of the asphalt plant in form of shortened contract time. This is but one of hundreds of places where Lorain strength, speed and flexibility cut contracting corners. Look into Lorain for your next job . . . it pays.

Reg. Trade Mark

thew. Lorain

THE
THEW SHOVEL CO.
Lorain, Ohio

CRANES · SHOVELS · DRAGLINES · MOTO-CRANES

*Le Roi-Rix Machinery Co., Los Angeles 11; Cate Equipment Co., Salt Lake City 4; *Liberty Trucks & Parts Co., Denver 1; *Coast Equipment Co., San Francisco 1; Wilson Equipment & Supply Co., Cheyenne, Wyo.; *A. H. Cox & Co., Seattle 4, Wash.; *Columbia Equipment Co., Portland 14, Ore., Spokane, Wash.; Bunting Tractor Co., LaGrande, Ore. - Boise and Twin Falls, Ida.; State Tractor & Equipment Co., Phoenix, Ariz.; Connelly Machinery Company, Billings and Great Falls, Mont.; Sanford Tractor & Equipment Co., Reno, Nevada; The Mountain Tractor Company, Missoula, Mont.; The Tractor & Equipment Co., Sidney, Mont.

*Carries a representative stock of spare parts.

11 only spec. conc. catch basin	60.00	75.00
2 only spec. dbl. conc. catch basin	75.00	100.00
6 only const. exist. conc. catch basin to grade	30.00	35.00
6,857 sq. yd. break. exist. cem. conc. pave	.25	.25
3,099 sq. yd. remov. exist. cem. conc. pave	.40	1.00
567 lin. ft. remov. exist. guard rail, Type No. 2	.30	.25
2,938 lin. ft. remov. exist. guard rail, Type No. 3	.30	.25
607 lin. ft. remov. exist. cem. conc. gtr. and spillways	.30	.25
1,590 lin. ft. pl. conc. or V.C. drain pipe 4 in. diam	.40	.50
134 lin ft. pl. conc. or V.C. drain pipe 6 in. diam	.60	.70
1,745 lin. ft. pl. conc. or V.C. culv. pipe 12-in. diam	1.25	1.25
6 lin. ft. pl. conc. or V.C. culv. pipe 18-in. diam	3.00	3.00
12 lin. ft. pl. conc. or V.C. culv. pipe 24-in. diam	5.00	4.50

California—San Diego County—State—Grade & Pave

Basich Bros. Construction Co., Alhambra, Calif., bid low at $234,230 to the Division of Highways, Sacramento, to grade and pave with asphalt concrete and Portland cement concrete 4.7 mi. of highway between Palm Avenue and Coronado. The following bids were submitted:

(1) Basich Bros. Construction Co. $234,230
(2) Griffith Co. 247,153
(3) R. E. Hazard & Sons Contracting Co. 274,799
(4) V. R. Dennis Construction Co. $284,928
(5) Ralph O. Dixson 300,387

	(1)	(2)	(3)	(4)	(5)
250 cu. yd. remove conc.	2.50	4.50	3.00	4.50	5.00
Lump sum, clear. & Grub.	$1,000	$1,200	$2,000	$1,000	$8,750
32,000 cu. yd. road. excav.	.40	.46	.34	.36	.50
115 cu. yd. struct. excav.	2.50	1.80	1.50	3.00	4.00
26,000 cu. yd. import. borrow	.75	.73	.83	.60	.70
460,000 sta. yd. overhaul	.006	.008	.005	.01	.013
34,000 cu. yd. import. subgrade mt'l.	1.00	1.03	1.20	.60	1.00
Lump sum, develop water and furnish equip.	$3,000	$7,150	$3,000	$5,200	$5,000
5,500 M. gal. apply water	2.00	1.45	1.25	1.00	2.25
60,000 sq. yd. prep. subgrade	.08	.14	.05	.12	.13
244 sta. finish. road.	8.00	5.00	15.00	15.00	15.00
80 T. crush. run base	2.50	4.00	3.00	4.00	3.00
100 T. liq. asph., MC-2 (prime coat)	18.00	21.00	16.00	26.00	35.00
460 T. liq. asph., MC-2 or 3 (R.M.S.)	18.00	17.75	16.00	23.00	20.00
4,200 cu. yd. mineral aggreg. (R.M.S.)	1.50	2.00	2.25	2.10	2.75
48,000 sq. yd. mix. and compact. (R.M.S.)	.07	.11	.14	.22	.07
22 T. asph. emulsion	22.00	30.00	40.00	65.00	40.00
400 T. asph. conc. (Type "B" surf.)	5.00	5.20	5.15	6.50	5.50
12,200 cu. yd. Class "B" P.C.C. (pave.)	9.50	9.54	12.10	13.70	12.40
5 cu. yd. Class "A" P.C.C. (struct.)	3500	55.00	42.00	75.00	65.00
30 cu. yd. Class "A" P.C.C. (curbs)	70.00	28.00	40.00	40.00	35.00
59 ea. monuments	3.00	4.50	5.00	4.00	5.00
252 ea. culv. mkrs. and guide posts	2.50	5.25	2.00	4.50	4.00
44 lin. ft. 18-in. R.C.P. (3000-D)	3.50	3.85	5.00	4.00	5.00
28 lin. ft. 18-in. R.C.P. (std. str.)	3.25	3.20	4.25	3.20	4.50
34 lin. ft. 24-in. R.C.P. (std. str.)	3.50	4.40	5.50	4.00	5.50
400 lb. bar reinf. steel	.08	.10	.12	.10	.10
360 lin. ft. remove and salvage barrier rail	.80	.75	.50	.50	1.50
2,300 ea. Mesembryanthemum edule cuttings	.05	.07	.06	.07	.07
Lump sum, engineer's office	300.00	500.00	7[illegible]0.00	$1,000	750.00

New Mexico—Roosevelt County—State—Grade & Pave

W. T. Bookout of Las Vegas, bid low at $228,188 to the State Highway Department and was awarded the contract to excavate, build culverts, grade and pave 28.4 mi. of State Highway 92 from Dora to the New Mexico-Texas State line. Following bids were submitted:

(1) W. T. Bookout $228,188
(2) Henry Thygesen & Co. 235,549
(3) Brown Bros. 240,130
(4) D. D. Skousen 247,336
(5) Walter L. Denison 256,769
(6) Hayner & Burn $278,085
(7) Allison & Armstrong 316,225
(8) Peter Kiewit Sons Co. 326,149
(9) M. M. Sundt Constr. Co. 361,947

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lump sum, remove old drain structs	250.00	100.00	100.00	100.00	50.00	100.00	200.00	200.00	300.00
20,000 cu. yd. excav. (unclass.)	.16	.30	.25	.40	.50	.20	.40	.33	.50
210 cu. yd. excav. for structs	1.00	1.50	2.00	2.00	1.50	1.00	1.50	2.15	2.50
110 cu. yd. excav. for pipe culv.	1.00	1.50	2.00	2.00	1.50	1.00	2.00	2.15	2.00
50,200 sta. yd. overhaul	.02	.04	.02	.02	.04	.03	.03	.01	.03
8,700 ¼ mi. yd. haul	.05	.10	.10	.05	.10	.10	.10	.10	.10
1,053 hr. roll (steel tired roller)	4.50	5.00	5.00	5.00	3.25	4.00	4.50	5.00	5.00
1,036 hr. roll (Sheepsfoot roller)	4.50	4.50	4.00	5.00	4.00	5.00	5.00	6.00	6.00
1,663 M. gal. watering	2.00	2.00	3.00	3.50	5.00	4.00	5.00	4.20	3.50
203.6 cu. yd. class "A" conc. box culv.	26.00	30.00	24.00	40.00	30.00	30.00	42.00	40.00	45.00
25,684 lbs. reinf. steel	.06	.08	.07	.08	.07	.10	.09	.09	.08
208 lin. ft. stand. reinf. conc. culv, pipe 24 in. diam.	5.00	4.50	5.00	6.00	4.50	5.00	6.50	7.00	5.75
96 lin. ft. stand. reinf. conc. culv. pipe 36 in. diam.	7.00	7.50	9.00	10.00	9.00	10.00	11.50	11.00	8.50
2 ea. reinf. conc. monument	35.00	50.00	50.00	50.00	50.00	20.00	35.00	45.00	40.00
180 ea. right of way marker	4.50	5.00	3.00	6.00	5.00	5.00	4.00	15.00	5.00
0.77 mi. obliterate old road	100.00	250.00	200.00	100.00	400.00	$1,000	100.00	850.00	350.00
24.41 mi. widen shoulders	780.00	150.00	700.00	375.00	300.00	500.00	280.00	700.00	950.00
52,243 T. base course surf.	.78	.85	.90	.78	.90	.99	1.25	1.20	1.35
71,460 T. ballast	.60	.75	.70	.75	.78	.94	1.08	.98	1.10
21,676 T. top course surf.	.78	.85	1.00	.75	.90	1.12	1.25	1.20	1.41
2,501 T. cover material	5.00	3.60	3.00	4.00	4.50	3.70	4.00	3.80	4.70
2,382 bbl. cutback asphalt, type MC-1	3.25	4.00	3.10	4.50	4.35	4.30	4.60	5.40	5.90
9,925 bbl. cutback asphalt, type MC-3	4.50	4.00	3.10	4.50	4.35	4.10	4.60	5.40	6.00
2,382 bbl. 200-300 penetration asphalt	3.25	4.50	3.10	4.50	4.50	4.30	4.70	5.70	6.00
28.42 mi. mixing asph. and aggreg.	300.00	450.00	700.00	400.00	400.00	600.00	650.00	600.00	500.00

California—Humboldt County—State—Slide Area

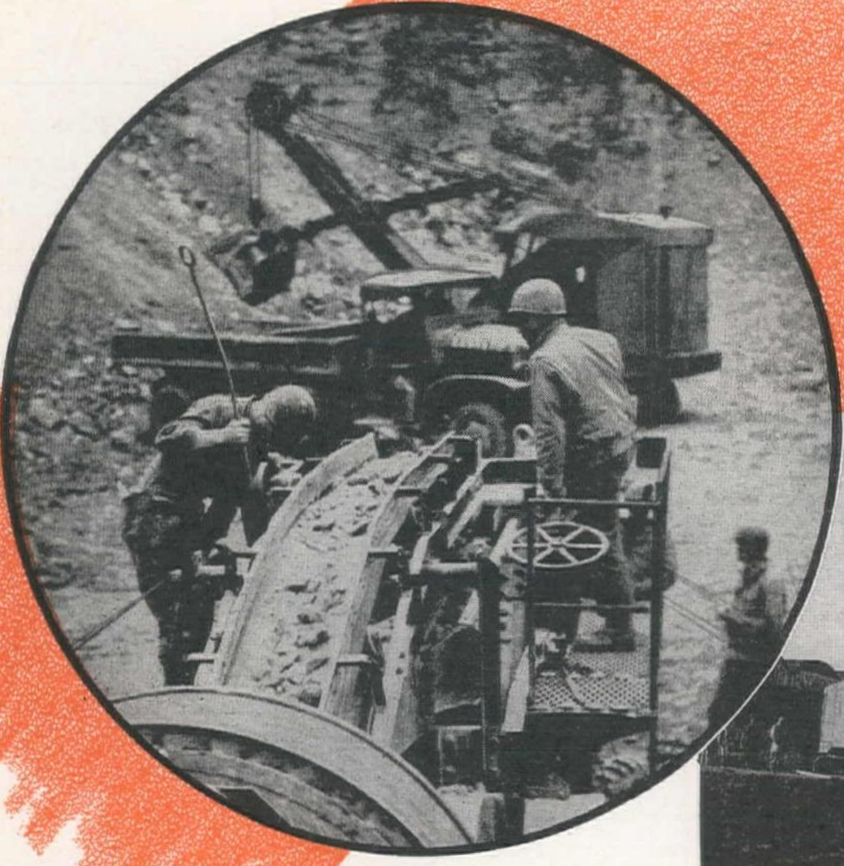
E. B. Bishop of Orland, bid low at $69,673 to the Division of Highways to stabilize a slide area for a distance of about 0.1 mi. at Benbow. Bids were:

(1) E. B. Bishop $69,673
(2) Frank E. Young 76,343
(3) Scheumann & Johnson 80,186
(4) C. M. Syar 82,232
(5) R. A. Farish $89,043
(6) J. Henry Harris 89,987
(7) Guerin Bros. 97,226
(8) N. M. Bell Sons 118,888

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
6 ac. clear & grub	530.00	600.00	500.00	500.00	650.00	625.00	400.00	700.00
66,000 cu. yd. roadway excav.	.77	.79	.90	.80	1.00	.91	.98	1.25
3,300 cu. yd. top soil	.70	.40	1.00	.60	.55	.91	1.00	.60
400 cu. yd. struct. excav.	2.75	3.50	2.00	4.00	3.00	3.75	4.00	4.00
7,300 cu. yd. trench excav.	.85	.80	1.00	1.50	1.00	1.03	1.75	1.50
5,500 cu. yd. trench backfill	.60	.50	.50	.80	.50	1.00	.75	1.50

(Continued on next page)

TOTAL WAR—ALLIED VERSION



FRANCE — A 15-B shovel loads rock for a crusher. *(Signal Corps Photo)*

ENGLAND — A 22-B crane unloads rations. *(Signal Corps Photo)*

SICILY — A 15-B crane unloads landing mats *(Signal Corps Photo)*

SOUTHWEST PACIFIC — A 37-B shovel supplies trucks with aggregate. *(Official Navy Photo)*

Fine excavating equipment in the hands of skilled men — the weapon the Axis overlooked — is one of the distinguishing marks of total war, Allied version.

Leaders always, Bucyrus-Eries on all the fighting fronts are adding to the effectiveness of Allied total war. And their outstanding features of design and workmanship will put Bucyrus-Eries in the front ranks of tomorrow's reconstruction.

V-69C

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

WASHINGTON: Bucyrus-Erie Co., 3408 First Ave. So., Seattle 4; Clyde Equipment Co., 3410 First Ave. So., Seattle 4; Construction Equipment Co., 1118 Ide Ave., Spokane I. OREGON: Clyde Equipment Co., 17th and Thurman Sts., Portland 9. CALIFORNIA: Bucyrus-Erie Co., 390 Bayshore Blvd., San Francisco 24; Crook Co., 2900 Santa Fe Ave., Los Angeles 11. UTAH: The Lang Co., 267 W. First So., Salt Lake City 9. COLORADO: Ray Corson Machy. Co., 1646 Wazee St., Denver 2. IDAHO: Intermountain Equipment Co., Broadway at Myrtle, Boise. NEW MEXICO: R. L. Harrison Co., 209 North Fourth St., Albuquerque. ARIZONA: O. S. Stapley Co., 723 Grand Ave., Phoenix. MONTANA: Westmount Tractor & Equipment Co., 150 E. Spruce St., Missoula. ALASKA: Northern Commercial Co., 419 Colman Bldg., Seattle 4, Wash.

1,900 cu. yd. gravel backfill	.80	4.00	1.00	3.00	2.50	3.10	3.00	4.00
15 cu. yd. Cl. "A" P.C.C.	40.00	70.00	50.00	50.00	40.00	63.00	100.00	60.00
1,300 lb. place bar reinf. steel	.10	.04	.10	.20	.08	.06	.15	.15
178 lin. ft. place 24-in. C.M.P. culverts	1.00	1.25	2.00	1.50	1.40	4.00	2.00	1.50
160 lin. ft. place 24-in. P.M.P. underdr.	1.00	1.50	2.00	2.00	1.10	4.00	2.00	1.50
1 ea. redwood cover for inlet	15.00	25.00	25.00	50.00	20.00	150.00	25.00	50.00
0.12 mi. move and reset fence	$1,000	600.00	$1,000	$1,000	$1,200	$1,600	$1,500	800.00
2 ea. culvert markers	5.00	3.00	5.00	5.00	5.00	5.00	10.00	5.00
5 ea. monuments	5.00	5.00	5.00	5.00	5.00	7.50	10.00	10.00

Airport . . .

