

THE CONCRETE AGE

REPRESENTING THE INTERESTS OF MODERN PERMANENT CONSTRUCTION

Entered as second-class matter October 10, 1919, at the Post-office at Dalton, Ga., under the Act of Congress of March 3, 1879.

VOL. XXXIII. MONTHLY DALTON and Atlanta, OCTOBER, 1920. \$1.00 Per Year. No. 1

Adjustable Poured Block and Concrete Log Molds

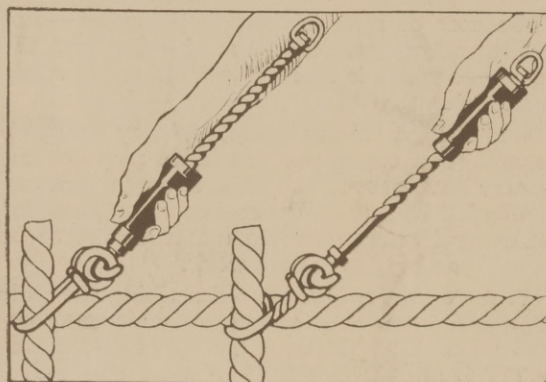
Pour your block in adjustable, non-sweat, true-to-size metal molds and you'll have a dense, waterproof, flint-hard product that will sell itself. Mo'ds make standard 8x8x16 units and 8x8 blocks of any length up to 8-ft., with air courses up and down, along the sides and around the corners, making a complete insulated air course.

The same molds that form the standard block can be used for pouring the logs. Out in this country, houses built of concrete logs, poured in adjustable metal molds, are mighty popular.

Ask for Catalog and Exclusive Territory.

Ray County Concrete Mfg. Co.
Richmond, Mo.

FRANK CREASON, Manager. W. A. MULLIN, Engineer.



You Are Out of Wire.
We Have Full Stock.
Wire Ties for Reinforcing Steel.
Send In Your Orders Now.
Thousands Using Them.

Bates Valve Bag Co.

7310 So. Chicago Ave. CHICAGO, ILL.

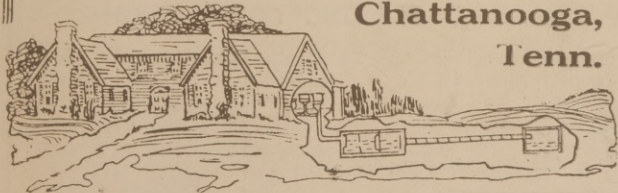
SEPTIC TANKS

Scientifically Designed for Suburban Sanitation.

Write for Circular.

E. J. NOBLETT MFG. CO.

Chattanooga, Tenn.



Alabama Hewn Oak Timber

Trade



Mark

Reg. U. S. A

THE S. K. TAYLOR LUMBER COMPANY

MOBILE, ALA.

IRON PIPE RAILINGS

When in the market for Pipe Railing for Stairs, Bridges or Retaining Walls, send us your drawings. We can quote you prices that will be worth considering.

Dept. R.

PIPE RAILING CONSTRUCTION CO., Long Island City, New York

SAUERMAN DRAGLINE CABLEWAY EXCAVATORS

are widely used in developing local deposits of road gravel

The cost of road construction begins — not with the actual work on the road — but with the first move which is made to get materials ready for the job.

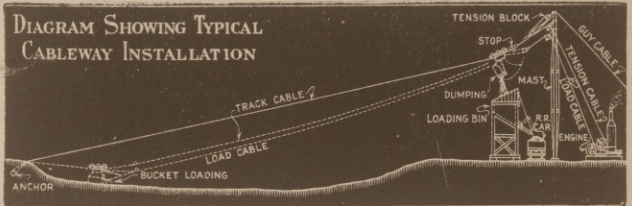
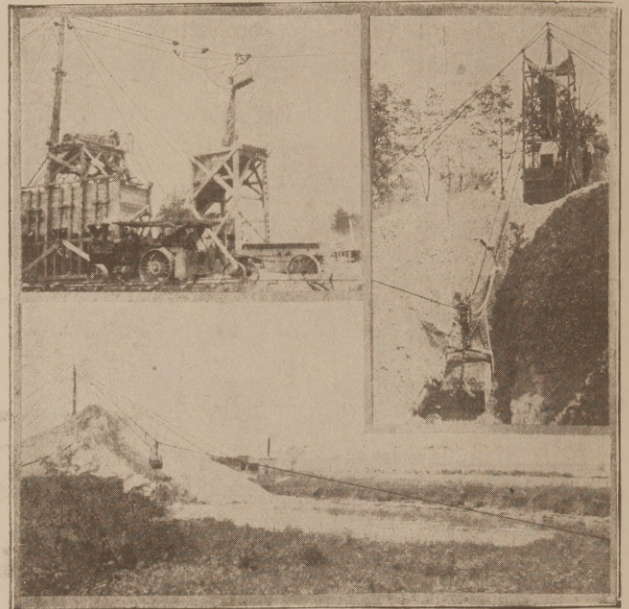
Sand and gravel producers, highway contractors and road commissioners in all parts of the country have proved the great saving which can be affected by installing the Sauerman Dragline Cableway Excavator when materials are to be rushed for a big job of road work.

Write today for literature describing the wide adaptability of this excavator which accomplishes the DIGGING, CONVEYING, ELEVATING and DUMPING of sand and gravel all in one continuous operation, and requires but one man to operate.

SAUERMAN BROS.

1136 Monardlock Block, Chicago, Ill.

Cableway Excavators Cableway Accessories
Power Scrapers



Making Business Talk

Is comparatively easy if you speak through

The Starks Line

Outside Stains
Shingle Stains
Cement Putty

Creosote Disinfectant
Wood Preservative
Waterproofing Paint

Concrete
Cement
Brick
Stucco

Waterproofing

Write or wire today for prices.

The Starks Manufacturing Co.

First & Main Sts.

Kansas City, Mo.

We Want Wide-Awake Jobbers

ART WORK IN CONCRETE

Start a Business of Your Own.

New lines, Methods and products. Concrete
Marble, Granite and Sanitary Flooring, Etc.

FOR PARTICULARS ADDRESS

ART STONE CO.

WAYNESBORO, PA.

Lock Box 400

Here is a Glazing Composition that will



Adhere tightly to iron, steel, wood, glass, stone or concrete, make an elastic joint—tight yet definitely flexible, preventing glass from cracking.

Guaranteed to withstand heat, cold, rain or extreme climate conditions, without chipping or peeling.

KUHLS'

ELASTIC GLAZING COMPOSITIONS

is used for bedding and glazing all classes of glass construction and is unequalled for securely setting floor or wall tile. Also supplied in shades to match for pointing up stone work, terra cotta, granite, etc. Literature on application giving your nearest dealer, or make application to your own.



H. B. FRED KUHL'S

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WITH A
ROWE SACK BALER

Makes neatest, lightest bales; works fastest; takes up least space; nothing to get out or order.

Price Only \$15.50
F. O. B. Galesburg. Order direct from this advertisement.

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Galesburg, Ill., U. S. A.



Clean Your Sacks Handy Sack Baler Co.

and bale them up right. We do it quick and easy.

Write us.
Handy Sack Baler Co.
600 S. Second St., E.
Cedar Rapids, Iowa



A TYPICAL CONCRETE HIGHWAY

The Concrete road will be giving good service when the bond issue matures—and for years thereafter. Every mile of Concrete road is a permanent link in a completed county highway system. In no other way can any county hope to complete its road-building scheme. Maintenance of existing roads of other types will soon absorb all possible revenue. Concrete roads mean no mud, no dust, low cost of maintenance and permanence.

WRITE FOR COPY OF "CONCRETE HIGHWAYS" WE WILL SEND IT WITHOUT CHARGE

Dixie Portland Cement Company

James Building, Chattanooga, Tenn.
CONCRETE FOR PERMANENCE.

Machinery Covers are cheap insurance

Even though your equipment isn't laid up for long spells, it should be covered over the week-end to prevent tampering and theft of parts.

Sound construction and careful treatment give U. S. T. & A. tarpaulins long wear. They stand rough handling. Absolutely waterproof.

Estimates on plain and waterproof coverings will be cheerfully sent you.

An ounce of covering is worth dollars in repairs.

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Buy Kramer Equipment

—and profit most from the big 1920 Block and Brick demand

Never have the opportunities for the Concrete Block and Brick manufacturers been so great. The man who uses Kramer Equipment can turn out a high grade product with speed. He is the fellow whose manufacturing cost will be least and his profits most.

Investigate. Prices on request.

Kramer Automatic Tamper Co.

Kelley Street, Peoria Heights
PEORIA, ILL.

Quality Higher Than the Price

The X-L All Face Down Block Machine is the only Foot Lever Machine on the market.

The X-L-All has stood the test for 16 years. Over 4,000 now in use.

The X-L-All Block Machine is made with either foot or hand lever.

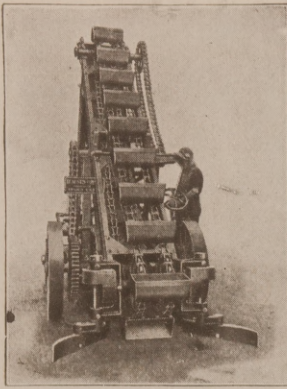
We furnish a complete outfit with each machine for making Rock or Plain face blocks.

Our Prices will surprise you. Send for Catalogue today.

BURRELL MFG. & SUPPLY HOUSE

Box Y-86 Kankakee, Ill.