California—San Diego County—Navy—Grade & Pave

Casson & Ball, 22105 Meekland Ave., Hayward, submitted the low bid of $1,263,277 to the Public Works Office of the Navy to grade and pave parking areas at the 11th Naval Base at San Diego. Bids were:

(1) Casson & Ball....$1,263,277
(2) J. A. Terteling Co.... 1,312,751
(3) Clyde W. Wood Co.... 1,322,659
(4) United Conc. Pipe Corp.... 1,370,527
(5) Macco Construction Co.... 1,371,845
(6) Bressi-Bevanda Constr. Co....$1,421,890
(7) Kiewit, Johnson & Everist.... 1,429,197
(8) Haddock-Engineers, Ltd.... 1,444,767
(9) Griffith Co. 1,450,060

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
117,000 cu. yd. excav.	.75	1.00	.79	.85	.90	7.15	.70	.78	.74
102,450 cu. yd. PCC, pav.	11.31	11.40	11.80	12.25	11.95	12.25	12.95	12.80	13.15
2 ea. con. manholes	175.00	600.00	375.00	275.00	$1,500	$1,250	265.00	340.00	250.00
3 ea. conc. catch basins, single grate	175.00	300.00	150.00	160.00	400.00	375.00	140.00	210.00	175.00
2 ea. conc. catch basins, double grate	250.00	550.00	250.00	300.00	800.00	750.00	235.00	345.00	225.00
1,009 lin. ft. 15 in. std. str. reinf. conc. pipe	5.00	8.50	5.75	4.60	12.00	12.50	5.25	6.40	5.00
270 lin. ft. 21 in. std. str. reinf. conc. pipe	8.00	6.00	6.50	5.00	13.00	9.50	6.90	7.00	6.50
275 lin. ft. 24 in. std. str. reinf. conc. pipe	8.50	7.00	7.50	5.25	14.00	11.00	7.60	8.00	6.50
Lump sum, misc. work	$5,700	$12,500	$10,000	$7,000	$17,000	$19,000	$9,900	$29,600	$6,200

California—Alameda County—U.S.E.D.—Airport Runway

Piazza & Huntley, 175 S. Montgomery St., San Jose, bid low at $389,953 to the U. S. District Engineer Office, San Francisco, to construct a runway at the Oakland Municipal Airport, Oakland. The following bids were submitted:

(1) Piazza & Huntley....$389,953
(2) N. M. Ball Sons.... 393,806
(3) Guerin Bros. 396,144
(4) Fredrickson & Watson Constr. Co....$397,800
(5) Charles L. Harney.... 453,586
(6) Bressi & Bevanda 509,420

	(1)	(2)	(3)	(4)	(5)	(6)
225,000 cu. yds. unclass. excav.	.335	.30	.34	.34	.50	.65
48,800 T. select material	1.15	1.15	1.20	1.15	1.20	1.90
59,700 T. rock base	2.40	2.40	2.45	2.35	2.50	2.50
12,350 T. bitum. plant-mix	3.40	4.00	3.45	3.90	4.45	4.00
680 T. asph. plant-mix	15.00	16.00	20.00	14.00	20.00	15.00
200 T. bitum. prime coat	23.00	20.00	30.00	25.00	23.00	16.00
104 T. bitum. seal coat	20.00	20.00	35.00	25.00	25.00	18.00
104 T. aggreg. for seal coat	4.00	5.00	4.00	5.00	8.00	4.00
3,700 M. gals. water	1.50	2.00	2.00	2.00	2.10	2.00
10,865 sq. yds. 9-in. Port. conc. pav. with 12-in. edge	4.00	4.00	3.50	4.20	4.00	4.00
1,568 lin. ft. single 3-in. ducts	2.00	1.50	.75	1.50	1.15	1.00
923 lin. ft. bank of two 3-in. ducts	3.00	2.00	1.00	2.50	1.35	2.00
7,500 lin. ft. remove and salv. fence	.10	.50	.12	.15	.25	.20
800 lin. ft. reconst. fence from salv. mat'l	.25	1.50	.15	.30	.65	.40

California—Sacramento County—U.S.E.D.—Hangar & Apron

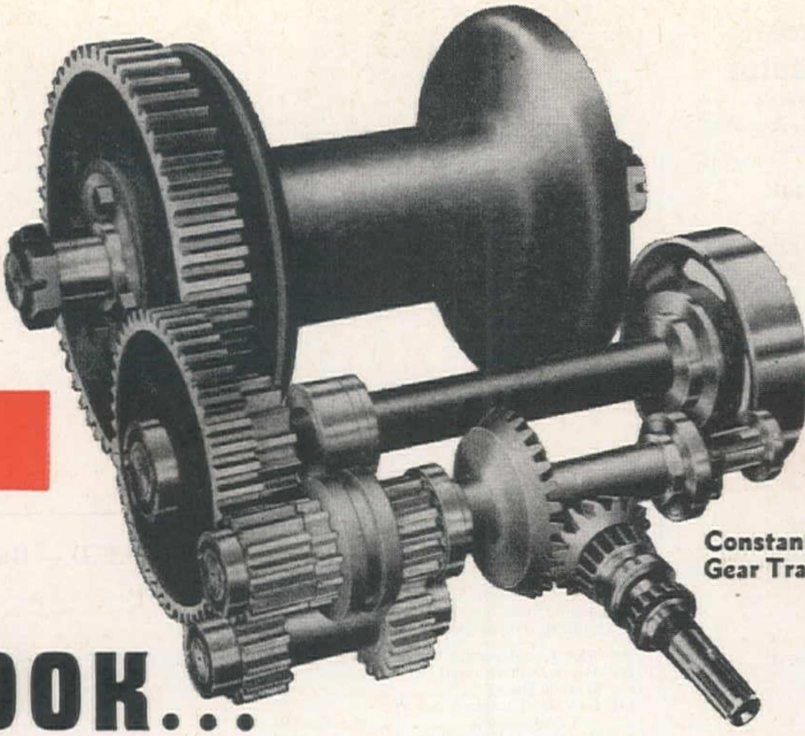
Moore & Roberts, 693 Mission St., San Francisco, bid low at $145,336 to the U. S. Engineer Office, Sacramento, to construct a hangar and apron at Mather Field near Sacramento. Bids were:

(A) Moore & Roberts....$145,336
(B) Trewhitt, Shields & Fisher.... 150,209
(C) H. W. Robertson.... 160,424
(D) Lawrence Const. Co.... 162,171
(E) A. J. Hopper.... 169,866
(F) G. W. Williams.... 173,816
(G) MacDonald & Kahn, Inc....$175,580
(H) Peter Kiewit, Al Johnson & Hubert Everist 176,746
(I) Guy E. Hall.... 177,725
(J) Franceschi Const. Co. 194,296

(1) 5,900 cu. yd. excav.
(2) 180 hr. 8 ft. roller.
(3) 70 hr. add'l. rolling.
(4) 120 hr. power rolling
(5) 50 hr. shpft. roller.
(6) 50 hr. pneum. tired roller
(7) 1,365 M. gal. water
(8) 3,645 T. base crs. aggreg., 1 in.
(9) 25,415 T. gravel fill.
(10) 1,440 T. plantmix asph. surf.
(11) 2,400 T. plantmix asph. level.
(12) 230 T. pav. asph.
(13) 36 T. liq. asph. MC2, prime coat
(14) 18 T. emuls. asph. RS1, tack coat
(15) 2 T. liq. asph. MC2
(16) 18 T. pave. asph. seal
(17) 135 T. coarse aggre.
(18) 4 ea. drop inlets, "A"
(19) 2 ea. drop inlets, "B"
(20) 205 lin. ft. 8-in. non-reinf. conc. pipe
(21) 340 lin. ft. 18 in. thick wall conc. pipe
(22) 700 lin. ft. 24 in. thick wall, std. pipe
(23) 250 lin. ft. remove 12 in. conc. pipe
(24) 370 cu. yd. "A" conc. fdn. walls
(25) 1,200 cu. yd. "A" conc. floors
(26) 555 bbl. Port. cement, hi-early str.
(27) 1,800 bbl. Port. cem. at mix. plant
(28) 22,000 lb. reinf. steel
(29) Lump sum, hangar and lean-to
(30) Lump sum, water serv.
(31) Lump sum, sewer serv.
(32) Lump sum, gas serv.
(33) Lump sum, relocate 2 fire hydrants
(34) Lump sum, remove sewer serv.
(35) Lump sum, remove water serv.
(36) Lump sum, remove gas serv.

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
(1)	1.10	.80	1.05	1.02	1.10	1.00	.80	1.15	1.10	1.10
(2)	7.70	8.50	7.35	7.12	7.00	7.50	8.70	8.10	7.70	7.70
(3)	1.10	1.10	1.05	1.02	1.00	1.10	1.10	1.15	1.10	1.10
(4)	6.60	5.85	6.30	6.12	6.00	6.50	6.00	6.90	6.60	6.60
(5)	11.00	10.60	10.50	10.20	10.00	11.00	21.50	11.50	11.00	11.00
(6)	11.00	10.60	10.50	10.20	11.00	11.00	21.50	11.50	11.00	11.00
(7)	1.37	1.60	1.31	1.27	1.30	1.35	1.60	1.45	1.40	1.35
(8)	1.54	1.55	1.47	1.43	1.50	1.50	1.55	1.60	1.55	1.54
(9)	1.05	1.00	1.00	.97	1.00	1.00	1.10	1.10	1.05	1.05
(10)	3.25	3.15	3.10	3.01	3.00	3.25	3.50	3.35	3.25	3.25
(11)	3.25	3.50	3.10	3.01	3.00	3.25	3.50	3.35	3.25	3.25

(Continued on next page)



Constant Mesh
Gear Transmission

LOOK... at the working parts of this winch

NOTE the simplicity of design and minimum number of parts in the Carco Winch. This simplicity means longer life, smoother, trouble-free operation. All parts are standardized and interchangeable.

In the Carco Winch, tractor power is transmitted from the power takeoff to the drum by the simplest, most direct method. All gears are in constant mesh, shifted by a sliding internal gear clutch. There are no chains or frictions in Carco Winches.

Because the gears of Carco Winches are of generous size, made of special alloy steel which has been scientifically heat-treated and precision-cut for the heaviest service, they provide a large overload capacity.

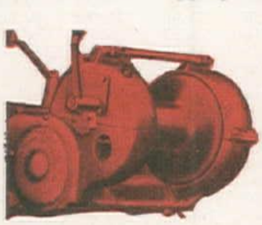
SAE Alloy Steel Shafting is heat-treated and splined. There are no press-fits or keyed drives.

Heavy-duty tapered roller and ball bearings are held rigidly in the Carco alloy steel one-piece case, insuring long, trouble-free operation and constant shaft alignment.

Powered to hold any load, the Carco brake is positive, smooth-operating and self-energizing. Designed for quick, easy adjustment, the brake is completely encased in a water-tight, oil-tight housing.

The reversible cast steel drum feeds line out smoothly. Its wide rounded flanges guard against cable cutting and provide strength and rigidity.

Carco Winches, field-tested under the toughest logging conditions, offer you the maximum in efficient and money-making operation. They are built for all standard crawler tractors. See your local tractor or logging equipment dealer for Carco Winches.

CARCO  **WINCHES**

AND LOGGING EQUIPMENT

PACIFIC CAR AND FOUNDRY COMPANY

RENTON, WASHINGTON

U. S. A.

(12)	14.30	16.00	13.65	13.26	13.25	14.00	16.30	14.90	14.00	14.30
(13)	24.20	20.00	23.10	22.44	22.00	25.00	20.50	25.20	24.00	24.20
(14)	38.50	26.50	36.75	35.70	35.00	35.00	27.00	40.00	38.00	38.50
(15)	27.50	32.00	26.25	25.50	25.00	30.00	32.50	28.60	27.50	27.50
(16)	27.50	20.00	26.25	25.50	25.00	28.00	20.50	28.60	27.50	27.50
(17)	3.85	3.20	3.68	3.57	3.50	4.00	3.25	4.00	3.85	3.85
(18)	264.00	265.00	252.00	244.88	250.00	275.00	270.00	275.00	260.00	264.00
(19)	165.00	372.00	157.50	153.00	150.00	165.00	380.00	171.60	165.00	165.00
(20)	2.10	1.40	2.00	1.94	1.90	2.00	1.40	2.16	2.00	2.09
(21)	4.00	2.90	3.78	3.67	3.60	3.00	3.00	4.15	3.90	3.96
(22)	6.30	5.00	6.04	5.86	5.75	6.00	4.90	6.60	6.25	6.32
(23)	.55	1.10	.53	.51	.50	.60	1.10	.57	.60	.55
(24)	17.20	15.00	16.50	17.00	17.00	20.00	21.40	20.00	17.50	17.00
(25)	7.70	9.50	9.45	9.00	8.00	10.50	10.00	11.83	10.40	20.00
(26)	3.00	2.85	2.84	2.75	2.75	3.00	3.00	3.17	2.95	2.85
(27)	2.50	2.35	2.31	2.20	2.25	2.40	2.35	2.60	2.40	2.30
(28)	.05	.07	.05	.045	.07	.05	.065	.07	.07	.055
(29)	$47,500	$55,231	$65,638	$71,200	$77,208	$75,500	$59,300	$70,770	$68,461	$103,152
(30)	130.00	140.00	123.00	125.00	120.00	130.00	32.00	126.00	129.00	128.70
(31)	650.00	649.00	614.00	600.00	650.00	650.00	785.00	446.00	637.00	643.50
(32)	120.00	118.00	111.00	110.00	110.00	120.00	174.00	230.00	116.00	116.00
(33)	375.00	376.00	364.00	175.00	360.00	385.00	330.00	$1,145	382.00	381.70
(34)	925.00	943.00	891.00	500.00	900.00	950.00	$1,250	$2,862	932.00	933.90
(35)	$1,110	$1,103	$1,043	640.00	$1,035	$1,020	$1,230	$2,170	$1,090	$1,092
(36)	500.00	489.00	464.00	240.00	475.00	500.00	325.00	230.00	486.00	486.00

Miscellaneous . . .

California—Riverside County—U.S.E.D.—Railroad & Storage

Alco Construction Co., 5423 Flemish Village Lane, Los Angeles, bid low at $93,120 to the U. S. District Engineer Office, Los Angeles, to construct a paint shop, railroad extensions and storage facilities at the Mira Loma Q. M. Depot. The following bids were submitted:

(A) Alco Construction Co. ....$ 93,120.20
(B) Mead & O'Donnell 96,017.26
(C) Matich Bros. 97,537.72
(D) Geo. B. Thatcher and Wm. Radkovitch 97,747.80
(E) Weymouth Crowell Co. 101,850.34
(F) Baruch Corp. $101,896.10
(G) Modern Builders Construction Co. 102,330.40
(H) Del E. Webb Construction Co. 103,334.00
(I) Frontier Construction Co. 111,348.01
(J) H. B. Nicholson 117,355.05
(K) Clifford C. Bong 152,683.44

(1) 1 ea., paint shop
(2) 650 lin. ft. 12-in. conc. pipe from catch basins B
(3) 13,000 cu. yds. excav. and grade.
(4) 57,833 sq. yds. subgrade prep.
(5) 5,342 T. 2-in. asph. conc. surf.
(6) 35 bbls. Port. cem. for bldg. constr.
(7) 72 lin. ft. 1-in. steel water line.
(8) 1 ea. 1-in. curb stop and service box
(9) Lump sum, sterilize water lines
(10) 50 T. emuls. asph. tack coat
(11) 5,544 bbls. Port. cem., cem. base crse.
(12) 49,183 sq. yds. 6-in. soil cem. base crse.
(13) 340 T. 50-60 penetration pave asph.
(14) 100 T. emuls. asph. seal coat
(15) 197 T. cover aggre. seal coat
(16) 80 lin. ft. relocate exist. track
(17) 4 ea. compromise joint
(18) 4,000 lin. ft. install. track
(19) 4 ea. lengthen switch rods
(20) Lump sum, elec. distributions
(21) 610 sq. yds. prep. road areas for bitum. surf.
(22) 215 gals. liq. asph., grade RC-3
(23) 66 T. hot bitum. mix
(24) Lump sum, fence and gates
(25) Lump sum, railroad trestle
(26) Lump sum, relocate exist. fire line
(27) Lump sum, pole work
(28) 1 ea. catch basin A
(29) Lump sum, reconst. railroad drain. facil.
(30) 7 cu. yds. conc. encasem't of exist storm sewer
(31) 2 ea. catch basins B
(34) 3 ea. install 75-lb. turnout
(35) 1 ea. install 100-lb. turnout

ALTERNATES FOR ITEMS NOS. 10, 11 AND 12

(32) 797 T. emuls. asph. stabil. base
(33) 49,183 sq. yds. 6-in. emuls. asph. stabil. base
(36) 50 T. emuls. asph. tack coat

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
(1)	$7,556	$6,651	$8,000	$7,773	$8,466	$7,335	$9,378	$7,694	$8,300	$11,800	$7,500
(2)	2.33	2.44	1.90	2.00	2.42	2.57	2.40	2.698	2.40	3.00	2.75
(3)	.62	.64	.70	.63	.72	.73	.685	.725	.83	.80	.85
(4)	.0825	.085	.05	.095	.095	.094	.09	.0929	.08	.10	.05
(5)	3.52	3.70	2.40	3.37	3.13	3.20	3.00	3.236	3.00	3.50	3.72
(6)	2.25	2.00	2.20	1.93	2.54	2.04	2.00	2.885	2.20	2.50	2.54
(7)	1.58	1.60	1.00	.65	1.59	1.71	1.55	1.708	1.25	.50	1.25
(8)	11.00	11.00	15.00	16.50	10.60	11.56	11.00	12.00	12.00	25.00	25.00
(9)	11.00	11.00	75.00	10.00	10.60	11.01	12.00	11.00	5.00	25.00	150.00
(10)	24.55	22.50	22.50	21.00	40.00	42.40	40.00	42.82	22.00	25.00	20.00
(11)	1.89	2.35	2.15	2.00	1.92	2.04	1.92	2.057	2.20	2.00	2.54
(12)	.26	.215	.29	.32	.30	.32	.30	.3326	.49	.50	.49
(13)	12.75	13.35	13.00	14.43	14.28	15.12	14.40	15.264	15.00	15.00	15.00
(14)	23.46	24.60	22.00	21.00	21.84	23.13	21.80	23.35	19.00	19.00	21.00
(15)	3.11	3.26	3.80	4.20	3.28	3.47	3.15	3.503	5.00	3.00	3.00
(16)	3.06	2.67	4.00	2.63	3.82	2.75	3.95	2.95	4.00	2.50	3.00
(17)	10.25	21.00	10.00	21.00	16.96	16.50	16.00	21.75	25.00	20.00	10.00
(18)	2.35	2.57	3.50	2.52	2.87	2.64	3.00	2.742	2.70	2.40	2.30
(19)	10.25	16.00	10.00	16.50	13.80	16.50	16.00	16.75	15.00	15.00	10.00
(20)	367.00	320.00	405.00	389.00	368.00	330.00	400.00	389.00	347.00	450.00	400.00
(21)	.41	.43	.50	.74	.78	.83	.78	.836	.40	.10	.15
(22)	.35	.32	.40	.32	.46	.48	.46	.493	.16	.40	.20
(23)	3.52	3.70	6.00	4.47	5.72	6.06	5.70	6.12	3.75	3.50	3.72
(24)	121.00	160.00	200.00	220.00	138.00	215.00	125.00	171.00	160.00	300.00	150.00
(25)	$5.668	$6,344	$6,600	$6,745	$7,228	$6,757	$8,017	$5,846	$7,000	$8,446	$8,800
(26)	$1,680	$1,710	$2,700	596.00	$1,696	$1,817	$1,675	$2,026	$1,730	$1,200	975.00
(27)	105.00	227.00	143.00	110.00	280.00	110.00	135.00	111.00	381.00	275.00	300.00
(28)	131.00	134.00	200.00	32.00	133.00	143.00	130.00	140.00	75.00	132.00	175.00
(29)	163.00	166.00	300.00	120.00	164.00	176.00	165.00	217.00	$1,000	180.00	$1,000
(30)	26.25	27.00	20.00	12.00	59.00	16.52	27.00	31.86	43.00	60.00	20.00
(31)	105.00	107.00	100.00	32.00	106.00	116.00	105.00	122.00	115.00	168.00	175.00
(34)	375.00	374.00	600.00	367.50	345.00	385.00	365.00	39.20	350.00	350.00	365.00
(35)	375.00	400.00	700.00	400.00	400.00	375.00	420.00	423.00	400.00	375.00	365.00
ALTERNATES FOR ITEMS 10, 11 AND 12											
(32)	22.10	23.00	21.00	24.08	22.46	23.86	22.50	24.08	23.00	21.00	22.50
(33)	.26	.27	.205	.27	.26	.28	.26	.278	.21	.50	.40
(36)	39.27	41.00	30.00	31.50	40.00	42.40	40.00	42.82	22.00	22.00	20.00