AUSTIN Self-Feeding Wagon Loader

Not a so-called self-feeding loader, but a real labor saver for rapid and efficient

handling of material in concrete road and building construction, excavation work, quarry, storage and reclaiming plants and coal and material yards.

Note the steel feeding arms. In the view they are extended to outside radius of 6 ft. They dig into the material, gather it up and pull it into the elevator buckets. They cut a swath wide enough for the machine to pass through.

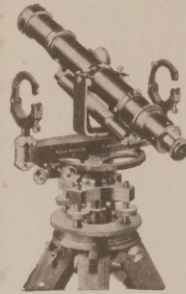
F. C. AUSTIN MACHINERY CO.

NEW YORK OFFICE
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Railway Exchange, Chicago
Southern Sales Agents,

GRAVES MACHINERY CO., Atlanta, Ga.

No Up-to-Date Builder



can afford to be without a reliable Transit or Level. Our 1920 Model

"STERLING" CONVERTIBLE LEVEL

may cost a little more at the start, but its special features will save enough valuable time to more than repay the additional outlay. Free examination privilege. Easy payment plan.

Our Illustrated Pamphlet C contains valuable information on the selection of up-to-the-minute Leveling Equipment. Write today for your copy.

WARREN-KNIGHT CO., 136 N. Twelfth St, Philadelphia

Vest Pocket Manual of Adjustments Free.

Wet Mix Concrete Men, Attention!

"McAdamite" is something new. Nothing like it on the market. Absolutely prevents cement from sticking to the forms and product comes out with a smooth, glossy surface, resembling the work of a trowel. Saves more than the price of other oils in labor. Gallon lots \$1.25 per gallon. Five gallons or more, \$1.00 per gallon. Money back if not satisfied.

McADAM CEMENT WORKS

315 E. 5th Street

Aledo, Illinois

The IMPROVED Rapid Floor Surfacer



will surface *right up to the wall or baseboard* without the use of Edge Roller. Just the machine you would want for surfacing all kinds of floors, whether old or new. Will smooth down rapidly and easily all joints or warped edges. *Perfect results guaranteed.* More than 20,000 in use.

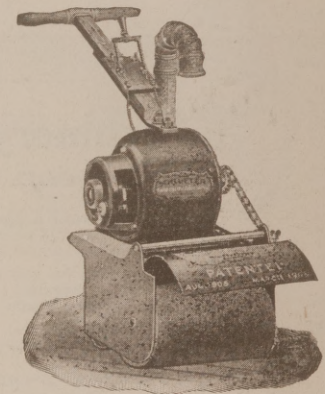
Send for our free trial offer.

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CHICAGO, ILL.

Phone Main 2349



Made in several sizes.

Several sizes. Extra 2-disc attachment can be removed making a 2-disc machine.



Dustless—Non-Slippery—Always Serviceable—Lowest Maintenance

The use of concrete for road and street construction is increasing rapidly throughout the country.

The experience of those communities which have built concrete highways has proven beyond question that concrete not only gives the most substantial construction, but also solves the perplexing question of maintenance because

Concrete Practically Eliminates Maintenance.

With sand and gravel or crushed rock available locally throughout the South, and Portland Cement—manufactured here at home, the cost of Concrete roads is very low. Concrete roads are an INVESTMENT—not an EXPENDITURE.

Send for our Booklet, "CONCRETE HIGHWAYS." Free on request.

Standard Portland Cement Company

J. I. McCANTS, Sales Mgr.
Birmingham, Ala.

CONCRETE FOR PERMANENCE

LOOK HERE!

The demand for Ohio Concrete Roofing Tile is greater than ever this year. The man who is equipped to meet this demand in his locality will control a highly profitable and clean cut business of his own.

A single 2 machine unit of Ohio Tile Machines will manufacture all the regular and special shapes required for any roof,—and with a net profit of over \$50 a day for you!

Write at once if you want information.

The OHIO TILE MACHINERY Co

WILLOUGHBY, OHIO
(Near Cleveland)

SILO HARDWARE

We are in a position at all times to furnish silo accessories of all descriptions for any make silo—we carry a full and complete stock on hand and can make immediate delivery from our warehouse on carload or small shipments.

Our goods are made from the best material obtainable—and are guaranteed.

Secure our inducements before placing your orders. We aim to give satisfaction. Prompt service and a square deal assured on all orders large or small.

A trial order will convince you.

If you are just beginning to manufacture or build silos—let us help you get started right—we will be more than pleased to aid you in any way possible.

We can furnish any quantity

SILO Rods

Lugs

Wood or Steel Doors

Door Spreaders

Reinforcements

Reinforcing Steel,

Twisted or

Deformed

Galv. Iron Chutes

Metal Roofs

Cement Stave

Machines,

Moulds, Etc.

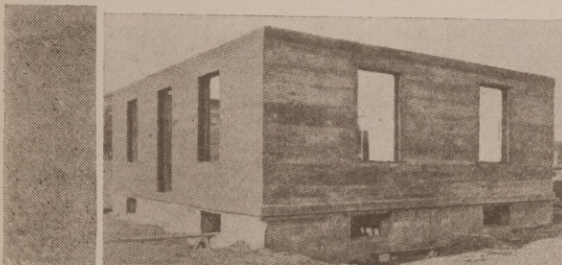
SMITH SILO HARDWARE CO.,

11th and Market Sts.
Des Moines, Iowa

FOR SALE OR LEASE.

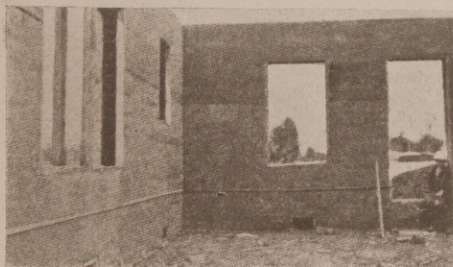
A complete concrete products plant, consisting of two "Ideal" block machines, 800 staple post molds, mixer and conveyor, motor driven. Switch track to building. Ten acres of abandoned cement tunnels with an even temperature of 55 degrees Fah. the year around, for curing and storing. The plant is located on a one acre plat in the wealthiest farming community in the state. For particulars, address,

Portland Cement Products Company,
Utica, Illinois.



ACME

Hollow Wall System

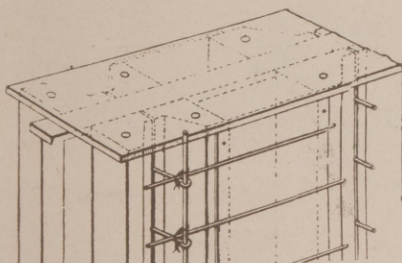


Speed and low-cost in building hollow walls—your bid low enough to get the business—high enough to make good money—and the speed gets you away to the next job in a hurry. That's how the Acme System works.

In building the one-story house (shown above) at Phillipsburg, N. J., on the Ingersoll-Rand property, 3 men erected all the form work in one day, and 5 men poured the entire walls above grade in 9 hours, carrying the concrete in buckets up a ladder.

With this system, simple wood forms are built 12 ft. high or higher. Ribs inside the airspace in the wall give strength—they act as pilasters.

Write for full details and explanation of other Acme advantages.



Acme Hollow Wall Co.,

Madera, Calif.

BELMONT PHILADELPHIA IRON NEW YORK WORKS EDDYSTONE

ENGINEERS—CONTRACTORS—EXPORTERS

STRUCTURAL STEEL

COMPLETE INDUSTRIAL BUILDINGS

MAIN OFFICE & WORKS, PHILA.,
22d & WASHINGTON AVE.

CABLE ADDRESS
"BELIRON"



NEW YORK OFFICE
15 PARK ROW

Code Western Union
fire letter addition.

Illustrated catalog in English, French and Spanish
mailed on request.

Complete Warehouse Stock of Structural Shapes and
Plates for Immediate Shipment.

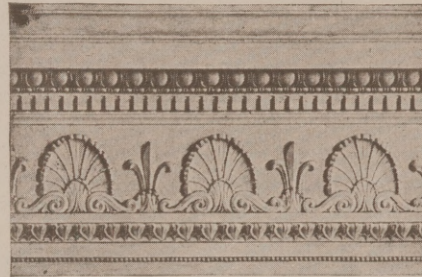
Pipe Couplings

We will buy your couplings in any quantity,
large or small. Write us what you have.

A. & J. Manufacturing Co.

557 West Lake Street,
Chicago, Ill.

REFINEMENT IN DETAIL



As here shown, will be found in all of our moldings and ornaments. Let us estimate on all your plastic relief and composition work. Let us lay before you more clearly the character of our work.

NATIONAL PLASTIC RELIEF CO.
330 Main Street, CINCINNATI, OHIO

Multiple Oval Cores allow use of Wet Mixed Concrete

We are the originators of the core method whereby the small oval openings in block guarantee against collapse. Thus wet material can be employed. Simplest and best method for production in various lengths of block.

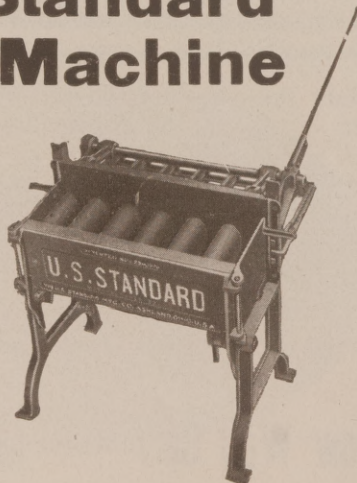
Our coring system allows for plenty of wall ventilation giving air space from top to bottom of wall.