California—Los Angeles County—U.S.E.D.—Unloading Area

Mead & O'Donnell, 7769 Melrose Ave., Los Angeles, submitted the low bid of $56,991 to the U. S. Engineer Office, Los Angeles, to construct an unloading area at the Los Angeles Port of Embarkation, Wilmington. Bids were:

(1) Mead & O'Donnell $56,991
(2) Western Dredging & Const. Co. 58,701
(3) Baruch Corp. 64,916
(4) Shannahan Bros. $76,622
(5) D. A. Williams & Frontier Const. Co... 79,735

(Continued on next page)

	(1)	(2)	(3)	(4)	(5)
Lump sum, remove floodlight pole	55.00	50.00	116.00	65.00	225.00
30 sq. yd. remove conc. pave	1.50	6.50	1.45	1.625	2.00
4,500 sq. yd. remove asph. pave	.15	.31	.58	1.17	.55
240 lin. ft. remove sidewalk	1.00	.70	.58	1.04	2.00
1 cu. yd. remove catchbasin	40.00	15.00	11.56	32.50	35.00
3 ea. reinstall wood ramp	77.00	12.50	116.00	65.00	100.00
1,200 cu. yd. excav. and grade	.80	.75	1.45	1.625	1.50
15,000 sq. yd. prep. subgrade	.23	.17	.23	.13	.24
1,230 cu. yd. fill for platform	.84	.44	1.73	1.95	2.00
140 gals. membrane curing sol.	.80	.90	.69	1.30	1.50
2,930 sq. yd. 9, 6, 9 in. conc. pave	2.70	3.00	1.64	2.21	3.20
690 bbl. cem. for 9, 6, 9 in. conc. pave	2.20	2.20	2.20	2.60	2.20
290 cu. yd. conc. walls for platform	30.00	27.00	36.42	44.20	50.00
900 lin. ft. timber guard	.17	.40	.34	.325	1.00
2 ea. wood ramp	460.00	644.00	918.00	741.00	600.00
2,020 cu. yd. 6-in. gravel base course	2.75	3.20	4.34	5.85	4.00
15 T. liq. asph., MC-1	24.00	25.00	23.12	28.60	20.00
8 T. liq. asph., RC-3	30.00	25.00	28.91	42.90	40.00
60 T. 50-60 penetr. asph.	17.00	15.50	16.19	20.80	15.00
1,200 T. bitum. hot mix.	4.60	4.12	3.70	5.46	5.00
10 T. liq. asph., RC-3, seal	28.00	23.00	28.90	28.60	20.00
80 T. cover aggr., seal	5.00	3.00	3.47	6.50	6.00
1,500 lin. ft. install tangent track	2.70	3.08	3.00	2.60	2.50
330 lin ft. install curved track	3.00	3.85	3.12	3.25	2.60
2,150 lin. ft. reline exist. track	1.80	1.54	2.66	1.30	1.50
2 ea. install turn-out	460.00	462.00	491.00	390.00	350.00
4 ea. compromise joint	30.00	30.08	17.34	26.00	15.00
2 ea. lengthen switch rod	12.00	13.32	17.34	10.40	10.00
4 ea. steel bumper	60.00	61.60	86.72	52.00	125.00
300 lin. ft. 12-in. reinf. conc. drain pipe	3.70	4.69	3.00	7.80	8.00
850 lin. ft. 15-in. reinf. conc. drain pipe	5.00	5.94	4.24	8.45	9.70
5 ea. catchbasin	177.00	225.00	188.00	143.00	450.00
15 cu. yd. conc. pipe saddles	13.00	20.00	41.60	13.00	26.00
3 ea. base for manholes	33.00	19.00	11.56	32.50	30.00
20 lin. ft. brick masonry manhole shaft	13.00	19.00	17.34	10.40	26.00
3 ea. conc. manhole	33.00	38.00	23.12	39.00	61.00
Lump sum, offset to exist. manhole	355.00	520.00	492.00	390.00	$1,000
Lump sum, reconst. exist. catch basin	106.00	100.00	191.00	104.00	125.00

California—San Joaquin County—Navy—Supply Depot

Ford J. Twaits Co., Morrison-Knudsen Co. and Ben C. Gerwick, 391 Sutter St., San Francisco, were awarded a $10,608,845 contract by the Bureau of Yards & Docks, Washington, D. C., to construct a permanent Naval Supply Depot on Rough and Ready Island near Stockton. This bid was based on the construction of 22 steel buildings and 6 wood frame buildings. Bids were as follows:

(A)	Ford J. Twaits Co., Morrison-Knudsen Co. and Ben C. Gerwick	$10,608,845
(B)	Peter Kiewit Sons Co., Al Johnson Constr. Co. and Hubert H. Everist	10,897,400
(C)	MacDonald & Kahn, Inc., George Pollock Co. and A. Teichert & Sons, Inc.	11,092,500
(D)	Lindgren & Swinerton, Inc., Tucker McClure, Inc., The Arundel Corp., L. E. Dickson Co. and Robert E. McKee	11,410,000
(E)	James I. Barnes Constr. Co. and Clyde W. Wood	11,715,000
(F)	W. A. Bechtel Co., J. H. Pomeroy & Co. and Utah Constr. Co.	12,605,000

(1) Price of entire work complete. Amounts included in bid price for work in sec. 4 of specifications shall be computed as follows:

AREA "A"

(a) Unit price and total, 120,000 cu. yds. dry excav.
(b) Unit price and total, 600,000 cu. yds. dredge mat.
(2) Am't. to be added to or deducted from price bid in (1) if brick masonry filler panels are subst. for conc. filler panels in stand. storehouse firewalls.
(3) Am't. to be added to or deducted from price bid in (1) if steel frame and metal lath and plaster firewalls are subst. for conc. firewalls.
(4) Am't. to be added to or deducted from price bid in (1) if welded steel pipe is subst. for cast-iron pipe for Water Distribution System.
(5) Am't. to be added to or deducted from price bid in (1) if cement asbestos pipe is subst. for cast-iron pipe for Water Distribution System.
(6) Am't. to be added to or deducted from price bid in (1) if welded steel pipe is subst. for cast-iron pipe for Fire Protection System.
(7) Am't. to be added to or deducted from price bid in (1) if cement asbestos pipe is subst. for cast-iron pipe for Fire Protection System.
(8) Am'ts. to be added to price bids in (1) if dredging work is increased.

AREA "A" PLUS AREA "B"

(a) Unit and total price, 180,000 cu. yds. dry excav.
(b) Unit and total price, 835,000 cu. yds. dredge matl.
(c) Unit and total price for furnish. and place addl. riprap.
(9) Am'ts. to be added to the price bid in (1) if dredge work is increased.

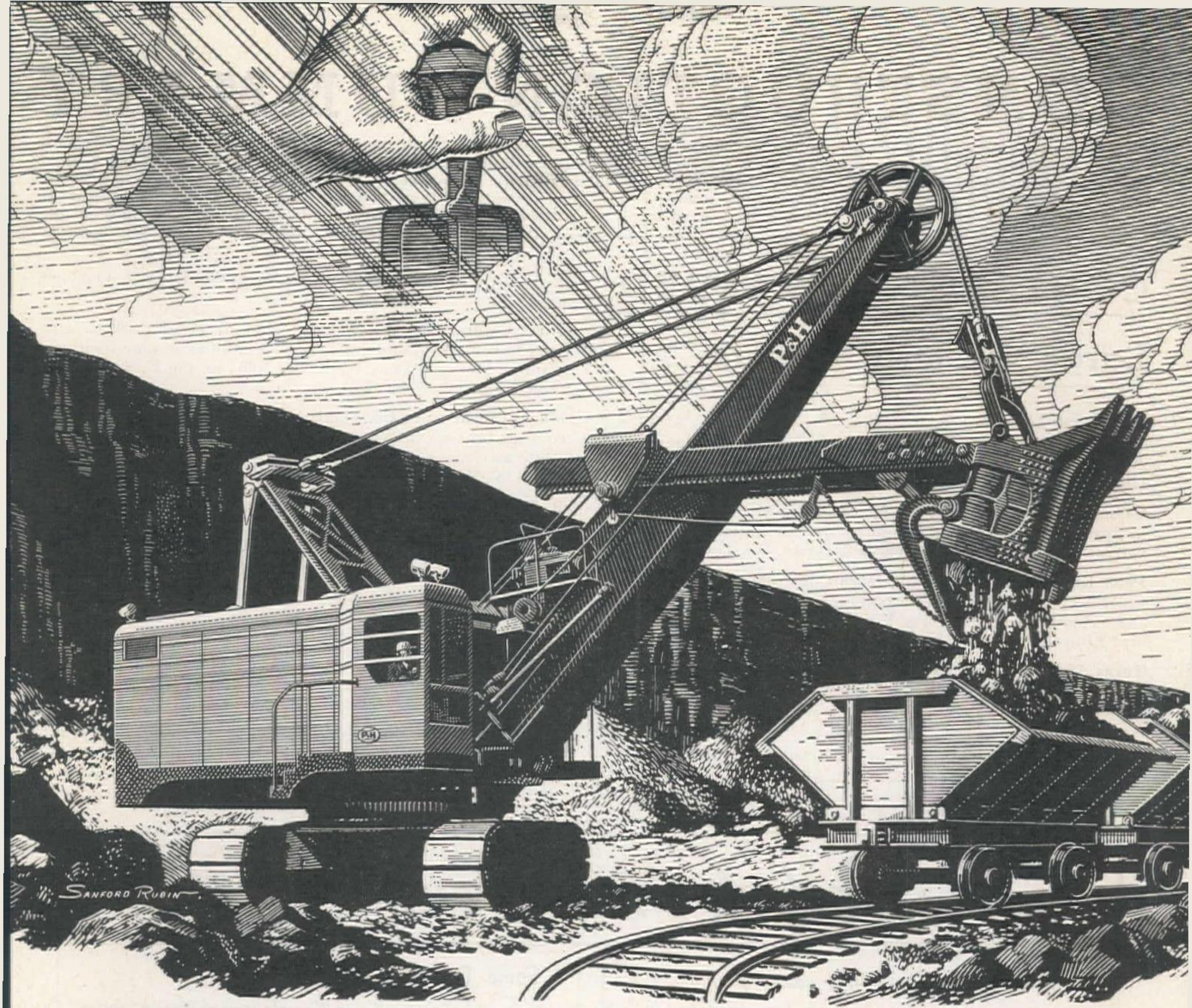
AREA "A" PLUS AREA "C"

(a) Unit and total price, 190,000 cu. yds. dry excav.
(b) Unit and total price, 865,000 cu. yds. dredge matl.
(c) Unit and total price for furnish. and place addtl. riprap.
(10) Amt's. to be added to price bid in (1) if dredge work is increased.

AREA "A" PLUS AREAS "B" AND "C"

(a) Unit and total price, 250,000 cu. yds. dry excav.
(b) Unit and total price, 1,100,000 cu. yds. dredge matl.
(c) Unit and total price for furnish. and place addtl. riprap.
(11) Am't. to be added to or deducted from price bid for (1) if vitrified clay pipe is subst. for cast-iron pipe in Sanitary Sewer System.
(12) Am't. to be added if south half of Open Storage Area No. 1111 is constructed.
(13) Am't. to be added if north half of Open Storage Area No. 1201 is constructed.
(14) Price of entire work complete with substitution of 28 wood frame storehouses.
(15) Add to or deduct from (14) if brick masonry filler panels are subst. for conc. filler panels in stand. wood frame storehouse fire walls.
(16) Add to or deduct from am't. bid for (14) if wood stud, metal lath and plaster fire walls are subst. for conc. fire walls.
(17) Add to or deduct from (14) if corrugated asbestos siding and composition roofing is subst. for government-furnished protected metal siding and roofing in 28 stand. wood-frame storehouses.
(18) Add to or deduct from (17) if light-weight corrug. asbestos siding is to be used.
(19) Deduct from (1) for each steel frame storehouse to be omitted.
(20) Deduct from (14) for each wood frame storehouse to be omitted.

	(A)	(B)	(C)	(D)	(E)	(F)
(1)	$10,608,845	$10,987,400	$11,092,500	$11,410,000	$11,713,000	$12,605,000
(2)	+5,300	+75,000	+162,000	+46,508	+35,000	+18,000
(3)	—32,100	+42,000	+36,000	—8,497	—44,000	+12,000
(4)	—2,100	....	+60,000	....	+52,000	+23,500
(5)	—4,900	....	+60,000	—8,500	+41,000	....
(6)	—22,900	....	+60,000	+5,600	+74,000	+72,000
(7)	—6,950	....	+60,000	—20,600	+52,000	....
(8)	+407,500	+465,750	+144,430	+206,584	+186,000	+173,500
(9)	+424,000	+484,250	+176,745	+330,838	+203,000	+200,000
(10)	+570,000	+609,000	+320,860	+437,432	+389,000	+372,300
(11)	—18,600	—34,000	—41,000	—45,000	—25,000	—33,000
(12)	+144,500	+340,000	+331,000	+360,900	+448,000	+489,740
(13)	+43,300	+80,000	+77,000	+95,973	+121,240	+132,879
(14)	10,099,179	10,874,000	10,820,800	10,920,000	11,353,000	12,387,000
(15)	+21,200	+75,000	+170,000	+118,574	+68,000	—18,000
(16)	—203,000	—45,000	+10,000	—11,892	—25,000	—165,000
(17)	+602,000	....	+1,192,000	+1,348,881	+1,192,000	+1,153,000
(18)	+515,000	....	+1,077,000	+1,229,843	+1,070,000	+1,035,680
(19)	—179,260	—195,000	—187,000	—195,911	—199,000	—179,507
(20)	—162,600	—185,000	—180,000	—180,867	—185,000	—174,931



NEW! P&H DIRECTRON CONTROL

— the simplest, smoothest, most efficient control ever applied to an electric shovel

America's open pit mines and quarries have long felt the need for better electric shovel control — for the simplification of motor and motor generator design, and auxiliary control equipment with its complicated relays, resistors, and switchboard panels.

Through years of research and development—P&H has perfected the revolutionary new Directron Control. Simpler, more direct, more dependable, this control overcomes maintenance problems and adds years to the life of all electrical equipment. It also allows more time for actual digging.

In addition, Directron Control provides the quick, velvety response for steady production and levels out the power peaks to reduce power line charges to a minimum.

Another development in P&H's sixty-year experience of applying electrical power to the movement of heavy loads, it is but one of many outstanding advancements found in the new P&H Electric Shovels. Write for complete information.

P&H ELECTRIC SHOVELS
4490 WEST NATIONAL AVE.
MILWAUKEE 14, WISCONSIN

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

THE GREATEST FORWARD STEP IN ELECTRIC SHOVEL DEVELOPMENT

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.

CONTRACTS AWARDED

Large Western Projects...

Hawkins & Armstrong, Seattle, Wash., were awarded a $214,258 contract to construct 15 treated timber pile trestle bridges, and grade and surf. bridge approaches near Fall City by the State Highway Department, Olympia, Wash.

Casson & Ball, Hayward, Calif., received a $1,263,277 contract to grade and pave parking areas at the Eleventh Naval Base, San Diego, by the Bureau of Yards & Docks, Washington, D. C.

Peter Kiewit Sons Co. and **Big Horn Construction Co.,** Denver, Colo., were awarded a $776,896 contract to construct taxiways and parking aprons at Lowry Field, Denver, by the U. S. Engineer Office, Denver, Colo.

Texas Bitulithic Co., Dallas, Texas, received a $819,052 contract for constructing additional facilities, grading and paving at the Fort Worth Aircraft Assembly Plant, Texas, by the U. S. Engineer Office, Denison, Texas.

W. A. Bechtel Co., San Francisco, Calif., was awarded a $242,845 contract to construct the Bixler Pumping Plant, near Brentwood, by the East Bay Municipal Utilities District, Oakland, Calif.

Sioux Contractors, Minneapolis, Minn., received a $88,927 contract to construct additions to outside utilities sewage treatment plant at McCook Army Air Field, Neb., by the U. S. Engineer Office, Omaha, Neb.

Macco Construction Co., Oakland, Calif., was awarded a $300,000 contract for rock fill necessary in the conversion of Kaiser Yard 3 into a repair yard for naval warships, at Richmond, Calif., by the U. S. Maritime Commission, Richmond, Calif.

B. Landon, Casper, Wyo., received a $186,000 contract for 29 mi. of 6 and 8-in. oil pipeline between Casper and Sinclair, Wyo., by the Sinclair Refinery, Casper, Wyo.

J. K. Thomas and **Theo. Beyer Construction Co.,** Los Angeles, Calif., were awarded a $568,322 contract to construct the St. Francis Hospital in Lynwood for Sisters of St. Francis, Calif., by G. J. Adams, Los Angeles.

Stone & Webster, Los Angeles, Calif., received a $1,796,000 contract for additional styrene plant at 20021 S. Vermont Ave., Los Angeles, by Rubber Reserve Company, Gardena, Calif.

Twaits, Morrison-Knudsen & Gerwick, San Francisco, Calif., were awarded a $1,377,000 contract to construct administration building, storm drainage, water, gas, sewer, fire and sprinkler systems and railroad tracks at Oakland Naval Supply Depot Annex, Rough and Ready Island, Stockton, Calif., by Bureau of Yards & Docks, Washington, D. C.

Pittsburgh Des Moines Steel Co., Pittsburgh, Pa., received a $937,592 contract for a wind tunnel and tunnel building at Moffett Field, Calif., by Ames Aeronautical Laboratory, Moffett Field, Calif.

Peter Kiewit Sons Co., San Francisco, Calif., was awarded a $175,042 contract to construct hangar at the Fairfield-Suisun Army Airfield by U. S. Engineer Office, Sacramento, Calif.

Northwest Fabricators, Albany, Ore., received a $430,000 contract to furnish and pack 800 units of pre-cut tropical barracks at Oregon by U. S. Engineer Office, Atlanta, Ga.

Halvorson Construction Co., Salem, Ore., was awarded a $348,780 contract to construct 115 dwelling units in Pasco, Wash., by Federal Pub. Housing Auth., Seattle, Wash.

Smith Bros. and **Wilson, Limited**, Vancouver, B. C., received a $300,000 contract to construct 100 houses to be used for soldiers' dependents at Vancouver by Wartime Housing, Limited, British Columbia.

Bartlett & Hosking, Richmond, Calif., was awarded a $517,991 contract to firesafe 494 buildings at Richmond, Calif., by Federal Pub. Housing Auth., San Francisco, Calif.