Machine makes hollow or outside blocks and thin blocks for veneer and inside partitions.

U. S. Standard block are made face-down and are dense, strong and waterproof.

U. S. Standard Block Machine

Ask for details about this—one of the oldest and most widely used block machines on the market.



U. S. Standard Manufacturing Co.

Formerly of Ashland, O.
Columbiana, Ohio

STOCK FIRE PROOF DOORS

Metal Covered

Standard Sizes in Stock of all Designs, with Frames and Trim

Write for Booklets and Price List



A. C. Chesley Co. Inc.
279 Rider Ave., New York, N. Y.

THE CONCRETE AGE

DALTON and Atlanta GEORGIA

VOL. XXXIII. October, 1920 No. 1

What so Good?

PUBLISHED MONTHLY

Devoted to Modern Permanent Construction.

CONCRETE AGE PUBLISHING CO.

SUBSCRIPTION RATES.

In the United States and Possessions (Hawaii, Phillipine Islands and Canal Zone), Mexico and Cuba, \$1.00 per year. Canada, \$1.50. All other foreign countries, \$2.00 per year.

Advertising rates given upon application.

Entered as second-class matter October 18, 1905, at the Post-office at Atlanta, Ga., under the Act of Congress of March 3, 1879.

The Editor solicits correspondence from readers on matters pertaining to the concrete industry. Descriptions of concrete work done anywhere that is of general interest accompanied by clear, sharp photographs and going into details as to methods employed will be published and paid for if found acceptable.

TO OUR ADVERTISERS.

Our advertisers are requested to have copy and cuts for changes for advertisements in this office not later than the 10th preceding the month for publication.

We cannot be responsible for changes not made, when copy and cuts are received later, or submit proof.

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Numerous issues of bonds issued by towns and counties of the South for roads, street paving, school improvement, sewer and water works construction, are now on the market. They yield around six per cent. The income from them is non-taxable by state, county and town and federal government. Eight months or more ago they fetched from 10 to 12 per cent more than they fetch now.

We hear of farmers who have sold cotton and don't know what to do with the money, of thrifty workmen with savings, of all sorts and conditions of men and women who do not know how to invest their accumulations.

So far as The Concrete Age is informed, there is never default in the payment of interest or principal of municipal bonds.

Every dollar of the public debt of any Southern state or their subdivisions ought to be owing to residents of state. They have the money to assume them. They can make no better investments that, in our opinion, will, in the long run, pay so well and that are absolutely safe.

What better rule of business than that Southerners "buy their own paper?" Shall they allow the bonds to pass into hands of the "bloated bondholders" in order that they may enjoy the privilege of abusing the bondholders a little later?

Six per cent interest payable twice a year, with a smile of defiance for all the tax collectors, what is better?

What so good?

Building Good Roads.

Highways that are really worthy the terms are being constructed by counties and states of the Southeast. The remarkable rate at which the number of federal-aid road building projects has increased since the war is shown in a summary relating to all such work from September 30, 1916, to April 30, 1920, which has been prepared by the bureau of public roads, United States department of agriculture. On the latter date the states had filed with the bureau 2,885 project statements, of which 2,790 had been approved, representing 27,796 miles of highway. The totals on April 30, 1919, were little more than one-third these amounts. Up to May 1 of this year 1,974 projects had proceeded to the stage at

which plans, specifications, and estimates had been delivered to the bureau of public roads. The plans, specifications and estimates of 1,827 of these had been recommended for approval, representing 13,845 miles. Project agreements had actually been executed and construction work was in progress on 1,569 projects, totaling 11,987 miles. In addition, work had been begun on about 100 projects for which agreements had not actually been signed, thus expediting the progress of the work and bringing the total mileage under construction up to 13,540. The summary shows that a great reduction has been made in the time required for preliminary work before actual construction is begun.

On the average the states have submitted project statements for nearly 95 per cent. of their respective allotments and have entered into agreement to construct highways which call for about one-half of their federal aid money. The projects actually completed and paid for are comparatively few, but they are materially exceeded in number by those which are practically completed. California, Delaware, Illinois, Idaho, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Minnesota, Nebraska, New Hampshire, New Jersey, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Washington, West Virginia, and Wyoming have each submitted approved project statements for all or nearly all of their allotments.

The Outlook for Building.

BUILDERS are going through a period at the present time that is as difficult as any they have experienced. It is particularly aggravating because on every hand we see the absolute need for building, and forgetting entirely those people who are holding off building in the hope of getting lower prices later on, there would be plenty to do to take care of work that many are anxious to get under way if such stumbling blocks as tightness of money and shortage of materials were not so serious.

The material situation is the greater handicap because so much project building is needed for business expansion and certain types of residential work insuring good returns on investment that money for that can generally be found but without sufficient material it is impossible to build.

The root of the evil lies, of course, in the railroad situation. There is a tremendous shortage of freight cars and the general inefficiency of the railroad employees following their taste of easy conditions under government operation, does not enable full use of available cars to be made.

Organizations Invited.

The Joint Conference Committee has been asked by one of the technical papers concerning the invitation to become a member of The Federated American Engineering Societies:

“Does this mean that we can publish the invitation as one that is extended generally to any society, club or organization, the chief object of which is the advancement of the knowledge and practice of engineering, and the application of allied sciences, and which is not organized for commercial purposes, or are we to publish it as an invitation which has been extended to a list of societies selected by the Joint Conference Committee, with the understanding that none others are desirable?”

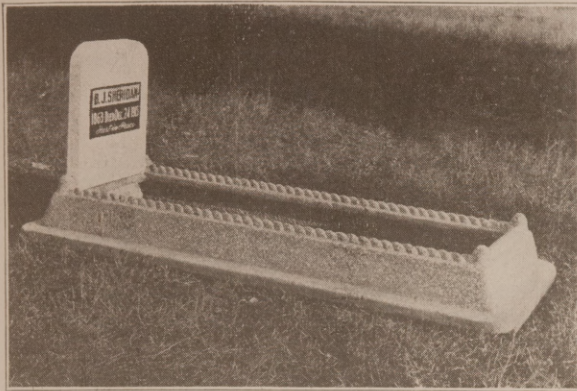
The Joint Conference Committee pursuant to the request of the governing boards of the four Founder Societies, of the American Society for Testing Materials, of the United Engineering Society and of the members of the Engineering Council, contained in the resolution unanimously adopted at their joint meeting on January 23, 1920, issued the call to the engineering and allied technical organizations of the country to attend the Organizing Conference in Washington, June 3-4, 1920, which was sent to engineering and allied technical organizations whose chief object is the advancement of the knowledge and practice of engineering and the allied technical arts and which were not organized for commercial purposes.

The Organizing Conference approved the list of organizations to whom the invitation was extended by the Joint Conference Committee and no other organizations were added to this list by the Conference. The Joint Conference Committee is, therefore, extending invitations to these organizations to become members of The American Societies under the authorization given it by the Organizing Conference on June 4th, 1920. The Committee does not maintain that the list is complete, and there may be other organizations, than those on the list prepared by it, eligible for membership. Such organizations may make application for membership to the American Engineering Council.

Conditions in German Concrete Industry.

The rise in the value of the German mark has only indirectly affected the concrete industry, as the export of concrete was forbidden by a law made in November, 1919. Originally, most German cement was exported to the Netherlands. Notwithstanding the embargo on exports of cement, the prices for home consumption have increased enormously, due to higher wages, the problems of transportation, and the cost of fuel.

Grave Marker and Coping Molds



Patent Pending.

Our molds make money fast for concrete products manufacturers. The products sell readily and give excellent satisfaction.

Central Cemetery Co., Cook Co., Ill.: "Your base protection is a splendid idea."

Mrs. L. Truska, Blue Island, Ill.: "The concrete monument and 5 copings are more than satisfactory."

Write for catalog of molds for making tombstones, grave-coping and other ornamental products.

KEMPER GRANITE MOLD CO.

865 Transportation Bldg.

Chicago, Ill.

Carpenters Wanted as Special Representatives

CARPENTERS and others are making big money. It's right in your line. Fenton, of Indiana, made 400 sales in one week; Woodard sold 47 the first day. You, too, can sell the



for the bottom of doors and hinged windows. It's automatic. Fits down tight against worn sills as well as new ones. Keeps out every bit of cold, snow and rain and dust. Saves fuel. Sells fast; everybody wants it for economy's sake. Simple; easy to-put on. Approved by architects, carpenters, and builders wherever known.

Send now for money-making plans.

The Henry Airtight Weatherstrip Co.
510 Elm St., Crawfordsville, Indiana



This attachment automatically shuts the strip tight against the sill.

"Perfect" Concrete Brick Power Machine

C. S. WERT - Inventor and Patentee

Also Hand and Power Block Machines, Hand Brick Machines, Well, Cistern and Silo Molds

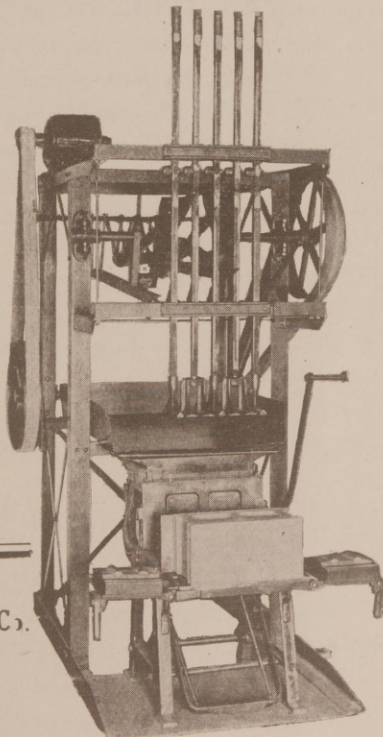
Turns out, with four men, 16,000 to 20,000 concrete bricks in ten hours.