Mercer, Fraser Co., San Francisco, Calif., received a $900,542 contract for a wooden wharf, supported on treated wood piling, with asphaltic concrete deck surf., util. bldg. and railroad tracks at Naval Magazine, Port Chicago, Calif., by Bureau of Yards & Docks, Washington, D. C.

B. O. Larsen, San Diego, Calif., was awarded a $1,188,000 contract for refrigerated boxes for use on barges of Army forces by U. S. Army, Cincinnati, O.

Moore & Roberts and **G. W. Williams Co.**, San Francisco, Calif., received a $592,658 contract for additional housing, paving and utilities at Fairfield-Suisun Army Airfield, near Fairfield, Calif., by U. S. Engineer Office, Sacramento.

Austin Bridge Co., Dallas, Texas, was awarded a $2,500,000 contract for excavation and foundation work for addition to steam electric station and an extension to Mountain Creek Power Plant, Texas, by Dallas Power & Light Co., Dallas, Texas.

Highway and Street...

California

ALAMEDA CO.—**Heafey-Moore Co.**, 344 High St., Oakland—$16,455 for additional paved areas for parking facilities, U. S. Naval Hospital, Oak Knoll, Oakland—by Bureau of Yards & Docks, Washington, D. C. 11-24

ALAMEDA CO.—**Stolte, Inc.**, 8451 San Leandro Blvd., Oakland—$119,164 to construct paving around two storehouses at Naval Air Station, Alameda—by Bureau of Yards & Docks, Washington, D. C. 10-30

HUMBOLDT CO.—**E. B. Bishop,** Orland—$26,090 to grade and surf. 0.9 mi. with imported base matl. betw. 1.5 mi. E. of Hwy. 1 and 20—by Calif. Div. of Hwys., Sacramento. 10-31

LOS ANGELES CO.—**Mead & O'Donnell,** 7769 Melrose Ave., Los Angeles—$56,991 to constr. an unloading area at Los Angeles Port of Embarkation, Wilmington—by U. S. Engr. Ofc., Los Angeles. 11-17

SAN FRANCISCO CO.—**Fay Improvement Co.,** 760 Market St., San Francisco—$44,369 to grade, pave with asphalt conc. pavement on crusher run base and on existing pave. about 0.7 mi. on Hunters Point Blvd., Innes Ave. and Donahue St.—by State Div. of Hwys., Sacramento. 11-9

SAN JOAQUIN CO.—**Geo. French, Jr.,** Box 307, Stockton—$75,253 to grade and plantmix surf. 2.4 mi. on untr. rock base, betw. Stockton and Rough and Ready Island—by Cal. Div. of Hwys., Sacramento. 11-8

SAN MATEO CO.—**Union Paving Co.,** 310 California St., San Francisco—$32,737 to grade and pave 0.3 mi. with asph. conc. at San Bruno—by Div. of Hwys., Sacramento. 11-27

SANTA BARBARA CO.—**Western Motor Transfer Co.,** 118 State St., Santa Barbara—$13,041 to resurf. road betw. Anapamu St. and Gutierrez St. and to seal coat Anapamu St. from Alta Vista Road to Milpas St.—by City Council, Santa Barbara. 11-3

SANTA BARBARA CO.—**Western Motor Transfer Co.,** 118 State St., Santa Barbara—$14,808 to resurf. San Andreas St., betw. Carillo and Mission—by City Council, Santa Barbara. 11-13

Idaho

LATAH & NEZ PERCE COS.—**D. A. Sullivan,** Parkwater, Wash.—$22,962 to surf. with crushed rock 2.37 mi. of the Wauncher Gulch section of the Ahsahka-Kendrick Hwy. and 4.6 mi. of the Bear Ridge grade betw. Kendrick and Deary—by Bureau of Highways, Idaho. 11-3

LEWIS CO.—**F. R. Hewett Co.,** 420 W. 22nd St., Spokane—$33,505 to surf. with crushed rock 8.4 mi. of State Hwy. 12 betw. Nez Perce and Kamiah—by Bureau of Highways, Idaho. 11-3

New Mexico

LINCOLN & OTERO COS.—**Brown Bros.,** Box 1479, Albuquerque—$59,591 to base surf. 10 mi. with top surf. and oil processing on Hwy. 54 betw. Tularosa and Carrizozo—by State Hwy. Dept., Santa Fe. 11-14

SIERRA CO.—**Brown Bros.,** Box 1479, Albuquerque—$21,373 to base and top surf. with oil processing and misc. const. 5 mi. on State Hwy. 85 and 51, near Hot Springs—by State Hwy. Dept., Santa Fe. 11-6

UNION CO.—**Henry Thygeson & Co.,** Box 876, Albuquerque—$66,192 to top surf. and oil process 8 mi. on State Hwy. 58, betw. Clayton and New Mexico-Oklahoma state line—by State Hwy. Dept., Santa Fe. 11-14

Oregon

CLATSOP & COLUMBIA COS.—**Rogers Construction Co.,** Dayton, Wash.—$24,755 to stockpile approx. 8,350 cu. yd. rock on the Columbia River and Mist-Clatskanie Hwys.—by State Hwy. Comm., Portland. 11-8

COLUMBIA CO.—**Rogers Construction Co.,** Dayton, Wash.—$28,272 to surf. and oil 3.7 mi. of embankment widening and ditching work at Clatskanie Army Works—by State Hwy. Comm., Portland. 11-8

DOUGLAS CO.—**Charles Shannon & Son,** 2400 Second Ave. N., Great Falls, Mont.—$50,954 to grade and pave on Pacific Hwy. and North Umpqua Co. Rd.—by State Hwy. Comm., Portland. 10-31

MORROW & UMATILLA COS.—**Nyberg Construction Co.,** Box 7, Yardley, Wash.—$68,900 to surf. 12.0 mi. on Jones Prairie Timber Access Road, in Morrow and Umatilla Cos.—by Pub. Roads Admin., Portland. 10-31

Texas

BELL CO.—**Gilbert Falbo Co.,** 107 Morales St., San Antonio—$199,981 to reconstr. pavement and installations of drainage at


PACIFIC
SUPER STEEL
WIRE ROPE
FACTORY AND GENERAL OFFICES
LOS ANGELES, CALIFORNIA
BRANCHES—HOUSTON, TEX. & PORTLAND, ORE.

McCloskey General Hospital—by U. S. Engr. Ofc., Fort Sam Houston. 10-8

KAUFMAN CO.—**O'Neal Construction Co.,** 767 S. Lamar St., Dallas—$25,351 to place asph. conc. pavement and stabilize shoulders on Hwy. 80 in Kaufman Co.—by State Hwy. Dept., Dallas. 11-16

Utah

DAVIS CO.—**Gibbons & Reed,** 259 W. Third S., Salt Lake City—$141,193 to surf. with conc. an open storage at Naval Supply Depot, Clearfield—by Bureau of Yards & Docks, Washington, D. C. 11-17

TOOELE CO.—**Cannon Construction Co.,** Salt Lake City—$39,475 to constr. loading platforms and pavement at Deseret Chemical Warfare Service Depot near St. John—by U. S. Engr. Ofc., Sacramento. 11-27

UTAH CO.—**Enoch Smith Sons Co.,** 1441 Beck St., Salt Lake City—$30,532 to pave with roadmix bitum. surf. in Dist. 34—by City Council, Provo. 10-30

Washington

KING CO.—**M. P. Butler,** 3419 13th Ave. S. W., Seattle—$30,000 to grade, pave and move tracks near the King Street Station—by Great Northern Railway Co., Seattle. 11-27

KING CO.—**Fiorito Bros.,** 1100 Leary Way, Seattle—$23,175 to pave an open storage area at the Army Supply Force Depot, Seattle—by U. S. Engr. Ofc., Seattle. 11-6

KING CO.—**Northwest Construction Co.,** 3950 Sixth N. W., Seattle—$26,830 to pave pier "E" storage area at Seattle Port of Embarkation—by U. S. Engr. Ofc., Seattle. 11-8

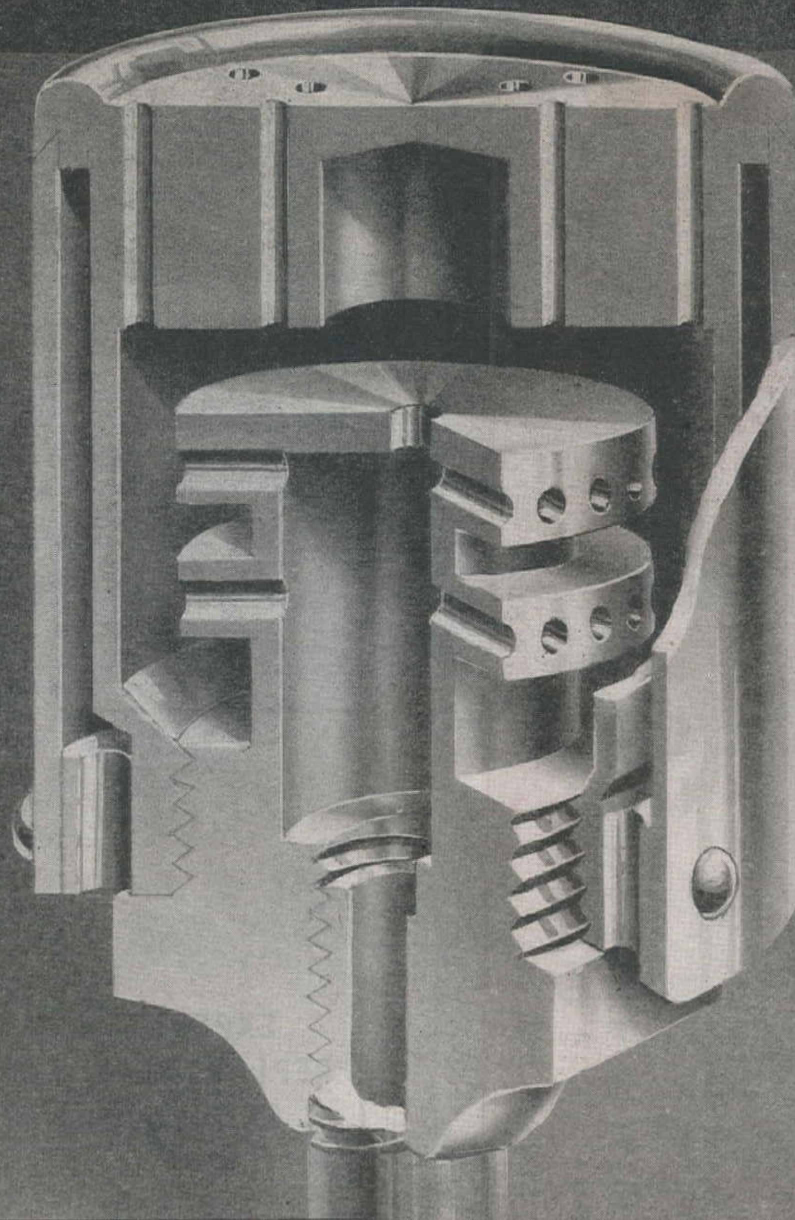
KITSAP CO.—**R. L. Moss & Co.,** Zenith—$21,436 to constr. retaining wall, conc. curb, gutter and sidewalk, asph. conc. pavement on E. approach to Port Washington Narrows Bridge in E. Bremerton and Manette, Hwy. 21—by Director of Hwys., Olympia. 11-22

Wyoming

SWEETWATER CO. — **Hopkins & McPherson,** Laramie —

A New Heating Nozzle

for Oxy-Butane, Propane or Natural Gas



VICTOR

ARMY E NAVY

Here is an additional heating nozzle for all Standard Victor Welding Torch models of the "300" series. An outer air mantle protects the tip against deflected heat. Internal construction and path of gases adds to cooling effect. These multi-flame heating nozzles are also made in various sizes to utilize oxy-acetylene. Efficient multi-flame heating nozzles add tremendously to the value of a good welding torch.

AD No. 95

VICTOR EQUIPMENT COMPANY · 844 FOLSOM STREET · SAN FRANCISCO 7

$89,590 to grade, drain, base course surf. 22.731 mi. at Rock Springs-Hiawatha Dome Oil Field Access Road—by State Hwy. Comm., Cheyenne. 11-14

Bridge & Grade Separation...

Arizona

MARICOPA CO.—**H. L. Royden,** Box 3707, Phoenix—$12,587 to constr. two 3-span reinf. conc. slab bridges on treated timber piles, near Somerton on San Luis-Yuma Hwy.—by State Hwy. Comm., Phoenix. 11-28

Oregon

DESCHUTES CO.—**Harry I. Hamilton Co.,** Route 5, Box 34, Eugene, Ore.—$19,484 for earthwork and structures, 3 county bridges and an operating bridge, North Unit Main Canal near Bend—by Bureau of Reclamation, Washington, D. C. 11-27

Washington

KING CO.—**Hawkins & Armstrong,** 5256 Sixteenth N. E., Seattle—$214,258 to constr. 15 treated timber pile trestle bridges with conc. decks and 2 reinf. conc. cattle passes, and to grade, surf. and place light bitum. surf. treatment with nonskid single seal on bridge approaches, Fall City to Snohomish Co. line—by Director of Hwys., Olympia, Wash. 11-22

Airport . . .

California

SACRAMENTO CO.—**Trewhitt, Shields & Fisher,** 1501 Pacific S. W. Bldg., Fresno—$150,209 to constr. a hangar and apron at Mather Field—by U. S. Engr. Ofc., Sacramento. 11-10

SAN DIEGO CO.—**Casson & Ball,** 22105 Meekland Ave., Hayward—$1,263,277 to grade & pave parking areas, Eleventh Naval

Base, San Diego—by Bureau of Yards & Docks, Washington, D. C. 11-9

SAN FRANCISCO CO.—**Peter Sorensen,** 927 Arguello Blvd., Redwood City—$63,900 to rock face with 24,000 tons along runways at the San Francisco Airport—by U. S. Engr. Ofc., San Francisco. 11-27

Colorado

DENVER CO.—**Peter Kiewit Sons Co.** and **Big Horn Construction Co.,** 1950 S. Colorado Blvd., Denver—$776,896 to constr. taxiways and parking aprons at Lowry Field, Denver—by U. S. Engr. Ofc., Denver. 11-24

New Mexico

CURRY CO.—**Western Contracting Corp.,** Sioux City, Iowa—$253,908 to constr. addtl. parking apron at Clovis Aux. Air Field—by U. S. Engr. Ofc., Albuquerque. 10-28

Texas

DALLAS CO. — **Texas Bitulithic Co.,** Dallas — $819,052 to constr. addtl. facil., grade and pave at the Fort Worth Aircraft Assembly Plant—by U. S. Engr. Ofc., Denison. 11-16

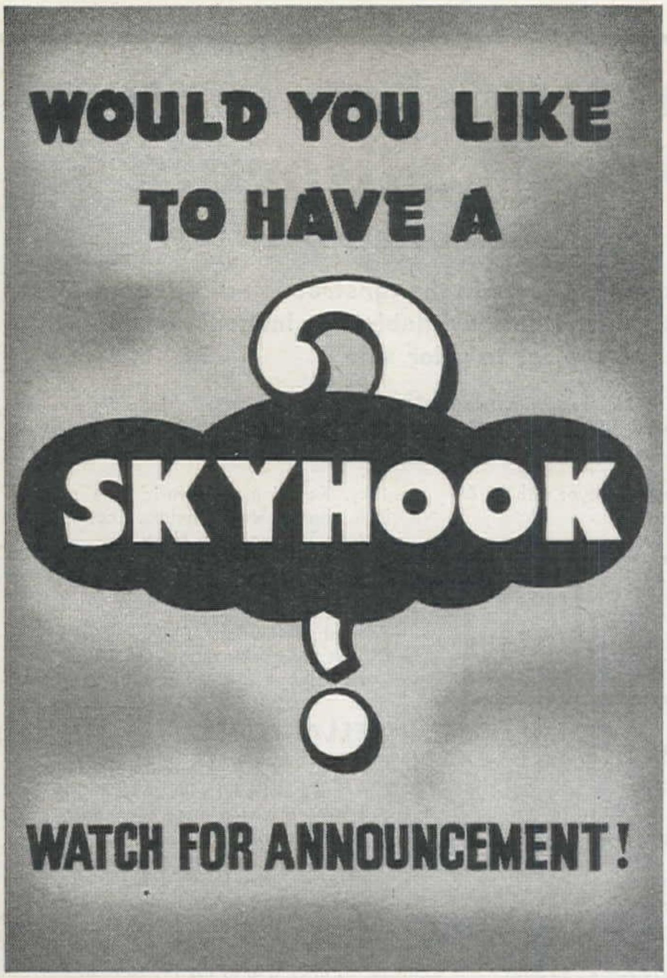
Utah

TOOELE CO.—**Christensen Bros.** and **L. A. Young,** Templeton Bldg., Salt Lake City—$234,570 to constr. prefab. steel hangar, apron at Wendover Army Air Base—by U. S. Engr. Ofc., Salt Lake City. 11-3

Water Supply . . .