In severe tests, Perfect Concrete Brick have proven stronger than common clay and pressed clay brick.

The power tamper may be operated by a one horse power motor, a 2½ horse power gas engine or direct from a line shaft.

"There is no better brick machine manufactured," says W. T. Sharp, of Montana, owner of a Perfect brick plant.

Get facts and figures now. Write while the matter is on your mind.



Manufactured by
The Sealer Distributing Co.

2553 Railway Exchange Bldg.
CHICAGO

Late Model—Gearless and Noiseless.

When a Reinforcing Bar Needs to be Bent



If needs to be bent then, on the spot, any angle, no slipping or creeping,—bent the way wanted.

Contractors cannot afford to be without

The Waterloo Bar Mending Machine

It's made in 2 sizes, and is guaranteed to bend bars as follows: No. 2 bends cold reinforcing bars including 1¼-inch round or square; Price, \$30.00. No. 3 bends cold reinforcing bars including 1½-inch round or square; Price, \$35.00. Bends bars to various angles desired. Has a detachable handle 7 feet long for convenience in handling.

Waterloo Construction Co. : Waterloo, Iowa

Perforated Radial and Common Brick

CHIMNEYS

American Chimney Construction Co.

Suite 407-408 Oxford Bldg., Chicago, Illinois

All Repairs Made While Chimney Is in Use

Cleveland, Ohio, Branch: 505 Superior Building

News of Street and Road Building Activity in the South Briefly Told

NEVER before in the history of the country has the South seen such active preparations being made and now underway in some parts for permanent road building of all sorts. For years the South has lagged in this respect, but the people are now speaking in no unmistakable terms, through the ballot, that they must have bond issues to carry on the good work.

This magazine is giving as briefly as it can the news of this activity, strictly confining itself to the South, though all states in all parts of the country are waking up.

Road and Street Construction.

Wayne, Ark.—Cross County Commrs., Parkin, St. Francis and Tyronza Road Dist.; construct road from St. Francis County line to Poinsett County line; sold \$1,050,000 bonds; Newell Construction Co., Contr., St. Louis, Mo.

Washington, D. C.—District Commrs., 509 District Bldg.; grade, improve and pave streets, roads, avenues and alleys; bids until Sept. 15.

Washington, D. C.—District Commrs., 509 District Bldg.; pave roadways; bituminous macadam; bids until Sept. 8.

Pensacola, Fla.—Escambia County Commrs.; construct roads; vote Sept. 29 on \$2,000,000 bonds.

Fort Lauderdale, Fla.—Town; improve streets, water-work and sewer system; vote on \$60,000 bonds; contemplated. Address The Mayor.

Fort Myers, Fla.—Crescent Beach Road & Bridge Co. inceptd.; capital \$25,000; B. E. Tinstman, Prest.; J. W. Blanding, Secy.; V. G. Winderquist, Treas.

Kissimee, Fla.—Osceola County Commrs.; construct 9-ft. road, hard-surfaced with asphalt; bridges; voted \$800,000 bonds.

Tampa, Fla.—City Commrs. Public Works, H. C. Gordon, Chrmn.; pave Plymouth St.; 3370 sq. yds.; asphalt blocks; bids until Sept. 7.

Hazard, Ky.—Perry County, A. M. Gross, Judge; construct road between Hazard and Lothair.

Hickman, Ky.—Fulton County Commrs.; construct hard-surfaced roads; vote in December on \$400,000 bonds.

Hindman, Ky.—Knott County Commrs.; construct 6 mi. Hindman to Whitesburg road.

Lecompte, La.—Town; construct 4500 lin. ft. sidewalk and curbing; bids until Feb. 16, 1921; changed date from Aug. 17; J. L. White, Engr.

Minden, La.—Webster Parish Police Jury; improve roads; voted 5-mill tax levy.

Rockville, Md.—State Roads Comsn., 601 Garrett

Bldg., Baltimore; construct .36 mi. Beallsville-Dickerson road, Montgomery County; M. J. Grove Lime Co., Contr., Frederick Md.

Baltimore, Mo.—City; repair 3½ mi. old road at Loch Raven; Frederick D. Corozza, Contr., 805 Calvert Bldg.

Baltimore, Md.—State Roads Comsn., 601 Garrett Bldg., Baltimore; construct 2½ mi. Philadelphia road; \$9302.70; American Paving & Contracting Co., Contr.

Upper Marlboro, Md.—State Roads Comsn., 601 Garrett Bldg., Baltimore; construct .50 mi. State Highway through Mt. Rainier; concrete; Prince George's County, Contract P-21; bids until Sept. 7.

Carrollton, Miss.—Carroll County Commrs., J. R. Bingham in charge; construct 30 mi. highway; Jno. M. Harbert Engineering Co., Engr., Indianola, Miss.

Meridian, Miss.—Lauderdale County, Geo. A. Gray, Chrmn. Beat 4, Goods Roads Comsn.; construct Hickory and Meridian road; 43,200 cu. yds. excavation, and Jackson highway, 32 cu. yds. excavation; bids opened Sept. 3; changed date from Aug. 3.

Bethany, Mo.—City; pave 4 blocks 17th St.; bids until Sept. 6; O. Stratton, City Engr.

Harrisonville, Mo.—State Highway Dept., Jefferson City, Mo.; construct 19 mi. Harrisonville-Belton road, 24 ft. wide, Cass County; Federal-aid Project 20; bridges; bids opened Sept. 1.

Mound City, Mo.—City; pave 4 blocks Nebraska St.; concrete; Reinert Bros., Contrs., 1208 N. 5th St.

New Madrid, Mo.—New Madrid County Commrs.; improve 19.3 mi. State road, Section A, Project S; E. Prendergast, Contr., St. Louis, Mo.

Oregon, Mo.—Holt County Commrs.; pave 66½ mi. Mound City-Oregon road, 18 ft. wide; concrete; Leslie-Barnes Engineering Co., Engr., American Natl. Bank Bldg., St. Joseph, Mo.

Savannah, Mo.—Andrew County Commrs.; grade 26 mi. North and South Road, 18 ft. wide; Leslie-Barnes Engineering Co., Engr., American Natl. Bank Bldg., St. Joseph, Mo.

Springfield, Mo.—Green County Commrs.; improve 50 mi. road; \$260,000; H. P. Moberly, Div. Engr.

St. Joseph, Mo.—Board Public Works; pave Marion and 15th Sts., and Goff Ave.; W. K. Seitz, Engr

Nashville, N. C.—Town, L. T. Vaughn, Clk.; pave ¼ mi. street; \$125,000 available; preparing plans and specifications; Mees & Mees, Conslt. Engr., 319 Trust Bldg., Charlotte. Supersedes recent item.

Ada, Okla.—City Commrs.; pave streets in Dist.

The Concrete Age And Its Promotion Work.

Every month, for fifteen years, The Concrete Age has been the sole missionary in the South, preaching the gospel of concrete fireproof construction. It has printed thousands of pages of text, and thousands of illustrations to drive home its arguments.

Every month, for fifteen years, The Concrete Age has likewise been relentless in advocating the building of concrete roads. It has devoted a vast amount of space and thousands of pictures to this subject and today this work is bearing fruit in the assured building of the Dixie Highway and other great road systems.

For fifteen years, The Concrete Age has had its leading articles copied by the big papers of the South, where they reached millions of readers and in this way doubled its power and influence in pleading for concrete fireproof buildings and concrete roads.

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Mr. Advertiser, have you fully appreciated the ceaseless efforts and influence of this paper? We are rendering missionary work which creates new business for your products every month, and The Concrete Age deserves your patronage and support. Give us this, in full measure, and enable us, through your help, to largely increase the practical influence the paper is exerting in your behalf.

CONCRETE AGE PUBLISHING CO.
ATLANTA, GA.

6 to 11; \$850,000; will invite new bids; Johnson & Benham, Conslt. Engr., Firestone Bldg., Kansas City, Mo.

Purell, Okla.—City; pave streets in residence section; \$200,000; Johnson & Benham, Conslt. Engrs., Firestone B'dg., Kansas City, Mo.

Tulsa, Okla.—City; construct 7000 sq. yds. paving; one-course concrete; \$40,000 available; bids about Sept. 15; C. E. Griggs, City Engr.

Anderson, S. C.—Anderson County Comms.; construct 20 mi. Anderson-Abbeville and 25 mi. Anderson-Greenville roads; C. H. Moorefield, Engr., Columbia, S. C.

Camden, S. C.—Kershaw County Comms.; construct 30 mi. Camden-Ridgeway road; C. M. Moorefield, Engr., Columbia, S. C.

Columbia, S. C.—City; pave Main St.; 19,000 sq. yds. roadway; 6100 sq. ft. sidewalk; Atlantic Bitulithic Co., Contr., Richmond, Va.; F. C. Wyse, City Engr., Columbia, S. C.