California

CONTRA COSTA CO.—**W. A. Bechtel Co.,** 155 Sansome St., San Francisco—$242,845 to constr. the Bixler pumping plant near Brentwood—by East Bay Munic. Util. Dist., Oakland. 11-24



SAN FRANCISCO CO.—**Miller & Stoutenberg,** Central Bank Building, Oakland—$127,500 to supplement water supply at Treasure Island and Yerba Buena Island—by Bureau of Yards & Docks, Washington, D. C. 11-13

SHASTA CO.—**D. V. Stutsman,** 543 S. Grant St., Stockton—$10,037 to install approx. 6,700 lin. ft. 10-in. 12-gauge welded steel pipe extension from Fell and Market Sts. to Shasta Box Co.—by City Council, Redding. 11-7

Texas

BELL CO. — **Taylor Construction Co.,** Taylor — $35,868 for addtl. water supply facilities at McCloskey General Hospital—by U. S. Engr. Ofc., Fort Sam Houston. 11-13

Washington

KITSAP CO.—**Bergesen, Wick & Dahlgren,** Route 1, Tacoma—$47,537 to expand exist. water system at East Port Orchard housing project—by Federal Pub. Housing Auth., Seattle. 11-21

KITSAP CO.—**N. C. Jannsen Drilling Co.,** Seattle—$34,921 to drill water well S. of Annapolis—by Federal Pub. Housing Auth., Seattle. 11-21

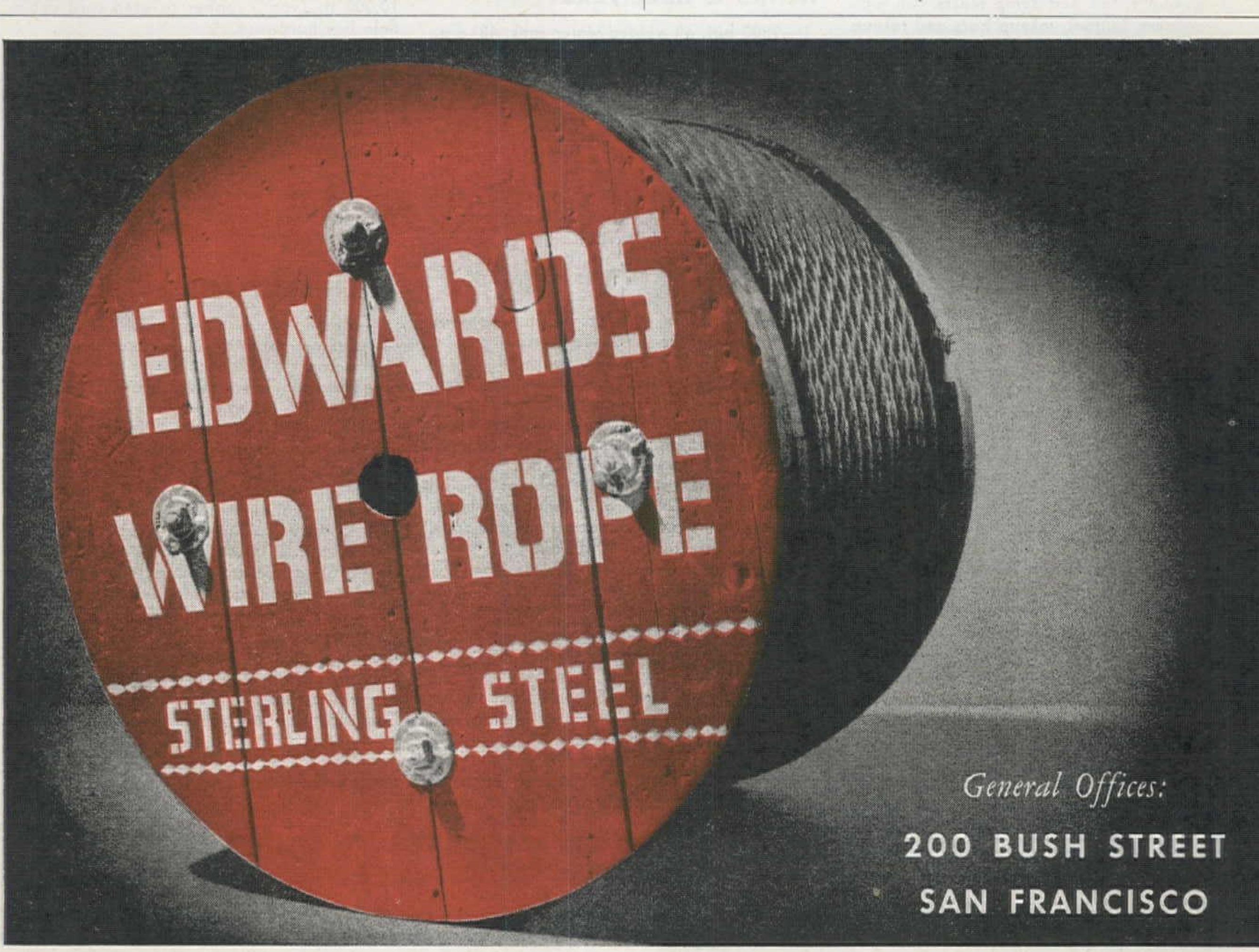
Sewerage . . .

California

CONTRA COSTA CO.—**Parker, Steffens & Pearce,** 135 S. Park, San Francisco—$51,590 for sewage disposal for barracks section of tidewater area at Naval Magazine, Port Chicago—by Bureau of Yards & Docks, Washington, D. C. 11-17

LOS ANGELES CO.—**P. & J. Artukovich,** 3834½ W. Slauson Ave., Los Angeles—$28,838 to constr. a 1,670-lin. ft. 8-in. vitrified clay pipe main line sewer and 1,755-lin. ft. 6-in. clay pipe house connections at Seacliff Manor—by Murphy Bros., Ltd., Wilmington. 11-3

LOS ANGELES CO.—**George Miller,** 2147 W. Silver Lake



Drive, Los Angeles—$32,931 to constr. sewer in Exeter and other streets—by Board of County Supervisors, Los Angeles. 11-1

LOS ANGELES CO.—**Mike Radich,** 3000 Empire St., Burbank—$39,681 to constr. sewer in sewer district, Artesia and 63rd St., Long Beach—by City Council, Long Beach. 11-10

LOS ANGELES CO.—**V. C. K. Construction Co.,** 629 S. Atlantic Blvd., Los Angeles—$21,554 for sewer in Valleyheart Dr. and Columbus Ave.—by Board of Public Works, Los Angeles. 11-3

MONTEREY CO.—**Edwin J. Tobin,** 1132 Longridge Rd., Oakland—$13,665 to constr. sewers in Park Lane, Salinas—by City Council, Salinas. 11-8

SACRAMENTO CO.—**Fred J. Early, Jr.,** 369 Pine St., San Francisco—$78,362 to constr. sewage plant enlargements at McLellan Field—by U. S. Engr. Ofc., Sacramento. 11-22

SAN DIEGO CO.—**J. S. Barrett,** Spreckels Theater Bldg., San Diego—$27,002 to constr. sanitary sewer in Market St., betw. Pacific Hwy. and India St.—by City Council, San Diego. 11-2

Nebraska

REDWILLOW CO.—**Sioux Contractors,** Minneapolis, Minn.—$88,927 to constr. additions to outside until. sewage treatment plant at McCook Army Air Field—by U. S. Engr. Ofc., Omaha. 11-16

Nevada

PERSHING CO.—**Brizard Co.,** 83 McAllister St., San Francisco, Calif.—$12,521 to constr. sewer system improvements at Mill City—by Federal Housing Auth., San Francisco. 11-6

Texas

CAMERON CO.—**Mitchell Darby Construction Co.,** Harlingen—$10,671 to extend sewer system in Lakeside Addition, Shaw and Carter Additions—by U. S. Engr. Ofc., Harlingen. 11-2

Waterway . . .

California

ALAMEDA CO.—**Macco Construction Co.,** Freight and Ferry Sts., Oakland—$46,818 to fill 18,360 tons rock fill in timber bulkhead at Naval Air Station, Alameda—by Bureau of Yards & Docks, Washington, D. C. 11-13

CONTRA COSTA CO.—**Macco Construction Co.,** Freight and Ferry Sts., Oakland—$27,341 to constr. moorings for loading ships in San Pablo Bay and in Suisun Bay—by Bureau of Yards & Docks, Washington, D. C. 11-14

CONTRA COSTA CO.—**Macco Construction Co.,** Freight and Ferry Sts., Oakland—$300,000 for rock fill included in the conversion of Kaiser Yard 3 into repair yard for naval warships at Richmond—by U. S. Maritime Comm., Richmond. 11-27

LOS ANGELES CO.—**Warren-Southwest, Inc.,** Box 386 Wilmington—$30,000 to constr. a timber wharf at Berth 219, Wilmington—by Consolidated Shipyard, Inc., Wilmington. 11-27

SAN BERNARDINO CO.—**Mittry Bros. Construction Co.,** 4801 San Fernando Road, Los Angeles—$15,760 to constr. 0.5 mi. creek channel north of Blue Cut, betw. Devore and Alray—by Calif. Div. of Hwys., Sacramento. 11-2

SAN FRANCISCO CO.—**San Francisco Bridge Co.,** 503 Market St., San Francisco—$51,520 for maintenance dredging in Redwood Creek—by U. S. Engr. Ofc., San Francisco. 11-14

Idaho

MADISON CO.—**Otis Williams & Co.,** Box 1124, Helena, Mont.—$37,170 for reconstr. and extension of existing levees and revetments along the Snake River in Heise Roberts area—by U. S. Engr. Ofc., Portland. 10-31

Montana

CASCADE CO.—**Elmer Genger,** Fairfield—$108,070 for the Sun River crossing, Pishkin canal, 18 mi. N. W. of Augusta—by Bureau of Reclamation, Washington, D. C. 11-22

Nevada

WASHOE CO.—**Miller & Stoutenberg,** Box 87, Hawthorne—$25,074 to load, haul and place approx. 37,000 cu. yd. rock along pilot channel of Truckee River Control, betw. rock chute and Pyramid Lake, near Niwon—by U. S. Indian Irrigation Service, San Francisco. 11-28

Dam . . .

California

VENTURA CO.—**E. G. Perham,** 1128 Stearns Dr., Los Angeles—$37,822 to constr. levee 0.6 mi. bank protection fence and two wing dams on Santa Clara River at Los Angeles Ave.—by City Council, Ventura. 11-22

Oregon

UMATILLA CO.—**Diamond Drill Construction Co.,** 18 Stone St., Spokane, Wash. —$53,850 to drill 46 holes and pressure testing, incl. drilling cement plugs and reaming at Umatilla—by U. S. Engr. Ofc., Portland. 11-20

Washington

KING CO.—**Diamond Drill Construction Co.,** 18 Stone St., Spokane, Wash.—$16,950 for exploratory drilling at Boundary dam site on the Pend Oreille River—by U. S. Engr. Ofc., Seattle. 11-6

Building . . .

California

ALAMEDA CO. — **Dinwiddie Construction Co.,** Crocker Bldg., San Francisco—$294,400 for bldgs. and inst. yard services at Hurley Marine Works, Oakland—by Bureau of Yards & Docks, Washington, D. C. 11-20

ALAMEDA CO.—**G. W. Williams Co.,** 10 California Dr., Burlingame—$432,870 for housing units in Berkeley—by Fed. Pub. Housing Auth., San Francisco. 11-17

CONTRA COSTA CO. — **MacDonald & Kahn,** Financial Center Bldg., San Francisco — $129,654 for smoke drum storehouses, Inland Storage Area, Naval Magazine, Port Chicago—by Bureau of Yards & Docks, Washington, D. C. 11-28

CONTRA COSTA CO.—**Parker, Steffens & Pearce,** 135 South Park, San Francisco—$75,987 to constr. a stripping and joinery shop at the Naval Magazine, Port Chicago—by Bureau of Yards & Docks, Washington, D. C. 11-8

LOS ANGELES CO.—**H. M. Kellar Co.,** 4604 Hollywood Blvd., Los Angeles—$74,000 to constr. and install hangar doors on bldg. at Plant B-6, Burbank—by Lockheed Aircraft Corp., Los Angeles. 11-24

LOS ANGELES CO.—**J. K. Thomas & Theo. Beyer Construction Co.,** Chamber of Commerce Bldg., Los Angeles—$568,322 for St. Francis Hospital in Lynwood, for Sisters of St Francis—by G. J. Adams, Los Angeles. 11-13

LOS ANGELES CO.—**Stone & Webster,** 20021 S. Vermont Ave., Los Angeles—$1,796,000 to constr. addtl. styrene plant at 20021 S. Vermont Ave., Los Angeles—by Rubber Reserve Co., Gardena. 11-15

LOS ANGELES CO.—**J. A. Terteling & Sons Co.,** 411 W. Fifth St., Los Angeles—$207,000 to convert bldg. into pipe and copper shop at U. S. Naval Dry Dock, Terminal Island—by Bureau of Yards & Docks, Washington, D. C. 11-27

MARIN CO.—**H. H. Larsen Co.,** 64 South Park, San Francisco—$102,723 to constr. an air freight terminal at Hamilton Field—by U. S. Engr. Ofc., San Francisco. 11-15

ORANGE CO. — **Allison Honer,** 103 E. Third St., Santa Ana—$121,900 to constr. 10-room grammar school bldg. at Corona Del Mar School, Newport Beach — by Board of Trustees, Newport Beach. 11-24

SAN DIEGO CO. — **Austin Co.,** 777 E. Washington Blvd., Los Angeles—$524,000 to constr. an aeronautical laboratory, including a wind tunnel, at Lindbergh Field, San Diego—by Consolidated Vultee Aircraft Corp., San Diego. 11-16

SAN DIEGO CO.—**O. L. Carpenter,** 353 Spreckels Theater Bldg., San Diego—$118,810 to constr. housing for hospital corps for women & nurses at Marine Corps Base, San Diego—by Bur. of Yards & Docks, Washington, D. C. 11-27

SAN DIEGO CO.—**M. H. Golden Construction Co.,** 3489 Noell Ave., San Diego—$480,522 to constr. storehouse at Naval Air Station, San Diego—by Bur. of Yards & Docks, Washington, D. C. 11-16

SAN DIEGO CO.—**Harvey & Rose,** 211 W. Orange Grove Ave., Arcadia—$81,097 to constr. a Fleet Post Office at Naval Supply Depot, San Diego—by Bur. of Yards & Docks, Washington, D. C. 11-2

SAN FRANCISCO CO. — **De Luca & Sons,** 1745 Filbert St., San Francisco—$123,800 to constr. 48 temp. dwelling units in San Francisco—by Fed. Pub. Housing Auth., San Francisco. 11-15

SAN FRANCISCO CO.—**Carl N. Swenson,** 55 New Montgomery St., San Francisco—$186,450 to constr. motion picture theater, Chaplain's ofc. & beauty shop & addns. to ship barracks, recreation bldg., at Hunters Point—by Bur. of Yards & Docks, Washington, D. C. 10-30

SAN JOAQUIN CO.—**Twaits, Morrison-Knudsen & Gerwick,** 391 Sutter St., San Francisco—$1,377,000 to constr. administration bldg., storm drainage, water, gas, sewer, fire & sprinkler systems, and R.R. tracks at Oakland Naval Supply Depot Annex, Rough & Ready Island, Stockton—by Bur. of Yards & Docks, Washington, D. C. 11-19

SAN MATEO CO.—**Erbentraut & Summers,** 446-6th St., San Francisco—$461,800 to constr. 176 temp. family dwelling units at San Bruno—by Fed. Pub. Housing Auth., San Francisco. 11-13

SANTA CLARA CO. — **Pittsburgh-Des Moines Steel Co.,** 3438 Neville Ave., Pittsburgh, Pa.—$937,592 to constr. wind tunnel and tunnel bldg. at Moffett Field—by Nat. Adv. Comm., Ames Aeronautical Laboratory, Moffett Field. 11-15

SANTA CLARA CO.—**Carl N. Swenson Co.,** 355 Stockton Ave., San Jose—$165,000 to constr. 85,000-sq. ft. factory for processing food at Newhall St. & Campbell Ave.—by H. H. Clapp Food Processing Co.

SOLANO CO.—**Peter Kiewit Sons Co.,** 442 Post St., San Francisco—$175,042 to constr. hangar at the Fairfield-Suisun Army Airfield—by U. S. Engr. Ofc., Sacramento. 11-16

SOLANO CO.—**Moore & Roberts,** 693 Mission St., San Francisco—$682,145 to constr. 250 temp. family units at Vallejo—by Fed. Pub. Housing Auth., San Francisco. 11-24

VALLEJO CO. — **Barrett & Hilp,** 918 Harrison St., San Francisco—$227,492 to constr. fleet training facilities bldg., at Mare Island—by Bur. of Yards & Docks, Washington, D. C. 10-30

VENTURA CO.—**Jensen & Jepsen,** 1540 S. Robertson Blvd., Los Angeles—$472,595 to constr. 172 temp. family units at Oxnard—by Fed. Pub. Housing Auth., San Francisco. 11-28

Nevada

MINERAL CO.—**Wm. P. Neil Co.,** 4814 Loma Vista, Los Angeles, Calif.—$173,258 to constr. addl. personnel facilities at Naval ammunition depot, Hawthorne—by Bur. of Yards & Docks, Washington, D. C. 10-30

Oregon

CLATSOP CO.—**John Helstrom,** Astoria—$95,600 to constr. 30 family dwelling units & community bldg. at Astoria—by Fed. Pub. Housing Auth., Seattle. 11-22

COOS CO.—**Lee Hoffman,** Rte. 5, Box 801, Portland—$58,985 to constr. 20 family dwellings at North Bend—by Fed. Pub. Housing Auth., Seattle. 11-17

KLAMATH CO.—**K. T. Henderson,** 1614-25th Ave., Longview, Wash.—$244,577 to constr. 80 public dwelling units, Klamath Falls—by Fed. Pub. Housing Auth., Seattle. 11-24

LINN CO.—**Northwest Fabricators,** Albany—$430,000 to furnish & pack 800 units of pre-cut tropical barracks—by U. S. Engr. Ofc., Atlanta, Ga. 11-22

MARION CO.—**Ed Viesco,** Box 69, Salem—$105,532 for market & receiving dairy plant at Salem—by Dairy Cooperative Association, Portland. 10-28

Texas

DALLAS CO.—**Lloyd Epperson,** Pittsburg—$52,000 to constr. theater & stores at Lovers' Lane, Dallas—by B. R. McLendon, Dallas. 11-15

POTTER CO.—**McCann Construction Co.,** Box 2007, Fort Worth—$137,250 for the site work necessary for the constr. of 150 portable dwelling units at Amarillo—by Fed. Pub. Housing Auth., Fort Worth. 11-14

WARD CO.—**Widmer & Mankins,** Pecos—$160,000 to constr. hotel of three stories & basement, 27 rooms & baths—by J. B. Tubb, owner, Monahans. 11-13

Utah

BOX ELDER CO.—**S. M. Horman,** Salt Lake City, Utah—$200,000 to constr. 39 housing units at Brigham City—by Bushnell Homes, Inc., Brigham City, Utah. 11-23

IRON CO.—**Ben H. Davis,** Salt Lake City—$149,000 to constr. 36 housing units, including landscaping at Cedar City—by Slack W. Winburn, Architect. 11-2

WEBER CO.—**Robert E. McKee,** 4700 San Fernando Rd., W., Los Angeles—$159,855 to constr. freight warehouse & utils. at Ogden Arsenal—by U. S. Engr. Ofc., Sacramento. 10-30

Washington

BENTON CO.—**W. C. Smith, Inc.,** Bd. of Trade Bldg., Portland—$102,900 to constr. 16-rm. addn. to elementary school, Kennewick—by School Board, Kennewick. 11-17

CLALLAM CO.—**Chisholm & Eiford,** Box 54, Bellingham—$92,748 to constr. 20 family units at Forks—by Fed. Pub. Housing Auth., Seattle. 11-14

FRANKLIN CO.—**Halvorson Construction Co.,** 1st Natl. Bank Bldg., Salem—$348,780 to constr. 115 dwelling units in Pasco—by Fed. Pub. Housing Auth., Seattle. 11-10

GRAYS HARBOR CO.—**C. F. Davidson Co.,** 711 Broadway, Tacoma—$98,600 to constr. 30 family dwelling units at Pacific Beach—by Fed. Pub. Housing Auth., Seattle. 11-14

ISLAND CO.—**S. S. Mullen Co.,** 1222-8th Ave., W., Seattle—$158,414 to constr. 50 family dwelling units at Whidby Island—by Fed. Pub. Housing Auth., Seattle. 11-8

JEFFERSON CO.—**Rainier Construction Co.,** Seattle—$65,386 to constr. 20 family dwelling units at Hadlock—by Fed. Pub. Housing Auth., Seattle. 11-8

KING CO.—**Henrikson Construction Co.,** Lloyd Bldg., Seattle—$64,900 to constr. addtl. corpsmen's barracks at the U. S. Naval Hospital, Seattle—by Pub. Works Ofc., Seattle. 11-24

KING CO.—**Dolph Jones,** 2213 N. Proctor St., Tacoma—$77,150 to constr. a 6-room elementary school, Terminal Park District, Auburn—by King Co. School Dist., Auburn. 11-27

KING CO.—**Nettleton & Baldwin,** 1109 N. 36th St., Seattle—$384,900 to constr. 130 dwelling units & a community bldg., in East Magnolia area—by Fed. Pub. Housing Auth., Seattle. 11-18

KITSAP CO.—**Bergesen, Wick & Dahlgren,** Box 25, Tacoma—$78,000 to constr. 20 family dwellings at Bainbridge Island—by Fed. Pub. Housing Auth., Seattle. 11-17

MASON CO.—**Bergesen, Wick & Dahlgren,** Box 25, Tacoma—$63,150 to constr. 20 family dwelling units at Shelton—by Fed. Pub. Housing Auth., Seattle. 11-17

SPOKANE CO.—**Roy L. Bair & Co.,** W. 1220 Ide Ave., Spokane—$69,212 to constr. a nurses' training home at St. Luke's Hospital in Spokane—by Fed. Works Agency, Spokane. 11-17

British Columbia

KAMLOOPS—**J. C. Taylor & Son,** Kamloops—$100,000 to constr. a storage plant at Kamloops—by Kamloops Ice & Cold Storage Company, Ltd., Kamloops, B. C. 11-28

VANCOUVER—**Smith Bros. & Wilson Limited,** 1267 Richards St., Vancouver—$300,000 to construct 100 houses to be used for soldiers' dependents at Vancouver—by Wartime Housing Limited, British Columbia. 10-30

Miscellaneous...