Columbia, S. C.—Richland County Permanent Roads Comsn., 1202½ Main St.; construct 15.125 mi. Two Notch road; 43,265 cu. yds. sand-clay surfacing; bids opened Sept. 3.

Lexington, S. C.—Lexington County Supvrs., C. E. Corely, Supvr.; construct Columbia-Newberry road; 15,616 cu. yds. topsoil surfacing; bids until

Sept. 11; J. D. Gregory, Div. Engr., 1202¼ Main St., Columbia, S. C.

Newberry, S. C.—Newberry County Commissioners; improve roads; voted \$400,000 bonds.

Spartanburg, S. C.—Spartanburg County Comms.; construct 18 mi. road; C. H. Moorefield, Engr., Columbia S. C.

York, S. C.—York County Comms.; construct 15 mi. road; C. H. Moorefield, Engr., Columbia, S. C.

Amarillo, Tex.—Potter County, R. C. Johnson, Judge; grade Highway No. 5; \$20,774.97; F. F. Keller & Son, Contrs., Raton, N. M.; rejected bids for graveling and surfacing 25 mi. Highways 13 and 33.

Angleton, Tex.—Brazoria County Comms.; grade and surface 5.73 mi. Highway 36; contract to S. I. Stratton and M. Palmer, Freeport Tex.

Clarksville, Tex.—Red River County Comms.; grade, surface and drain 10.341 mi. Highway 5-B from Bowie County line to English; P. Y. Creager, Engr.

Coleman, Tex.—Coleman County Comms.; construct 42.17 mi. road in Precinct 2; crushed rock or gravel; A. Smith, Contr., Santa Anna, Tex.

Dallas, Tex.—Dallas County Comms.; construct sidewalks and gutters on 1 mi. Harwood St.; invite bids; rescinded former contract; G. Fairtrace, Engr.

Fort Worth, Tex.—City Comsn.; pave 1 mi. Commerce St.

Hillsboro, Tex.—Hill County Commrs., R. F. Burns, Judge; grade, gravel surface 14.9 mi. Highway 31 through Hill County; bridges and culverts; Sept. 4; Bryant & Huffman, Engrs., Littlefield Bldg., Austin, Tex.

Jasper, Tex.—Jasper County Commrs., C. C. Brown, Judge; grade 12.48 mi. Highway 8 from Buna to Newton County; bridges and culverts; bids until Sept. 13; C. P. Hunter, County Engr.

Nacogdoches, Tex.—Nacogdoches County Commrs., L. D. Parmley, Clk.; construct 45 mi. highways; bids opened Sept. 1; Lamar Acker, County Engr.

San Angelo, Tex.—Tom Green County Commrs.; grade 10 mi. macadamized road; State Highway 9 and 9A; \$200,000; W. D. Moseley, Contr., El Paso, Tex.; McCall-Moore Engineering Co. have contract for drainage structures at \$12,000, and J. E. Ward, Dallas, Tex., for spreading asphalt surfacing at \$26,000.

Norton, Va.—Wise County Commrs., Gladeville, Richmond and Dapps Dist.; construct 18 mi. macadam road, penetration top; \$75,000 available; O. H. Beverly, Engr.

Richmond, Va.—City; grade alley from Virginia to Miller Ave.; \$2250; Cheatwood & Driscoll, Contrs.

Wytheville, Va.—Wythe County Supvrs.; improve rock road; 10 to 12 mi.; \$150,000.

Beckley, W. Va.—Raleigh County Commrs., Jackson Smith, Clerk; construct 5 mi. Marsh Fork, Class

A, road; bids until Sept. 11; Neil F. Hathway, Dist. road Engr., Montcoal, W. Va.

Charleston, W. Va.—State, Jno. G. Cornwell, Governor; construct roads; vote in November on \$50,000-000 bonds.

Fayetteville, W. Va.—Fayette County Commrs.; grade 9½ mi. road on Lower Loup Creek from Robson to Ingram Branch; \$134,000; J. M. Randish Construction Co., Contr.

Huntington, W. Va.—City Commrs. Mat. Miser, Commr. Streets and Sewers; pave 6th St.; \$7321; Hocking or Dixie brick; L. J. Gillispie, Contr.; A. B. Maupin, City Engr.

Lewisburg, W. Va.—Greenbrier County Commissioners, Thos. W. Shields, Prest.; construct roads in Blue Sulphur Dist.; vote Sept. 18 on \$94,000 bonds.

Huntington, W. Va.—City Commrs., Mat Miser, Commr. Street and Sewers; pave 14th, 2d and 5th Sts. and 2½ alley; bids until Sept. 7; A. B. Maupin, City Engr.

Smithfield, W. Va.—Town; pave streets; voted \$15,000 bonds. Address The Mayor.

Webster Springs, W. Va.—Webster County Commrs.; construct 20 mi. road; earth; \$400,000 available; H. M. Bruffy, Contr.; J. H. Hancock, Engr.

Wheeling, W. Va.—Ohio County Commrs.; pave National Road over Chicken Neck hill; brick; \$8495.90; Vincent Vercellotti, Contr.

Why Men Strive to Get Ahead

By P. B. McDonald, Assistant Professor of English, College of Engineering, New York University.

The "Gloomy Dean" Inge of St. Paul's cathedral, London, said recently in one of his characteristic addresses that man is naturally so indolent he will toil only to obtain food and shelter. He was arguing against industrialism and for a return to rural life, and was trying to show that the only occupations satisfying to man through inherited instincts are farming and hunting.

Why is it then, when he has attained food and shelter, that man continues to strive as desperately as before? Why is it, after we reached the civilization of our grandfathers, we continue to pile up luxuries and garnishings? Why cannot we live as Thoreau did at Walden Pond, spending nine cents a day and working six weeks in the year? Thoreau considered that he was happier in this rustic cabin, with leisure to ponder over nature, than the city-

dweller who works the year round and sees nature only during two weeks of vacation.

Herbert Spencer, reflecting on philosophy in his individualistic way, remarked that man strives for position, and the satisfaction of feeling above others. Said this "synthetic philosopher": "It is incredible that men should make the sacrifice, mental and bodily, which they do, merely to get the material benefits which money purchases. . . . What merchant would spend an additional hour at his office daily, merely that he might move into a larger house in a better quarter? In so far as health and comfort are concerned, he knows he will be a loser by the exchange, and would never be induced to make it, were it not for the increased social consideration which the new house will bring him. Where is the man who would lie awake at nights devising means of increasing his

income in the hope of being able to provide his wife a carriage, (a motor-car would be a more appropriate example to-day, were the use of a carriage the sole consideration? It is because of the eclat which the carriage will give, that he enters on these additional anxieties. To be distinguished from the common herd—to be somebody—to make a name, a position—this is the universal ambition. . . . We do not mean to say that men act on the consciously reasoned-out conclusions thus indicated; but we mean that the conclusions are the unconsciously-formed products of their daily experience.” According to Spencer, then, men struggle to gain deference and respect rather than the direct use of luxuries. Such a condition opposes the theories of the socialists, who would have us all enjoying an equal share of the good things of life.

One of the best analyses of the motives actuating gregarious man is contained in Carlyle’s extraordinary book “Sartor Restarus.” The Scottish author has an eccentric German professor, Teufelsdröckh, summarize the ambitions of his fellow townsman as he looks by night from his attic window. Says the professor: “Upwards of five-hundred-thousand two-legged animals without feathers lie around us, in horizontal positions; their heads in nightcaps, and full of the foolishlest dreams. . . . All these heaped and huddled together, with nothing but a little carpentry between them;—crammed in, like salted fish, in their barrel, or weltering, shall I say, like an Egyptian pitcher of tamed Vipers, each struggling to get its head above others.”

Such was this cranky Scot’s idea of modern civilization: “a pitcher of tamed vipers each trying to get its head above the others.” Yet Carlyle toiled more than most men to get his head above the crowd, and no one emphasized more than he the world’s need for leaders with their head above the mass. Carlyle would say that for all men to have their heads on the same level brings that peril of democracy—short-sighted mediocrity, **lacking** inspiration and ideals. Spencer would say that to remove the possibility of the hard-working or exceptionally-gifted man getting his head above others destroy the incentive for work except of a mechanical and indifferent kind. Proper respect and encouragement should be given deserving individuals, lest they cease to strive. This applies to the underpaid engineer.

Individuals as a philosophy has been criticised so severely since standardization and organization became popular that its true meaning should be explained. It means not only oddity and self-importance,

nor refusal to co-operate merely for the sake of being different; but it means the self-development of individuals able to think for themselves and requiring little regulation and interference to keep in order. Spencer pointed out that placing men under restraints and mechanical patterns develops mollycoddles. He meant, of course, mental mollycoddles.—individuals of poor judgment and flabby initiative. Another effect has been the wide discontent which followed recent efforts to standardize human nature. To allay this unrest, the men in power in industry increased wages and added luxuries to the factories’ welfare department, only to find that these brought but temporary benefit.

Charles S. Myers in a recent paper before the British Ceramic Society recommended “psychological management” rather than “scientific management,” as a better method of suiting each worker to his job and keeping him satisfied, since scientific management tends to treat men as cogs in a machine, while psychological management recognizes individual talents and eccentricities. Likewise, an editorial in the British magazine “Engineering,” arguing for individualism, said: “The creative mind, in short, to which every great increment of wealth can be traced, fits in badly with a communistic or a co-operative scheme of society. The man of genius is ever and necessarily an individualist.”