California

CONTRA COSTA CO.—**Bartlett & Hosking,** 541 Civic Center, Richmond—$98,470 for firesafing 285 bldg. in Richmond—by Fed. Pub. Housing Auth., San Francisco. 11-27

CONTRA COSTA CO.—**Bartlett & Hosking,** 541 Civic Center, Richmond—$517,991 to firesafe 494 bldg. at Richmond—by Fed. Pub. Housing Auth., San Francisco. 11-6

CONTRA COSTA CO.—**Biltwell Construction Co.,** 4745 Geary Blvd., San Francisco—$182,877 for fire prevention measures at Richmond—by Fed. Pub. Housing Auth., San Francisco. 11-1

CONTRA COSTA CO.—**Mercer, Fraser Co.,** 83 McAllister St., San Francisco—$900,542 to constr. wooden wharf supported on treated wood piling with asphalt concrete deck surf., util. bldg., and R.R. tracks at Naval Magazine, Port Chicago—by Bur. of Yards & Docks, Washington, D. C. 11-17

LOS ANGELES CO.—**Nathan A. Moore,** 2455 Sherwood Rd., San Marino—$116,000 to excavate 200,000 cu. yd. sand dune at Hyperion and place on public beach, betw. 18th Ave. & 32nd Ave., Venice—by Board of Pub. Works, Los Angeles. 11-14

SACRAMENTO CO.—**MacDonald & Kahn, Inc.,** Financial Center Bldg., San Francisco—$242,928 to install automatic sprinkler systems in five storage bldg. at McClellan Field—by U. S. Engr. Ofc., Sacramento. 11-22

SAN DIEGO CO.—**B. O. Larsen,** 1340 E St., San Diego—$1,188,000 to constr. refrigerated boxes for use on barges of Army forces—by U. S. Army, Cincinnati, Ohio. 11-21

SOLANO CO. — **Grinnell Co.**, 5th & Brannan, San Francisco—$92,300 to inst. sprinkler protection for dock at Benicia Arsenal—by U. S. Engr. Ofc., San Francisco. 11-15

SOLANO CO.—**Moore & Roberts & G. W. Williams Co.**, 693 Mission St., San Francisco—$592,658 to constr. addtl. housing, paving & util. at Fairfield-Suisun Army Airfield, near Fairfield—by U. S. Engr. Ofc., Sacramento. 11-16

Colorado

PUEBLO CO.—**Grinnell Co.**, 914 Coneral St., Kansas City—$404,924 to furnish & install a sprinkler system at the Pueblo Ordnance Depot—by U. S. Dist. Engr. Ofc., Denver. 11-7

Montana

TETON CO. — **Morrison-Knudsen Co.**, Box 450, Boise—$115,000 to improve the railway line betw. Acme & Collins, on the Shelby-Great Falls line—by Great Northern Railroad Co., Montana. 11-1

Nebraska

REDWILLOW CO.—**Sioux Contractors,** Minneapolis, Minn. — $61,642 to constr. lavatory units & other misc. work at McCook Army Airfield—by U. S. Engr. Ofc., Omaha. 11-16

Oregon

DOUGLAS CO.—**Dan J. Malarkey**, 923 S.W. 17th Ave., Portland—$69,732 to constr. control house & oil house near Rock Island—by Bonneville Power Admin., Portland. 11-20

UMATILLA CO. — **Viking Automatic Sprinkler Co.**, 811 N.W. Davis St., Portland—$104,592 to install six automatic sprinkler systems in 6 warehouses at Umatilla Ordnance Depot, Hermiston—by U. S. Engr. Ofc., Portland. 11-22

Texas

CAMERON CO.—**Dodd & Wedegartner Construction Co.**, 382 N. Bowie Drive, San Benito—$55,694 to constr. addtl. gunnery range, maintenance bldg., latrines, eight high towers & trap houses at Harlingen Army Air Field—by U. S. Engr. Ofc., Galveston. 10-8

DALLAS CO.—**Austin Bridge Co.**, 1813 Clarence St., Dallas—$2,500,000 for excavation & foundation work for addt. to steam electric station & an extension to Mountain Creek Power Plant—by Dallas Power & Light Co., Dallas. 11-20

Utah

DAVIS CO.—**A. H. Palmer & Son**, Logan —$72,812 for heating installations in storehouse, at Naval Training Station, Clearfield—by Bur. of Yards & Docks, Washington, D. C. 11-27

SALT LAKE CO.—**John H. Haslam**, 4221 Highland Dr., Salt Lake City—$101,903 to alter & make additions and furnish laundry equipment for St. Mark's Hospital, Salt Lake—by Fed. Works Agency, Salt Lake City. 11-29

WEBER CO.—**Viking Automatic Sprinkler Co.**, 216 Pine St., San Francisco—$493,-

804 to install sprinkler system in warehouse & bldg., Army Service Forces Depot near Ogden—by U. S. Engr. Ofc., Sacramento, Calif. 11-9

Washington

GRAYS HARBOR CO. — **The Lamb-Grays Harbor Co.**, Hoquiam—$750,000 to make boosters for shells at Lamb-Grays Harbor Plant—by Frank H. Lamb. 10-25

PIERCE CO.—**Macdonald Bldg. Co.**, 1517 S. Tacoma Way, Tacoma, and **Woodworth & Co.**, 1200 E. "D" St., Tacoma — was awarded a negotiated contract to constr. storehouses and administration bldg., to grade and drain & to install sewers at Lakeview—by Bur. of Yards & Docks, Washington, D. C. 10-25

Wyoming

NATRONA CO. — **B. Landon**, Casper, $186,000 for 29 mi. of 6 and 8-in. pipeline carrier betw. Casper and Sinclair—by Sinclair Refinery, Casper. 11-23

NATRONA CO. — **I. C. Little**, Dallas, Texas—$142,000 to place 31½ mi. of 12-in. crude oil pipeline betw. Casper & Welch—by Standolind Pipe Line Co., Casper. 11-16

PROPOSED PROJECTS

Highway and Street . . .

California

SAN FRANCISCO CO. — $515,000 has been allotted for the new six-lane highway which will parallel the present Bayshore Blvd. and Potrero Ave. to Potrero & Eleventh St. & will swing from that point over to Fifth & Harrison St., terminus of the San Francisco-Oakland bridge. The freeway will be from San Francisco down the Peninsula. 10-25

Airport . . .

Arizona

PIMA CO.—The War Department has authorized new constr. at Davis Monthan Army Air Field, Tucson, Arizona. U. S. Engr. Ofc., Los Angeles, will supervise the job of bldg. addtl. facilities, & the estimated cost is $1,577,500. 10-9

Colorado

DENVER CO.—The War Department has just authorized the constr. of addtl. taxiways, parking aprons & roads. The work will amount to $992,680 and will be supervised by the Denver Corps of Engr., at Colorado. 11-13

Idaho

ADA CO.—Authorization has been given by the War Department to constr. bldg., hangars, and warm-up pads at Gowen Field, Boise. Estimated cost is $1,519,865.

This work is supervised by the U. S. Army Engr., Portland, Oregon. 10-9

BANNOCK CO.—The War Department has authorized $1,290,193 to expand the facilities at the Pocatello Army Air Field. The constr. work will be done by the Portland Corps of Engr., & will consist of hangars, crash truck building, service aprons, warmup pads & roads. 10-9

New Mexico

BERNALILLO CO.—The War Department has just authorized the constr. of addtl. airfield facilities at Kirkland Field, Albuquerque, consisting of taxiways, hangars, extending existing parking aprons, & trainer bldg. in the amount of $1,260,406. U. S. Engr. Ofc., Albuquerque, will supervise. 11-13

CHAVES CO.—The War Department has authorized constr. at Roswell Army Air Field to consist of extending runways & providing shoulders, widening taxiways, and building hangar. $1,160,917 is the authorized amount to be used by the Corps of Engr. of Albuquerque. 11-9

Texas

BEXAR CO.—The War Department has authorized the constr. of addtl. hangars, aprons, and widening of taxiways at Randolph Field, San Antonio. Work will be supervised by Corps of Engr., San Antonio. The amount to be expended is $2,014,172. 11-9

Washington

SNOHOMISH CO.—Plans have been drawn for constr. of an addtl. runway & taxiway at the Arlington Aux. Naval Air Station at an estimated cost of $612,500. The new runway is to be 150 ft. wide & 5,000 ft. long. 10-13

Wyoming

NIOBRARA CO.—The C. A. A. has approved an airport project for Lusk, Wyo., and surveys will be started at once. This project will include two 5,000-ft. runways, 200 and 300 ft. wide.

British Columbia

ABBOTSFORD CO.—Dominion Government at the R.C.A.F. airport has received $563,300 for work at the field. 10-30

Sewerage . . .

California

SAN FRANCISCO CO.—In the recent election San Francisco voted $12,000,000 to constr. sewer improvements throughout the city.

Building . . .

California

YOLO CO.—The Board of Supervisors of Yolo Co. has purchased a site for the proposed $190,000 hospital. Plans and specifications are being prepared by W. D. Peugh. 10-24

TRADE WINDS

News of Men Who Sell to the Construction West

CALIFORNIA

The Peerless Pump Division of the FOOD MACHINERY CORPORATION was honored in Los Angeles recently when its employees received the Army-Navy "E" pennant as a recognition of their outstanding war production record. Peerless products, expanded and developed for special applications for all branches of the armed forces, include powerful turbine-type pumps used in refloating sunken warships and de-watering dry docks; hi-lift pumps to assure the necessary supply of fresh water for our troops; refueling pumps for combat planes, tanks and water buffalos; bilge pumps for landing craft and specially designed submersible pumps which are serving as part of the equipment of our naval vessels.

☆ ☆ ☆

B. M. Brown has been appointed manager of the Petroleum and Chemical Section of the industrial department of the WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, San Francisco, Calif. Brown succeeds **O. M. Crater**, who was transferred to the Detroit, Mich., office as assistant manager. Brown joined Westinghouse as a member of the student course in 1941 and served with the Machinery Electrification Section until 1943. He later was transferred to the transportation department. He is a graduate electrical engineer.

☆ ☆ ☆

H. K. PORTER COMPANY, INC., Pittsburgh, Pa., has opened offices at 849 Petroleum Bldg., Los Angeles, Calif., with **Harold A. Hentz** as district manager for the territory. Porter products handled through the new office include locomotives, freight cars, process equipment for oil, chemical and other industries, pumps, electric steel castings and heavy forgings. Hentz has had years of experience in the industrial field and promises excellent service for the company's western customers.

☆ ☆ ☆

LINK-BELT COMPANY, with plant and executive offices at Chicago, Ill., has opened a Pacific Division office and warehouse at 1025 Harrison St., Oakland, Calif. The new store has been remodeled to meet the needs of Link-Belt and is now serving East

Bay customers. The company manufactures roller chain and chain couplings, malleable iron chains, sprocket wheels, shafting, safety collars, anti-friction bearings and other power transmission merchandise.

☆ ☆ ☆

THE UNITED STATES PLYWOOD CORPORATION, New York, N. Y., has formed a Los Angeles, Calif., sales division. **Fred B. Smales**, who has been with the concern for 12 years, will manage the new office. **Don L. Braley** has been appointed manager of the San Francisco distributing unit. **Don L. Kesselring** will manage the Oakland unit and **John D. Patriguin** will manage company affairs in the entire San Joaquin Valley.

☆ ☆ ☆

Frank B. Fulenwider is the new Assistant Manager of the Tire, Battery and Auto Supply Department of TIDE WATER ASSOCIATED OIL COMPANY, San Francisco, Calif. Fulenwider has been in Portland, Ore., with this company for twelve years and was Assistant District Service Station Supervisor at the time of his transfer.

William A. Smith has been appointed panelboard specialist for the WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, San Francisco, Calif. Smith will have charge of the application of panelboards and other electrical circuit protective devices in industrial plants, commercial buildings, hospitals and other institutions throughout the Seattle area. He joined the company in 1941 and has served as an application engineer.

☆ ☆ ☆

To the men and women of the Torrance, Calif., works of the COLUMBIA STEEL COMPANY, goes the Maritime "M" Pennant, the Victory Fleet Flag, and Maritime Labor Merit Badges. These awards were given in recognition of the outstanding production record that was made by the employees during the construction of new ships for the Victory Fleet.

PACIFIC NORTHWEST

Ralph E. Yoder, Jr., left, and Arthur K. Roberts

WEST COAST LUMBERMEN'S ASSOCIATION, Seattle, Washington, has appointed **Arthur K. Roberts** to become a member of the information department staff and **Ralph E. Yoder, Jr.**, to become a member of the trade extension staff. Roberts will edit Big Trees, the WCLA newspaper for the retail lumber trade, as well as other publications. Yoder is to handle, in cooperation with retail lumber groups, the WCLA Home Planners Institute nation-wide program of popular education on postwar home building. Both men have had considerable experience in their respective fields.

☆ ☆ ☆

Establishment of a British Columbia branch is now announced by the FLINTKOTE COMPANY OF CANADA, LIMITED. The new branch is located at the Hotel Vancouver, Vancouver, B. C., and is under the direction of factory representative **J. J. Marshall.** Marshall has arranged warehouse facilities for local stocks and the WEST COAST LUMBER & ROOFING CO., Vancouver, has been appointed approved applicator for the roofing products. The company has developed a type of cold adhesives and emulsions of clay and asphalt to be used as a top coat for process roofing.

☆ ☆ ☆

FRUEHAUF TRAILER COMPANY has appointed two new men to the sales and service staff at Portland, Oregon. The new representatives are **Ivar R. Madsen** and **Merle B. Shannon.** Madsen was formerly associated with firms dealing in automobile and truck finance and Shannon was employed by the

Ivar R. Madsen, left, and Merle B. Shannon

STANDARD OIL COMPANY. They will handle sales and service work on all types of Fruehauf trailers.

EVANS, COLEMAN & JOHNSON BROS., LTD., Victoria, B. C., have purchased the business of the BAKER BRICK & TILE CO. of the same city. **George Graham** will continue to act as engineer, while **Gilbert Parfitt** will be in charge of the plant. **J. V. Johnson** and **D. E. Smith** will be joint managers. The company sells building supplies and quarry products.

☆ ☆ ☆

INTERMOUNTAIN

THE YOUNG RADIATOR COMPANY, Racine, Wis., announces the appointment of the RODGERS ENGINEERING COMPANY, of Dallas, Texas, as sales and engineering representative for Northeast and North-central Texas. This company designs and manufactures heat transfer products for heating, cooling and air conditioning—for the aircraft, automotive, marine and processing industries. The engineering company will stock a complete line of complementary accessories and will provide sales and engineering service.

☆ ☆ ☆

THE FOOTE COMPANY, INC. of Nunda, N. Y., has appointed the POWER EQUIPMENT COMPANY, Denver, Colo., to represent it in the state of Colorado. The company handles the Adnun Black Top Paver and the Multifoote Paver.

☆ ☆ ☆

THE WOOD MANUFACTURING COMPANY, Los Angeles, Calif., has appointed the FEHRS TRACTOR & EQUIPMENT COMPANY, Omaha, Nebraska, as its distributor in Nebraska. "Wood" builds the Wood Roadmixer, which is a complete traveling mixing plant.

☆ ☆ ☆

AMONG THE MANUFACTURERS

Harold D. Bates is the new advertising and sales promotion manager for the PHILIP CAREY MANUFACTURING COMPANY of Lockland, Cincinnati, Ohio. **Chester L. Owens** is assistant general sales manager, and **George B. Johnston** is the general merchandising manager. Bates has had years of experience in the promotion of building materials and industrial products and was assistant advertising and sales promotion manager for Johns-Manville at New York prior to his new appointment. Owens joined the company as a salesman in 1927 and later served as branch manager at Omaha and Chicago. For the past ten years he has been manager of the company's Cincinnati branch. Johnston is past manager of the marketing division. During his 19 years with the company he has had wide experience in various departments. He has been recently the assistant branch manager at Chicago. The three men will maintain headquarters in the Cincinnati office of the company.