The point of all these arguments is that man will always strive to get ahead, no matter what socialistic or co-operative rules are laid upon him, and that this innate wish to rise above the herd is desirable, and beneficial to society. The government which recognizes most clearly that exceptional individuals must be rewarded suitably, and shown due respect, will develop the greatest leaders, not only in politics and statesmanship but in science and invention. The industrial corporation which rewards most appropriately workers of unusual ability will attract such men, and the reward of higher wages or welfare conveniences is by no means the chief incentive that keep men satisfied. Working under an inspiring leader, being encouraged to express ideas about the work, and being treated in a sincere and honest manner, are considerations that move employees as much as anything else. But these advantages should not be flaunted in a way that antagonizes by its very obviousness. Appealing to the individual, especially to the unusual, means leaving something to his imagination; he does not like to be hustled into admiration of the company, any more than he likes to be catalogued as a cog in a machine. After all, men are human which makes them appear otherwise.

Concrete Tanks for Cottonseed Oil Storage

J. E. FREEMAN, Engineer Technical Bureau Portland Cement Association

DURING the past 20 years the increase in plants producing cottonseed oil in the south has been more than 300 per cent. In the same period the increase in the north has been 85 per cent or more. The production of cottonseed oil in sixteen southern states in 1918 was very close to \$500,000,000. With the many extensions of use that have been found for cottonseed oil during recent years, the industry has attained an importance little dreamed of but a few years ago, and when an industry reaches such magnitude, it is evident that all measures of economy which may be introduced affect profits to a material degree, just as does neglect to introduce such economy and efficiency reduce profits and perhaps result in failure of the enterprise.

One of the problems attending the manufacture of cottonseed oil is that of storing the oil until marketed. This involves suitable tankage of short lived structures. Of course, there is a way to avoid this, which is to build as nearly permanent and depreciation free as possible. Any structure which requires continual maintenance to remedy or counteract depreciation due to exposure to the elements or other causes, soon becomes an expensive proposition and might better have been designed and built without regard to first cost in order to eliminate if possible the perpetual annual charges of upkeep.

Of the various materials which may be used to build storage tanks for cottonseed oil, concrete invites particular attention because of qualities characteristic of concrete alone. It becomes stronger in contact with moisture, does not rot, rust or in other ways deteriorate and is more nearly maintenance free than any other type of construction. The average life of any kind of tank may probably be taken as less than 30 years, with an unknown yet burdensome cost, such as painting and general repair throughout the period of its life.

The concrete tank involves no investment other than its first cost and because of this maintenance free characteristic, soon stands as a better investment than the one which seemed to have a better favor because of considerably lower first cost.

Since in most cottonseed oil crushers, the tanks are below ground under the presses, the concrete tank is the logical solution of cottonseed oil storage problems. Contact with the soil causes no depreciation, regardless of whether soil is wet, moist or dry. The tank cannot go to pieces when empty, cannot

rust when full, nor in any other way suffer injury through normal use.

Because of the fact that the most convenient and natural location for the tank is below ground, concrete adds its insulating value to contents, which are kept at a fairly even temperature both winter and summer. As concrete can be placed so that the required tank shall have any desired form, all sharp corners or pockets are eliminated, thereby permitting thorough cleaning of the tank, thus leaving no oil into it to sour.

The success of concrete tanks for use by cottonseed oil crushers is proven by examples of tanks which have been in use for a number of years.

The Houston Oil Mill and Manufacturing Co., Crocket, Tex., in 1916 built a 6,000-gallon concrete tank for cottonseed oil. This is below ground, the interior coated with a portland cement mortar, followed with a paint coat of neat cement. The company reports that this tank has been in continuous use up to the present time; furthermore, no bad effects have been noticed either on the concrete or contents.

The Rule Cotton Oil Co., Rule, Tex., built one 1,500-gallon concrete tank in 1912 and, after four years of use, one 2,000-gallon tank in 1916 showing their confidence in concrete containers for cottonseed oil. One of these structures was lined with paraffin, the other with neat cement. Both have been in satisfactory service from the time of erection to the present date.

The Lenoir Oil and Ice Co., Kinston, N. C., handle cottonseed oil direct from the presses into concrete containers built below the presses. In 1914 a 2,000-gallon tank was built, finished on the inside with a 1:2 portland cement mortar. This company also reports entirely satisfactory results, with no effects upon either the oil or the concrete.

The Baker Cotton Oil Co., Hobart, Okla., have about 10 concrete tanks varying in size from 6,000 to 12,000 gallons, used for storing fuel oil, cottonseed and kerosene. These are for the most part circular, finished with a mortar coat.

In addition to handling cottonseed oil, the problem of storing the raw cottonseed must be considered. Here the concrete container has also solved the storage problem. Last year the Pine Bluff Cotton Oil Co., Pine Bluff, Ark., built six concrete tanks above ground for storing the seed, each with a capacity of 1,000 tons. The reputation of concrete in so many other structures and under so many

various conditions proves the future of these tanks.

The use of oil for fuel has already been adopted by many plants, and others, as soon as they realize the economy, will change from coal to oil. This again opens the question of storage. Concrete tanks have been successfully used many years for storing oils of every grade, crude, fuel, gasoline, kerosene, benzine, etc. At the present time there are over 850,000,000 gallons of fuel oil storage capacity in the form of concrete tanks.

Among the cotton oil companies using them are the Joyton Cotton Oil Co., Joyton, Texas; Winters Cotton Oil Co., Winters, Texas; Seymour Cotton Oil Co., Seymour, Texas; Anadarko Cotton Oil Co., Anadarko, Okla.

Underground concrete tanks mean greater conservation. They reduce evaporation losses to a minimum by keeping the oil at a fairly even temperature; leakage losses are stopped entirely in a good concrete tank. By being below ground all yard space is available for the storage of materials. Insurance rates on concrete tanks in some states are considerably lower than on other types of containers; concret tanks do not raise the rates on surrounding buildings.

Every concrete tank, whatever be the shape, capacity or use, is a subject for special design. Unless concrete tanks are properly designed to withstand pressure of the contents and from without when the tank is empty, small cracks may open up and the contents may leak through or the tank may fail completely. This is not peculiar to the concrete tank alone, but is true of all tanks improperly designed, regardless of the construction material.

With a proper design the success of a concrete tank depends upon the choice of materials, proper proportioning, mixing and placing of the concrete and protecting the finished work until the concrete has properly hardened. Neglect of any one of these

points may be cause for dissatisfaction later. The concrete should be so proportioned as to secure a dense, compact mass; this can usually be obtained with the proportions of one sack of portland cement, two cubic feet of sand and three cubic feet of pebbles or broken stone. Consistency, or the amount of water used in mixing the concrete, plays an important part, as either too much or too little may leave pockets in the hardened concrete. Mixing of materials should preferably be done in a mechanical batch mixer so that mixing may be thorough and uniform and that the placing of the concrete may be rapid and with as few interruptions as possible. The best results would be obtained by building the tank in one operation, but as this is usually impossible, the work should be speeded up so as to reduce construction joints or seams to a minimum. When it is necessary to stop concreting, precautions must be taken to join new work to old by roughening and washing the hardened concrete and flushing it with mortar immediately before placing the new concrete. Usually a wedge shaped 2 by 4, small end down, is embedded in the old concrete so that a key is formed. It has also been found of further advantage to embed a metal plate in the old concrete so that it will extend into the new.

The treatment of the interior surface depends upon the character of the liquid to be stored. Foregoing examples of cottonseed oil tanks show that for such use a rich mortar coat, applied immediately after the forms have been removed, has been sufficient. It is probable that a further treatment with sodium silicate (water glass) or magnesium fluosilicate would be of benefit. These methods have been successfully used on tanks used for storing fuel oil heavier than 30 degrees Baume, although special commercial coatings have sometimes been used. For the storage of oils lighter than 30 degrees Baume, some special coating is needed to prevent the penetration of the oil.



A view of a packing plant where cottonseed oil is taken from the large tanks. Concrete enters largely in construction of these tanks.

Advantages of Lime in Construction

By TYRRELL B. SHERTZER,
Construction Engineer Eastern Bureau Nat. Lime Ass'n.

THAT engineers, architects and constructors recognize the value of hydrated lime mixtures in concrete construction is evidenced by the rapidly increasing number of specifications calling for the admixture of hydrated lime in all classes of concrete work, and also by the recent ruling of the Board of Standards and Appeals of New York City, noted in the American Contractor of May 8, 1920.

Advantages.

Briefly summarizing the advantages to be derived from the admixture of hydrated lime in concrete the following may be cited:

Hydrated Lime:

- (1) Makes concrete much more plastic and workable, thus facilitating chuting and placing.
- (2) Reduces the amount of water necessary in mixing concrete, thus obviating the danger of drowning cement, particles, and also overcoming the difficulties and known detrimental effects of excessive free water.
- (3) Causes concrete to lie closer to the forms and reinforcement, thus giving more uniform and smoother faces, eliminating segregation and stone pockets, and reducing finishing costs.
- (4) Produces denser and more homogeneous concrete.
- (5) Acts as a preservative to the reinforcement.
- (6) Prevents separation and settlement in carts and buggies.
- (7) Imports more uniform appearance as to surface and color.
- (8) Is the most efficient integral watertightening medium as officially declared by the U. S. Bureau of Standards, and is also the cheapest material available.

That hydrated lime imparts the above mentioned properties to concrete has been observed and testified to by many of the leading professional and practical men of the country, as well as by practically all of the departments of the U. S. Government dealing with construction matters.