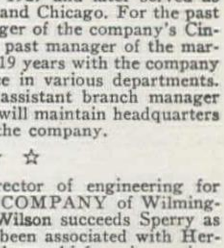
☆ ☆ ☆

Luke H. Sperry is director of engineering for HERCULES POWDER COMPANY of Wilmington, Delaware. **Ernest S. Wilson** succeeds Sperry as chief engineer. Sperry has been associated with Hercules since 1918, and has been chief engineer since 1939. In 1941, he became a member of the company's board of directors. Wilson joined Hercules in 1923 and was general manager of Hercules Paper Makers Chemical plants from 1937 to 1939, when he was appointed assistant chief engineer. Both men have taken an important part in the directing of construction and the beginning of operations of six large Hercules-operated ordnance plants manufacturing smokeless powder, TNT and ammonia.

☆ ☆ ☆

William M. Kauffmann has been appointed assistant to the chief engineer, in charge of diesel engines, for MACK TRUCKS, INC., New York. Kauffmann has had 20 years' experience in diesel development and will supervise the company's enlarged facilities for diesel research and development. He has been research and design engineer for WORTHINGTON PUMP & MACHINERY COMPANY, Buffalo, BALDWIN DE LA VERGNE, Philadelphia, and other machinery organizations.

☆ ☆ ☆



Ray C. Nesbitt, formerly with the construction machinery branch of WPB in Washington, D. C., is a new sales engineer for BARNES MANUFACTURING CO., Mansfield, Ohio. He has been associated also with ED. PHILLIPS CO., construction equipment distributors in the Middle Atlantic States, and has had wide experience in the sales and engineering phases of the construction field. Nesbitt's headquarters will be at the company's plant in Mansfield.

☆ ☆ ☆

LIMA LOCOMOTIVE WORKS, INC., Lima, Ohio, has appointed **Henry Barnhart** as Vice President in charge of the shovel and crane division, **Paul R. Ehrgott** as general sales manager of this division, in charge of domestic and export sales, and **Albert Townsend** as Vice President in charge of engineering. Barnhart joined the company in 1928 as assistant sales manager, and became manager of the shovel and crane division in 1943. Ehrgott is the past district sales manager at Bethlehem, Pa. Townsend has been associated with Lima since 1917 and has held positions as calculator, chief calculator, mechanical engineer and chief mechanical engineer. He is a member of several engineering and railroad societies and associations.

☆ ☆ ☆

Joseph W. Frazer, chairman of GRAHAM-PAIGE MOTORS CORPORATION, predicted that "If America's heavy industries accept the challenge of reconstruction which will be hurled at them when hostilities cease, they can enter upon an era of prosperity unexcelled in our peacetime history." WARREN CITY MANUFACTURING COMPANY, a subsidiary of Graham-Paige, is at present building landing barges and other heavy duty war equipment. Frazer stated that we must prepare ourselves for the vast job of reconstructing obsolescent equipment in this country and rebuilding the battle-scarred cities of the world. He believes that the job of rehabilitating the nation's railroads, which are straining under the burden of war transportation and years of physical decline, is sufficient in itself to keep hundreds of plants humming and thousands employed.

☆ ☆ ☆

THE LE ROI CO., Milwaukee, Wis., manufacturers of portable air compressors, internal combustion engines, and engine-driven generator sets, announces the advancement of **Norman M. Sedgwick** from assistant manager of compressor sales to sales manager of that division succeeding **Don Heffron**, who has resigned to take up other work. Sedgwick joined the company 16 years ago and has had experience in the shop, field service, purchasing and sales departments. For the past several years he has worked with the U. S. Engineer Corps in servicing government compressor contracts.

☆ ☆ ☆

Charles Roebling Tyson has been elected president of the JOHN A. ROEBLING'S SONS COMPANY of Trenton and Roebling, New Jersey. Tyson succeeds the late **William A. Anderson**, who died recently. The company, founded 102 years ago by **John Augustus Roebling**, has produced supplies and material for the Nation's armed forces during four wars. **Lt. Joseph M. Roebling**, now serving abroad with the United States Army Air Corps, was elected chairman of the Board of Directors. **Archibald W. Brown** was elected treasurer and **H. D. Rathbun** is the new secretary and assistant treasurer. Tyson joined the company in 1935 and has had wide experience in the various departments. Lt. Roebling has been first vice president since 1936.

☆ ☆ ☆

W. A. Smith is manager of suspension sales for the B. F. GOODRICH COMPANY, Akron, Ohio. His department will handle all suspension products, including the company's well known line of Vibro insulators, which are devices of rubber and metal used for isolating vibration and noise. Smith has been with the company for 20 years and is a past technical representative in the Washington offices.

☆ ☆ ☆

Lyle E. Hill, who has served three years as a priorities supervisor and special traveling representative of the purchasing department of the CATERPILLAR TRACTOR CO., Peoria, Ill., has been transferred to the position as chief of the railroad power division. He is widely experienced in the application of diesel-electric railroad motive power. He was associated with the CHICAGO & NORTHWESTERN RAILROAD CO. for 19 years.

☆ ☆ ☆

John Gasteiger has been appointed as Sales Manager of the ADVANCED CONCRETE ROAD CURING COMPANY of New Haven, Conn. He was released recently from a position as Disposal Advisory Officer for the War Department. Gasteiger followed in his father's footsteps in the hay and grain business and has been active in this industry since 1929.

☆ ☆ ☆

DRESSER INDUSTRIES, INC., Cleveland, Ohio, has acquired the assets of the INTERNATIONAL-STACEY CORPORATION, which will be dissolved, and of its subsidiaries, which will continue to operate. **Oscar M. Havekotte** has been President of the Stacey Corporation and INTERNATIONAL DERRICK & EQUIPMENT COMPANY, and will continue as head of the latter company. Havekotte started his career with CARNEGIE-ILLINOIS STEEL CO. in 1906. Dresser, Inc. manufactures equipment for the oil, gas, and water fields, such as derricks, drilling apparatus, radio and airport towers and equipment, gas storage tanks and gas-fired home heating equipment.

☆ ☆ ☆

Littleton C. Barkley, present manager of the New York office of the Manhattan Rubber Mfg. Division of RAYBESTOS-MANHATTAN, INC., has been appointed sales manager of the Manhattan Mechanical Rubber Goods Sales Department with offices at 120 Broadway, New York City.

☆ ☆ ☆

William P. Michell was appointed assistant chief engineer of MACK TRUCKS, INC., Long Island, New York. Michell recently returned from Great Britain, where he had been serving in an advisory capacity on military truck transport for the British government. He joined Mack in 1923 as a shop engineer and became assistant to the chief engineer in 1937. He is a member of several engineering societies.

Harold F. Allen has been appointed Chief Engineer of the LINK-BELT SPEEDER CORP., Chicago, Ill. He will be in charge of engineering in both the Chicago and the Cedar Rapids plants. Allen has been with the crane division since 1916, and has contributed many sound engineering ideas such as the Speed-o-Matic type of hydraulic controls for crane and shovel equipment.

☆ ☆ ☆

UNITED STATES RUBBER COMPANY, Rockefeller Center, New York, has purchased the assets and business of the L. H. GILMER COMPANY of Philadelphia, Pa., manufacturers of industrial V-belts. President **John S. Krauss** will continue in the active management of the former Gilmer business. The plant is located at Tacony, a Philadelphia suburb.

William W. Greenway is the new Production Engineer for the MT. VERNON CAR MANUFACTURING COMPANY and the J. P. DEVINE MANUFACTURING COMPANY. These companies are divisions of the H. K. PORTER COMPANY, INC., Pittsburgh, Pa. Greenway has had 8 years of experience with LA PLANT-CHOATE MANUFACTURING COMPANY of Cedar Rapids, Iowa, where he served in various capacities from machine operator to manager of production. He was associated with the AUSTIN WESTERN COMPANY as production specialist and has been with the War Production Board as industrial specialist.

☆ ☆ ☆

J. W. Sullivan, Chairman of the Board of SKILSAW, INC., died Oct. 26 at his home in Evanston, Ill. He was 73 years old. Sullivan was the founder of Skilsaw, Inc., portable electric tool manufacturers, and until recently has been an active force in directing the company's production and sales policies.

☆ ☆ ☆

CLINTON BRIDGE WORKS, Clinton, Iowa, GAGE STRUCTURAL STEEL CO., Chicago, Ill. and MIDLAND STRUCTURAL STEEL CO., Cicero, Ill., have withdrawn from the "4V" structural steel companies and have formed the ALLIED STRUCTURAL STEEL COMPANIES. These companies have a total annual capacity of 75,000 tons of finished steel products and will specialize in fabricating, engineering and erecting work.

☆ ☆ ☆

E. M. Martin, who was on loan from the B. F. GOODRICH COMPANY, Akron, Ohio, as special assistant to the Administrator of the Surplus War Properties Administration and later with the War Production Board in Washington, D. C., is now in Europe helping to make recommendations on the restoration of the rubber industry and the re-establishment of civilian transport in France. Martin has been with Goodrich for 24 years and, previous to his government appointment, was attached to the overseas branch of the company's international division.

MASONITE CORPORATION, Chicago, Ill., announces that **Matthew P. McCullough** will head the corporation as the new President. He has been treasurer since 1928 and takes the place of the late **Ben Alexander**. The company produces ligno-cellulose products made from the fibers of exploded wood. These products, ranging from die stock for the forming of metal parts to insulating material, are widely used in the construction industry.

☆ ☆ ☆

David M. Salsbury is now vice president and general manager of the Supply Company of the WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, San Francisco, Calif. Salsbury has been with Westinghouse since 1920 and has had many years of experience in the electrical supply business.

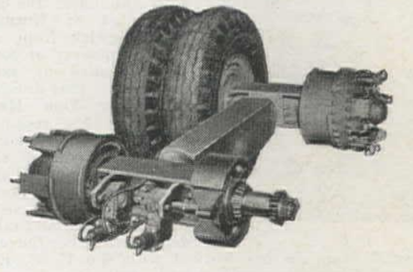
NEW EQUIPMENT

Hydraulic Brakes

Manufacturer: The C. R. Jahn Co., 1341 W. 37th Place, Chicago, Ill.

Equipment: Hydraulic brakes for heavy duty trailers.

Features claimed: The company's heavy duty industrial trailers, from 5 to 100 tons capacity, are now equipped with hydraulic brakes. These brakes provide smoother, faster braking action with positive, equal braking pressure on all wheels. There is little



possibility of a partial application or dragging of the brakes when operating over rough ground. Full motive power can be utilized in pulling the load and unlimited oscillation of the tandem axles is possible without affecting braking action. These hydraulic brakes reduce maintenance work to a minimum and increase safety to a maximum.

Electrode Holder

Manufacturer: The Lincoln Electric Co., Cleveland, Ohio.

Equipment: Lincoln electric holder.

Features claimed: This holder weighs 22 oz., has a current rating of 300 amps. with ample capacity for overload and will handle electrodes ranging from 1/16 in. to ¼in. in diam. The "Lincalloy" jaws, made of high conducting and wear resisting copper alloy, will withstand rough treatment and are fully guarded from contacting the work by a replaceable durable spring steel insulating guard. Trigger is made from a molded, heat-resisting inorganic material. Holder is designed to hold electrode securely at any angle, to permit quick and easy change of rods, and to give equally good performance on both AC and DC currents.

Moisture Detector

Manufacturer: Colloid Equipment Co., Inc., New York, N. Y.

Equipment: Delmhorst moisture detector for construction materials.

Features claimed: This new Model R detector is complete and self-contained. The reading is taken, after forcing the electrode needles into the material, by turning the dial knob until a small light above the dial flashes at the correct moisture content. Through assembly-line manufacturing methods, this simple, rugged, accurate meter is offered at a reasonable price.

Fluorescent Lighting

Manufacturer: Westinghouse Electric & Manufacturing Co., San Francisco, Calif.

Equipment: Fluorescent tubes 8 ft. long.

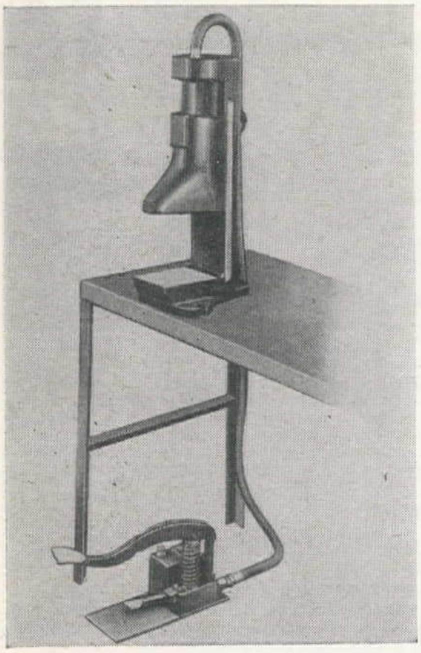
Features claimed: These slender fluorescent tubes which produce the effect of a long ribbon of soft electric light will be manufactured as soon as war conditions permit. The new "slimline" lamps were designed primarily for showcases, wall cases, and coves in stores and restaurants. These high efficiency hot cathode types, which average approximately 60 lumens per watt of electricity consumed, will be available in 42-in., 64-in., 72-in., and 96-in. lengths. The diameters of the bulbs range from ¾ in. to 1 in. and the lamps will start immediately at the flick of a light switch.

Press

Manufacturer: Reimuller Brothers Co., Franklin Park, Ill.

Equipment: Hy-speed precision punch press.

Features claimed: The precision bench press of semi-steel construction incorporates "V" ways to eliminate the use of die shoes and is designed for speedy and efficient handling of production jobs. It is made in a 5-ton size with a 5 x 6-in. platen and 7-in. of ram movement. Only two levers are used in



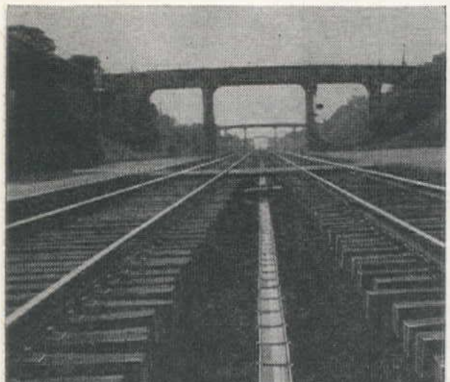
the hydraulic foot control, no outside airlines or power is necessary and the unit is self air eliminating so that the operator's hands are free while operating the press. The press may be built so that it is portable and with proper equipment it may be used as a tensile and compression testing unit up to 5 tons, as a pipe vise to handle up to 6-in. pipe, or as a shearing tool for ¼-in. plate or ½-in. rounds.

Drainage Pipe

Manufacturer: Robinson Clay Product Co., Akron, Ohio.

Equipment: Drainage Skip-Pipe and Staminite Pipe.

Features claimed: As a result of joint pioneering by the Robinson Clay Product Co., the W. S. Dickey Clay Manufacturing Co., and the Dimick-Mosher



Products Co., the clay pipe industry has developed Skip-Pipe to provide permanent, fast-flowing, subsurface drainage. Vitrified clay Skip-Pipe provides long-life installations; drains at high velocity because of its cradle design; will not rust, corrode or disintegrate; is impervious to action of deteriorating agencies; has great structural strength; is low in cost; and economical to lay. Robinson Staminite Pipe has the advantages of Skip-Pipe as well as a center structural reinforcement which permits its use for special applications where extra-heavy surface loads are encountered. In a laboratory test, this pipe supported 19,000 lbs. per lineal ft.

Rubber Insulation

Manufacturer: United States Rubber Co., Los Angeles, Calif.

Equipment: Synthetic rubber insulation.

Features claimed: This insulation makes possible power, lighting and communications cable which is lighter, smaller in diameter and with maximum conductivity. The dipping assures centering of the conductor and the insulation is impermeable to water.

Crane

Manufacturer: The Thew Shovel Co., Lorain, Ohio.

Equipment: 20-ton self-propelled crane.

Features claimed: The turntable engine powers the carrier as well as the turntable. The unit, developed to meet military requirements, is mounted on six wheels, each equipped with dual 11 x 20 rubber tires, and can be operated by one man. Gasoline or diesel engines are available and by means of a 2-speed transmission on the turntable and a transfer case in the chassis, 4 travel speeds ranging from 1 to 7 mi. per hr. are provided. Maximum grade of 20 per cent can be climbed by the unit in low gear. Full floating axle shafts and parallel torque rod system are incorporated in design. Two rear axles are mounted on rocker arms which replace the conventional springs. This type of construction gives required flexibility for road travel and necessary rigidity for crane operation. Steering is effected by positive application of air controlled by a single handle lever. Bendix Westinghouse air brakes are standard equipment on all four rear wheels. Other features include an all-welded tube chassis frame of rectangular cross-section, all-welded pin-connected boom, front loading platform to carry loads in transit, and a complete set of instruments and tools.

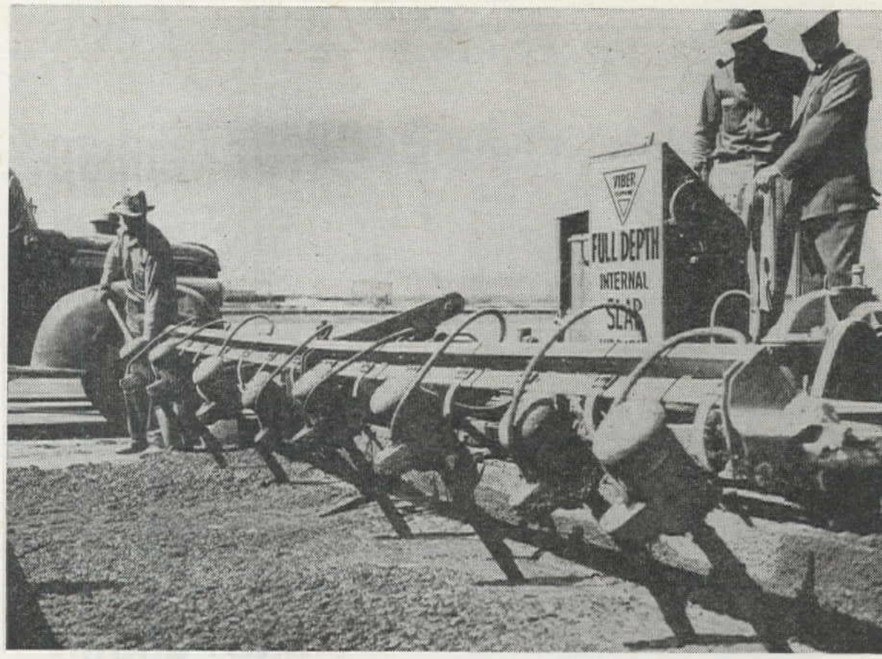
Concrete Vibrator

Manufacturer: The Viber Company, Burbank, Calif.