Highway Construction.

In view of the rapid development of automobiles and the breakdown of our rail transportation system, good roads are today imperative. For the large majority of communities a concrete road provides the most durable and satisfactory type of construction.

A number of state highway departments, county engineers, and municipal authorities have investigated the advantages to be derived from proper ad-

mixtures of hydrated lime in concrete used for highway and pavement construction, with the result that many of them have now standardized such admixtures in their specifications.

After careful study and investigation, the office of Public Roads, U. S. Department of Agriculture has approved specifications calling for hydrated lime admixtures on projects to which government aid is extended.

Careful and systematic studies conducted by the Delaware State Highway Department indicate that the following advantages are derived from the proper admixture of hydrated lime in highway construction.

- (1) The compressive strength of the concrete is increased.
- (2) The concrete is placed and finished with less work.
- (3) The concrete is made more impervious to moisture, thus protecting the subgrade and reducing the internal stresses caused by alternate absorption and evaporation of moisture.
- (4) The war seems to be more uniform and decreased as compared with plain concrete.
- (5) Economy is effected in that 1-2-4 concrete with hydrated lime admixtures has proved more satisfactory than 1-1½-3 concrete without hydrated lime.
- (6) Observations indicate that cracks are less frequent in concrete with hydrate lime admixtures than in the plain concrete.
- (7) The free water content is reduced and the surface runs off from the finished surface.

Concrete Products.

One of the rapidly growing uses for concrete is the production of concrete products, such as blocks, bricks, pipe, battery boxes, etc. In order to facilitate the manufacture and to prevent excessive mold equipment being tied up, such products are generally made of very dry mixtures. Such dry mixtures are difficult to work, owing to the fact that there is not enough water present to provide lubrication or plasticity. Complete filling of the molds is also difficult with the dry mixtures and requires an excessive amount of work. The loss due to imperfect mold filling and breakage of green specimens on account of lack of cohesion, is large.

The admixture of hydrated lime to the mixes used for the manufacture of concrete products has in several instances, turned a losing venture into a paying business. Lime reduced to a paste or putty

is the most plastic of all materials used in construction. The experiences of many manufacturers of concrete products have conclusively demonstrated that the admixture of hydrated lime provides workability in the mass and at the same time does not reduce the consistency to such an extent as to interfere with the rapid manipulation of the material in the molds and out of them. As a matter of fact, it has been found that the labor required to fill and tamp the molds has been materially reduced, and as a consequence the rate of production has been increased. Experience has also demonstrated that the finished products are more uniform in texture and color, denser and more impervious, harder and more durable.

Masonry Mortar.

Lime has been considered one of the basic materials of civilization ever since it has been known that a mortar composed of lime and sand would hold stones and brick in place in buildings, enabling mankind to provide more comfortable and durable housing than the primitive skin and wattle huts.

The oldest structural works of man such as the pyramids, and many other prehistoric works, now in ruins, were built with lime mortar as the material for binding the individual structural units together.

This mortar has resisted the ravages of the elements throughout the succeeding centuries, thus demonstrating the durability of the material. The monumental structures of continental Europe were all constructed with lime mortar, giving further evidence as to the time-resisting value of the material, even when subjected to the severe varying climatic conditions.

No structural material ever used by man has shown itself superior to properly prepared lime mortar made from lump or quick lime, as in ancient and medieval times.

Recent scientific investigations of the subject of mortars have conclusively demonstrated that even those composed of portland cement are greatly improved by the presence of lime.

Tests conducted at Columbia University, New York City, have conclusively proved that a mortar composed of one part portland cement, one part lime, and six parts sand (all by volume) produces brick masonry which has a compressive resistance more than a third greater than can be obtained when only portland cement and sand are used in the volumetric proportion of 1-3. Other tests conducted by equally authoritative laboratories have proved also that both cohesion and adhesion are increased by the use of lime, and that the bedding of masonry, or in other words, the area of contact between the structural unit and the mortar bed, is greatly increased by the use of lime owing to the remarkable

plasticity of lime putty. Another valuable property of lime, indicated by the tests at Columbia University, is its remarkable moisture-retaining power. Owing to this property the "suction," or absorbent action of structural units, such as brick, exercises a much less deleterious effect upon the mortar, due to absorbing the water from it.

Lime Plaster.

Soon after man discovered that he could build better houses by binding durable units together with lime mortar, his sense of refinement and inherent desire for order and decoration began to be awakened. He became dissatisfied with rough interiors and so smeared the rough surfaces of his structures with some of the mortar. Thus the art of plastering was born.

The chambers of the pyramids, the ruins of Pompeii, and other examples of ancient structures are plastered. At Pompeii and other ancient ruins lime plaster in many instances has resisted the ravages of time and the elements better than the surface of stone or brick to which it was applied. Many museums and private collections contain specimens of wonderful frescoes upon great slabs of lime plaster, which is was found possible to remove intact from the structural surface to which it was originally applied.

All of the remarkable examples of Greek, Roman, Byzantine, Florentine, Medieval, and Renaissance structures were plastered with lime plaster, to which were applied the priceless works of the ancient artists either by the fresco or the "laid-in" method. The remarkable preservation of these art gems as regards both color and detail is irrefutable testimony as to the durability and stability of lime plaster.

The interesting buildings of the Elizabethan period, which were plastered both inside and outside with lime plaster, and which have resisted the climatic conditions found in England during the intervening centuries, bear further testimony as to the lasting quality of lime plaster.

No substitute yet devised can compare with properly prepared lime plaster, as to durability, stability, cheapness, and sound deadening. Lime plaster can be worked to absolutely true surfaces and angles due to the fact that it remains plastic long enough to permit perfect working. Lime has a most remarkable sand-carrying capacity, thus making for economy. Lime plaster will dry out as rapidly as any other material but requires slightly longer to attain the same degree of hardness. It is perfectly feasible to run three-coat lime plaster work from the same scaffold as is done with other materials.

When having a new home built the average man gives no consideration to what is probably the most

important element affecting his comfort and pleasure, namely, the plaster. The plaster of a home is more in evidence than any other single item, and unsatisfactory plaster or a plaster failure may cause more unhappiness and inconvenience than any other failure, aside from the foundation or roof.

Let us consider for a moment the qualities and properties which plastering in the home should possess. One of the objects of individual home building is to insure privacy both in the broad meaning of the word and also as regards personal and individual seclusion. It is, therefore, desirable to plaster with a material that will not transmit sound from room to room or from one part of the house to the other. In other words, it is desirable to use a sound deadening material. Lime plaster is such a material. It is essential to use a material that will provide at least a reasonable degree of fire protection. Such a material is lime plaster. It is essential to use a material that will provide a suitable, stable, lasting foundation for decoration by one of the several methods, such as painting, fresco, or papering, without danger of disintegration, cracking or discoloration. Such a material is lime plaster.

As the result of over two years' study and investigation, the Architects of the Board of Education, for the city of New York, specifically call for lime plaster in all auditoriums to be constructed in future school houses owing to the superior acoustical properties of lime plaster. Many public gathering places have proved unsatisfactory from an acoustical viewpoint because of unfortunate selection in plastering materials and the use of hard, resilient, sound reflecting material instead of the more porous and sound-absorbing lime plaster.

In conclusion it may truly be said that "Lime Is Eternally Essential," that it is the oldest and most time tried of any of our materials of construction, and that it was a considerable factor in the establishment of civilization, and the uplift of mankind from the sloughs of savagery and privation.

New York Housing Conditions.

Only such construction as will relieve the shortage of dwelling accommodations and such construction as is in the public interest, should be given building permits, says Mayor Hylan of New York City, urging that legislation be enacted authorizing some responsible body to pass on permits for construction. The Mayor's report on local housing conditions shows that at least 100,000 additional apartments are urgently needed to provide homes for the city's population. A total of 12,662 apartments and houses are now under construction but to meet the normal demand a sufficient number of

tenement houses must be erected each year to provide at least 50,000 apartments. Under the state constitution New York City has no power to construct municipal apartment houses and rent them to private parties, but an amendment to the constitution can be passed and the city could then go ahead with its building program in January, 1922. In the meantime, the Mayor says, there should be no standstill in the erection of homes and multi-family houses.

Atlanta's Big Building Record.

The prosperity of the South is clearly evidenced in the enormous amount of construction work now in progress in Atlanta or proposed for the near future, building permits issued for June having already reached a mark that will establish a new record for the city during any single month. While the Federal Reserve Bank's curtailing of credit will doubtless have some effect on construction, it is not particularly noticeable as yet.

Two of the largest building permits issued during June were for the new Metropolitan Theatre at Broad, Luckie and Forsyth streets, \$350,000, and the new nurses' dormitory to be constructed by the Georgia Baptists' Hospital, \$200,000.

Two large building projects recently proposed include a new 400-room hotel at Peachtree and Kimball streets, to cost \$1,500,000, and a new 10-story office building at Edgewood avenue and Equitable place, to cost \$1,500,000. C. P. Byrd, president of the Byrd Printing Co., purchased the property at Peachtree and Kimball streets for approximately \$250,000, and made the announcement of the proposed hotel. The building will be 10 stories, and Mr. Byrd is now in consultation with architects regarding the plans. The cotton interests will erect the office building, which will be occupied in the main by cotton brokers and agents, and by the Atlanta Cotton Exchange, which plans the expansion of its activities.

New Building Inspector.