Equipment: Multiple, high-speed, internal vibrator.

Features claimed: This new multiple, high-speed, internal full depth slab vibrating machine is designed to improve placement methods for heavy-duty airport runways, warm-up aprons, turn-arounds and postwar super thick highways for heavy-duty haul-

LINDBERGH FIELD 8,500-ft. concrete slab runway during pouring operations. Viber internal full depth slab vibrating machine was used on this heavy-duty construction job.



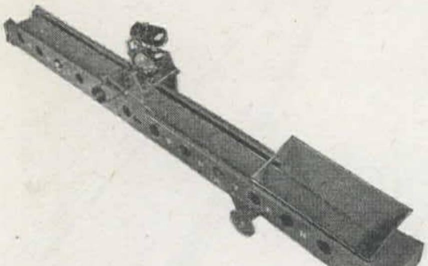
ing. Finished construction reveals that the Viber Slab machine will vibrate the stiffest concrete on slabs of 12 in. and more in thickness, as fast as it can be economically placed on the sub-grade. Requiring only one operator, the machine can vibrate concrete at a rate of from 0 to 22 ft. per minute. This flexibility and speed on the headers is made possible by the fluid motor which gives a wide range of speed. The 25-ft. wide bar lift, to which the battery of vibrators is attached, is hydraulically controlled. This permits the operator to effect an easy positioning control of the vibrators as the machine approaches expansion joints and other obstacles.

Conveyor

Manufacturer: Coaltoter Conveyor Co., Chicago, Ill.

Equipment: Tote-all endless belt conveyor.

Features claimed: This lightweight, portable endless belt type conveyor can handle many conveying



jobs in many industries. Available in 13 ft. 9 in. and 20 ft. lengths, the conveyor may be driven by an electric motor or a gasoline engine. It comes equipped with a 1½ hp. gasoline engine for ordinary conveying and a 2.3 hp. engine for heavy-duty work. A variable speed drive pulley is available if desired. The normal belt speed is 420 ft. per min. The Tote-all conveyor may be used for sand, gravel, brick, grain, salt, corn, clay, fertilizer and coal.

Floor Material

Manufacturer: Continental Asbestos Refining Corp., New York, N. Y.

Equipment: Stonoleum.

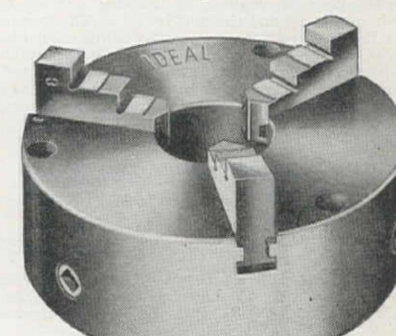
Features claimed: This self-bonding flooring material can be laid over old concrete, cement, wood or composition without adhesives or separate bonding agents. A unique colloidal composition gives it great resistance to direct impact and load, and to vibration, abrasion and other effects of traffic. Small holes in a Stonoleum floor, such as those left when machines or fixtures are removed, are self healing and disappear under traffic. The flooring is simple to place and may also be used as patch material.

Chuck

Manufacturer: Ideal Commutator Dresser Co., Sycamore, Ill.

Equipment: 5-in. 3-jaw universal lathe chuck.

Features claimed: This chuck is precision made to assure accurate turning and has a body of high grade, fine grain and high tensile strength semi-steel. Rib construction provides ample resistance to shock, load



and unusual stress. Scroll is built of alloy steel and has heavy proportions to assure true turning and long life. Two sets of tough, specially treated alloy steel jaws are provided, one for internal and one for external work. A mounting adapter is furnished with each chuck so that it can be accurately fitted to any particular lathe.

Power Take-off

Manufacturer: Davey Compressor Co., Kent, Ohio.

Equipment: Davey truck power take-off.

Features claimed: Many Army crash trucks operate with only one motor and employ the Davey truck power to transmit power from the truck's engine to the high-pressure pumping equipment. Located back of the transmission as an integral part of the truck drive shaft, the unit can be installed to provide either separate or simultaneous operation of truck and equipment. The unit is designed to handle power transmission from truck engine to auxiliary equipment in nearly all truck models of 1½ tons or more capacity, with wheel bases of at least 117 in. for cab-over-engine types and 134 in. for conventional cab types.

Slide Rule

Manufacturer: Pickett & Eckel, Chicago, Ill.

Equipment: Slide rule and decimal point locator.

Features claimed: New device will enable persons of limited mathematical background to solve difficult problems and place the decimal point up to 19 places. These problems may include the use of cube root, square root, log. factors and trig. factors. An illustrated instruction manual gives instructions for beginners, rules for operating the decimal point locator, and presents the mathematical theory of mechanical decimal point location.

Loading Attachment for Trucks

Manufacturer: Hyster Co., Portland, Ore. and Peoria, Ill.

Equipment: Hystevator, self-loading attachment for dump trucks.

Features claimed: This is a work attachment for any standard dump truck and is designed for cleaning ditches along roads and highways. Traveling on the shoulder of a ditch the truck draws a scraper

until filled, then as the truck backs up the scraper is raised and the contents dumped into the truck. The Hystevator can be used for many construction and maintenance purposes and for special farm jobs and can be used for other loading operations when the scraper is replaced with a loading hook. The unit increases the work capacity of a truck.

Ladder

Manufacturer: Duo-Safety Ladder Corp., Oshkosh, Wis.

Equipment: Type "F" industrial ladders.

Features claimed: This ladder is built of duralumin which has light weight, great strength, high resistance to corrosion, and little maintenance cost. The top rails are rounded, brackets are built of web steel, and the open-type locks provide positive action. The extruded duralumin channel is precision built, the side plates are riveted on the inside of the channel at each rung spacing, and the rungs are internally expanded on both sides of the side plates and welded into the side of the channel on the outside of the ladder rail. A 40-ft. 2-section extension ladder weighs only 88 lbs.

Safety Valve

Manufacturer: Farris Engineering Co., Palisades Park, New Jersey.

Equipment: Venturi-type safety valve.

Features claimed: In the design of these valves, special provisions have been made to insure constant, accurate blow-off and to provide great capacity, complete tightness of reseating and minimum escape of vapor. The inlet venturi tube nozzle guides the high velocity steam through an unobstructed port. A patented "separator bell" causes the steam to make three changes in direction before passing into the atmosphere and thus keeps the amount of vapor that escapes into the air at a minimum. The bell has a drain for the condensed moisture and helps to keep the spring cool by preventing steam from striking it. Two-bearing construction eliminates angular distortion, minimizes fouling of guiding areas, provides maximum ease of maintenance, and assures accurate re-seating.

LITERATURE FROM MANUFACTURERS . . .

The Schaible Company, Cincinnati, Ohio—A colored booklet telling how the "kitchen of tomorrow" will be run, with automatic push button control, by radar and miscellaneous other electronics. The kitchen has already shown definite signs of making history, for its debunking and amusement value. At the earliest time permitted they will produce a greatly increased volume of refined pre-war models and improved gate, radiator and air valves taken over by the company just before the war.

The National Mineral Wool Association, New York, N. Y.—A 24-page booklet explains "Insulation and Your Home." Illustrations and cutaway diagrams picture the construction and use of insulation in your home. The National Mineral Wool Association believes that if home owners and builders know all the essential facts about the various insulation materials on the market they will not only better use of insulation but will be inclined to c mineral wool wherever construction conditions mit its use. This booklet sells for 25 cents.

Jones Motrola Co., Stamford, Conn.—The company recently issued a folder describing four models of Jones individual-mount tachometers, as well as the Jones multi-range portable hand tachometer. The folder shows both full-face and profile views of the individual tachometers, mounting dimensions, and contains a section on use, operation and general installation data. The Jones tachometers are designed to indicate instantly and continuously the speed or fluctuation in speed of any rotating part.

The Youngstown Miller Company, Sandusky, Ohio—Bulletin YM-800 describes the operation and exclusive features of plastic coaters. These machines are designed to melt low temperature plastics used for permanent coatings, and also ethyl cellulose compound and other plastic coatings used for protecting parts and tools being stored or shipped overseas. A number of photographs show the different models, with a wide range of dipping compartment sizes and melting capacities.

d Machinery Co., Cleveland, Ohio—
ooklet, "Production with Rear-
ictures the Euclid equipment in
es of heavy dirt-moving work.
trucks are designed especially to
and heavy excavation material. They
ble for year round operation and have
e power and speed for long, steep climbs.

"Quick-Way" Truck Shovel Co., Denver, Colo.—The 32-page illustrated Catalog No. 7 has been issued recently by the company. This booklet describes and pictures by cutaway diagrams and photographs the construction and operation of the "Quick-Way" truck shovel, which has been designed, built, and balanced for operating from any standard 5-ton truck. The shovel is portable; speeds to the job as fast as the truck can travel safely; is full revolving and operates from the rear of the truck; handles all kinds of material; is convertible to a 6-ton truck crane, to a dragline or a clamshell, and to a pile-driver; and is designed for maximum interchangeability of parts.

Air Reduction, New York, N. Y.—Bulletin ADC 619-A, 10-44-6, describes and illustrates the Airco portable and stationary acetylene generators. It features the Type "P" portable generator, which has an air-lift water circulating system and an enlarged radiation space between the carbide hopper and water level, in order to eliminate the hot-belt and provide cooler, double-scrubbed gas. The pamphlet considers the portable models in 15, 30, and 50 lb. sizes, with 30, 60, and 100 cu. ft. maximum hourly productive capacities, and the stationary models in 300 and 500 lb. sizes with 300, 600, and 1,000 cu. ft. maximum hourly productive capacities.

Chain Belt Co., Milwaukee, Wis. — Bulletin 459 "Flat Spray Nozzles" describes and illustrates the use of nozzles for washing, cleaning, cooling and descaling. The nozzles are made in a variety of sizes and from a variety of materials. The folder gives tabular information concerning the flat spray nozzles' discharge in gal. per min. and dimensions, and a list of materials, sizes and prices.

Littleford Bros., Inc., Cincinnati, Ohio—Pamphlet W-642 pictures and describes the company's black top equipment used in constructing and repairing roads, airport runways and highways. Consideration is given to emulsion sprayers, 84-HD double heat circulation kettles, trail-o-rollers, and special spray-tank equipment.

Williams Form Engineering Corp., Grand Rapids, Mich.—A 66-page, loose-leaf book, "Form Engineering," depicts many novel tools that have been developed by the company for use by construction men in the building of forms for concrete. The literature describes light metal clamps for heavy duty, fast pouring work, specifications and features of ties and spreaders, economical designing of forms, clamp adjustments to save time in detailing, demountable forms, methods of tying forms, methods of securing corners, demountable waler members and panels, stud-locks that eliminate nailing, tying circular forms, setting up demountable form members, and many other phases of practical form construction work. The book includes tables showing the design and construction of small retaining walls.

Armco Drainage Products Association, Middletown, Ohio—The company has issued Folder P. O. 15, "The Better Community," describing the long range planning for municipalities and Folder P. O. 16, "Those Modern Roads," urging surveys and blueprints for highway construction. The folders catalog briefly the problems confronting engineers and officials in connection with postwar plans and construction. The folders also illustrate the possible use of Armco products in this postwar work.

J. S. Bache & Co., New York, N. Y.—The company published recently a 42-page book discussing a "Survey of the Air Conditioning Industry." After a review of the development of the air conditioning industry, the publisher quoted the comments of leading executives of air conditioning companies. The men point out that the impetus of war necessity and the inventions that grew out of the war effort have greatly advanced the science of air conditioning. They envision an expanded future for the industry in manufacturing equipment for homes, offices, factories, schools, public buildings, and public conveyances.

E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del.—A 10-page pamphlet, "Metal Degreasing with Chlorinated Solvents," has been released by the company. These standard practices in equipment design, installation and operation have been prepared by the Solvents Division of the Electrochemicals Department, G. S. Blakeslee & Co. of Chicago, and the Detrex Corporation of Detroit. These last two companies manufacture degreasing equipment. The booklet illustrates a number of typical degreasing machines, outlines the fundamental principles of design and operation that must be considered to insure safety and efficiency, and lists reference material.

Advanced Concrete Road Curing Co., New Haven, Conn.—"Curing Concrete Pavement with New Haven Road Mats" presents an illustrated description of the application, removal and storage of the mats. It is claimed that these curing mats will reduce the curing time to 72 hrs., will eliminate constant watering, will protect the sub-grade from freezing and washouts, and can be used over and over again.

Athey Truss Wheel Co., Chicago, Ill.—A 6-page folder, "To Help You Maintain Better Highways," features the Athey force-feed loader. This pamphlet depicts the loader in operation as it removes and salvages surplus materials that are left by highway maintenance and construction crews. This fast, self-propelled loader travels under its own power from one job to the next.

Welding Equipment & Supply Co., Detroit, Mich.—The company has a 42-page booklet, "Eureka Tool Steel Welding Electrodes," that provides complete data on metallic arc tool steel welding. The illustrated catalog and welding manual discusses the repairing of dies and tool steel equipment. Diagrams and photographs picture the metallurgical characteristics of the electrodes, the effects of tempering various tool steels, and general welding procedures.

E. D. Bullard Co., San Francisco, Calif.—Circular 944-700, "A Guide to Selection of Respiratory Protection," tells how to select respiratory protection equipment that is best suited to any particular job conditions. In oxygen-deficient atmospheres, use a hose mask; in the presence of carbon-monoxide, use a Universal canister mask or a hose mask; and in concentrated toxic gases or fumes, use a canister with proper coverage. In stressing the importance of knowing the exact nature of the exposure, a chart lists ten basic types of hazards and the kinds of respiratory equipment to use in each case.

Punch-Lok Co., Chicago, Ill.—An 8-page catalog, "Punch-Lok Streamlined Clamps and Fittings," presents illustrated descriptions of many clamps and fittings. Tools used in applying the clamps and fittings are described and tables list the number, size, and price of the various clamps. According to the company, miscellaneous repairs with Punch-Lok will avoid hose troubles.

Associated General Contractors of America, Inc., New York, N. Y.—A 24-page pamphlet, "Good Public Relations for the General Contractor," has been prepared by Campbell-Ewald Co., Inc., and published by the Associated General Contractors. Printed in three colors and illustrated by sketches, the booklet contains a public relations chart, sample advertisements, and project signs and posters for the use of contractors. The manual emphasizes the importance of public good will and states that the essential basic elements in any public relations program are the recognition of the need for good will and the determination to merit that good will.

The Buda Co., Harvey, Ill.—A pamphlet, "Buda Nozzle Tester," tells how to test, adjust and set nozzles right on the job and keep diesel equipment operating at top efficiency. Diagrams and photographs explain in considerable detail the methods of nozzle testing. The tester available with either a 3,000 or a 5,000 lb. per sq. in. gauge is a precision instrument of rugged and simple construction.

The Elwell-Parker Electric Co., Cleveland, Ohio—"Safety Rules for Operators of Power Industrial Trucks" lists 35 rules for the safe operation of these trucks. Don't cut corners, keep your truck clean, don't carry passengers, report every collision to your foreman, and haul inflammable liquids and acids in only approved containers, are a few of the rules. The pamphlet also contains a list of 13 safety features that should be incorporated in the design of an industrial truck.

National Manufacturers Association, Washington, D. C.—A 16-page booklet, "Heavy Timber Construction Details," describes the standard types of timber framing arrangement and their structural connection details that have been developed and proven satisfactory through years of use. In order that the designer might have available the more recent developments in heavy timber framing, which employ newer types and means of connections, this publication has compiled a set of practical framing and connection details for use in the layout and design of heavy timber industrial building construction. Intricate cutaway diagrams picture clearly the plank floor and beam type of construction; the laminated floor and beam type; the plank floor, beam and girder type; truss and purlin roof framing; typical floor beam, roof beam, and column connections; and floor framing details.

The Master Vibrator Co., Dayton, Ohio—A 6-page folder, "Master Vibratory Finishing Screed," gives an illustrated description of the use and operation of this screed. The screed may be used in the construction of highways; airport aprons, runways and hangar floors; dock decks; street paving and sidewalks; and bridge decks. It is available in adjustable widths up to 26 ft. The screed strikes off and compacts in a single operation and gives uniform vibration throughout its entire length.

Johnson Gear & Manufacturing Co., Ltd., Berkeley, Calif.—An 80-page book, "Gear Facts," presents fundamental information useful in the proper design of all types of gears. It is a compilation of essential engineering data and charts for the use of engineers, master mechanics and machinists. The book has been published as a guide to use in designing and ordering gears in accordance with the recognized standards approved by the American Gear Manufacturers' Association.

B. F. Goodrich Co., Akron, Ohio—The company has recently issued a 98-page handbook, "B. F. Goodrich Operators," to offer suggestions in the selection of the proper tire for any particular job; to give vital facts and data about tires, rims, and wheels; to encourage the proper care and maintenance of tires; and to point out ways of lowering tire cost per mile. In order to prevent a breakdown of motorized commercial transportation, sections of the book deal with the following factors which affect truck tire life: loads carried, air pressure, speed, matching of duals, load distribution, rims, size and condition, wheels, brakes and springs, and proper driving.

Amsco, Chicago Heights, Ill. — The American Manganese Steel Division of the American Brake Shoe Company has published a 56-page catalog, Bulletin 844D, for dredgers. The illustrated booklet describes the important part played by austenitic manganese steel, "the toughest steel known," in the manufacture of all types of dredging equipment. It discusses placer dredging, the evolution of buckets for placer dredging, the rivetless lip bucket, pins and bushings, ladder rollers, bucket tumblers, clamshell and orange peel buckets and pipe line fittings.

George S. May Co., San Francisco, Calif.—"Business Engineering" is a 16-page colored pamphlet discussing the three major divisions of business: administration, operation and sales. Each of these phases is subdivided into five component factors: policies, methods, organization, facilities and personnel. The booklet tells how business engineering is applied to business and explains in detail how the May Company operates in offering service to business.

OPPORTUNITY SECTION

INDEX TO ADVERTISERS
★ IN THIS ISSUE ★