James Coles has assumed his duties as building inspector for Charleston, S. C., being the first official of the kind on the city engineer's staff. This office was recently created, and is expected to result in improved building operations and a better building code. Mr. Coles is now checking up building permits, seeing that work authorized is carried out, according to the ordinances. Charleston has been doing a lot of construction, in spite of generally adverse conditions, and the inspector will have plenty of work to handle.

A Modern System of State Highways

What it Means as an Aid in Getting Farm Products to the Consumer and Thus Reducing Living Costs.

Extracts from an address by W. A. McGirt, President of the North Carolina Good Roads Association, delivered July 23 before the North Carolina Press Association at Waynesville, N. C. are here given as of general interest in the cause of good roads. In part, Mr. McGirt said:

There is no more serious problem before the nation today than that of reducing the cost of getting the products of the farm to the table of the consumer. We are told, on the authority of the Government, that farmers lose \$300,000,000 yearly in marketing their crops because of bad roads. North Carolina's sweet potato crop amounted to \$13,000,000 last year, and \$6,000,000 went to waste because of lack of transportation and organization. We should remember these facts in connection with the high cost of living. You cannot neglect the farmer without seriously affecting every line of industry. Merchants, bankers and manufacturers are beginning to realize this, and many of them are now supporting legislation favoring the development of rural communities.

The country can exist without the city, but it is not possible for the city to exist very long without a back country to feed and support it. Practically all wealth is traced to the soil, and the farms are the blood and sinew, the very life, of our State and Nation. Without them the pulsebeat of this great nation would forever cease.

What is the solution? How can we better rural conditions and remove all crop wastage? How can we improve our educational facilities and our health conditions and reach an assured position with regard to these fundamentals?

After many years of close study of these problems, I am satisfied that a modern system of State highways will do more to bring quickly the needed changes than any other one thing, because it is a fact not to be disputed that with the advent of good roads there come quick communication and transportation, better churches, better homes, better schools, including consolidated schools in rural communities, better farms, including silos and barns, crops and increased cultivated acreage, less crop waste, and best of all, good roads mean a satisfied and contented rural population. The above statement is based on the result obtained by good roads in other States, and what has actually happened in the more progressive counties of this State that have already completed their system of modern hard-surfaced highways.

If you agree with me on the solution of many of

our problems, the next question that naturally comes to our minds is, How can we secure a system of State highways?

I would suggest for your consideration: First, the establishment of a State highway construction fund for the building of a modern system of State highways connecting county-seats and principal towns. This construction fund to be provided by an ad valorem tax supplemented by sufficient serial bonds, issued at such times and in such amounts as needed to meet economical expenditures. Second, the establishment of a State highway maintenance fund to be derived from a liberal license fee imposed on all motor-driven vehicles, the license fee to be graduated according to the horsepower and purpose of the vehicle, and to be used exclusively for the maintenance of State highways and for the support of the State Highway Commission. Third, the creation of a small though strong and representative, State Highway Commission, with a competent State highway engineer as its executive head. The commission to employ the best highway engineers obtainable, who, under the direction of the commission, shall locate, supervise and maintain the State system of hard-surfaced highways. Fourth, that the counties shall be relieved of the burden of building any portion of the State highway system.

If any county has already constructed any county road as a section of such State highway, or any road is to be incorporated as a part of the State highway system, such county shall be reimbursed, either by the building of an equal amount and quality of county highway or by an equitable adjustment based on the original cost of said road.

Fifth, the employment of all able-bodied State prisoners in the construction and maintenance of the proposed system of State highways. Sixth, the necessity of a constitutional amendment, if such be necessary, for the exemption of bonds for roads and other public improvements from local and State taxation.

No one will question the feasibility or the practicability of the plan suggested, other than that portion of it embraced in the question of the ability and willingness of our taxpayers to invest their money in a program which will certainly involve many millions of dollars. However, no road policy will be successful which is not broad enough in its scope to provide an adequate system of hard-surfaced highways leading into every section of the State. We should not make the oft-repeated mistake of underestimating the

cost of this comprehensive system of highways, for taxpayers have learned to have more confidence in getting some real return for their investment when estimates are large enough to offer some hope of the successful completion of a given undertaking. If we accept 5000 miles as an estimate for an adequate system of highways, we may also assume that the cost will approximate \$150,000,000 which could well be distributed over a period of 10 or 20 years.

I believe that the taxpayers of this State are able and willing to finance the undertaking necessary to place this State on a more solid basis for the future development of its resources.

In substantiation of my statement, please permit me to quote you some figures which show the almost unlimited wealth of this great State:

Last year (1919), we are told, the agricultural products of the State amounted to \$750,000,000, this in spite of the fact that we have over 20,000,000 acres in the State that are not being used for any purpose.

In 1917 the output of our manufacturing industries amounted to \$655,000,000, and during the past year undoubtedly increased to well over a billion.

The output of lumber, cordwood and other wood products amounted to well over \$100,000,000.

Our banking resources for 1918 were \$222,000,000.

Our deposits in savings banks in 1918, \$61,000,000.

We paid the Federal Government last year, in income, excess profits and special taxes, \$102,812,648.

Our State has now an investment of approximately \$130,000,000 in motor vehicles, including automobiles and trucks, which is being added to at the rate of \$130,000 a day. Few of these types of vehicle are confining their activities to the roads of any one township or county, but are users of inter-county or State highways.

To relieve railroad congestion and for many other reasons the State and Federal government should go into the business of road building on a big scale. The United States Government should build the great trunk line highways through the States, and the States should build from county-seat to county-seat, thus leaving the counties to build their local systems which will serve as feeders to these main arteries of commerce. Counties should not be expected to participate in the construction of the State system. Local county roads are a necessary adjunct to the large trunk line State highways, and if counties will build their 45,000 miles of local roads, it is enough to ask of them. To be of greatest service to the farmer, and through him to the State, the State highways must be made available by a system of high-class county roads. The counties are not able to build both systems.

Annual Meeting American Engineering Societies

The Annual Convention of the American Society of Civil Engineers held in Portland, Oregon, August 10, 1920, adopted resolutions which provided,—"that the Board of Direction of the American Society of Civil Engineers be directed to submit at once the question of the American Society of Civil Engineers becoming a charter member of The Federated American Engineering Societies to referendum vote to the Corporate membership of the American Society of Civil Engineers as recommended by the Joint Conference Committee, said ballot to be accompanied by a copy of the Constitution and By-Laws of said Federation." and "that the Board of Direction of the American Society of Civil Engineers be further instructed in event of a favorable vote on said referendum to proceed at once to take such steps as may be necessary for the American Society of Civil Engineers to become affiliated with said Federation."

Lessons From Engineering Council.

In connection with The Federated American Engineering Societies, two questions have arisen:

1. "If Engineering Council is a success, why should the proposed Federation supplant it?" and
2. "If Engineering Council is a failure, why should the Federation be organized along lines so nearly parallel?"

These are basic questions and worthy of the serious consideration they have received not only from the Joint Conference Committee when it was preparing its report but also from the Committee on Constitution and By-Laws of the Washington Organization Conference.

When the Joint Conference Committee, composed of conferees of four of the then five members-Societies of Engineering Council, considered the question of co-operation of these societies in matters of common concern to the engineer, the functions and accomplishments of Engineering Council naturally came under review. There were present as conferees, three members of Engineering Council; by invitation of the Committee, Council also had an official representative present.

The Committee decided that some form of com-

prehensive organization was necessary to provide a medium that could speak for the engineering and allied technical professions on matters of common concern to them. The Committee also decided, which decision was concurred in by the official representative of Engineering Council and the members of the Committee who also representatives on Engineering Council, that

“If desired, Engineering Council can be moulded into this organization by making it more democratic and founding it on direct representation of all engineers, rather than by appointment as at present.”

It was agreed that engineering Council is at present not properly constituted to carry on efficiently the work which it has undertaken; its organization is from the top downward, rather than from the bottom upward, which the Committee deemed desirable if a thoroughly representative and efficient organization was to be established.

It has been admitted by Engineering Council and it was so pointed out to the members of the Joint Conference Committee that Engineering Council has been handicapped from the beginning in regard to funds for its operations, in freedom of action on the matters that came before it, by reason of the necessity for reference to the Member-Societies and to the United Engineering Society, and the great difficulty in electing additional member-societies. The annual contributions of the Member-Societies never exceeded \$22,000; which amount was wholly inadequate for meeting the demands for service which Council has been desirous of rendering. Notwithstanding these difficulties, Engineering Council, has been able to accomplish a great deal as was pointed out by the Joint Conference Committee in Bulletin No. 3, and particularly has it been successful in its work of developing among its Member-Societies the habit of united effort in matters of common concern to the engineer and the allied technical professions. Engineering Council may be said to be a success and considering the conditions under which it has operated, to be a commendable success. It is evident, however, that to fulfill the real functions of comprehensive body to represent the engineering profession that there are basic defects in the organization of Engineering Council, and these are not remedial through its reorganization.

Engineering Council has six Member-Societies. At the Organizing Conference in Washington, 71 societies were represented with an aggregate membership of over 80 per cent of that represented by 110 societies that were invited.

The action of the Organizing Conference in creating The Federated American Engineering Societies and its governing board, American Engineering Council, was unanimous. This action has received the unanimous approval and support of Engineer-

ing Council. The affirmative consideration that is being accorded the invitation to become members of The Federated American Engineering Societies, assures that American Engineering Council will have a far greater number of member-societies at its initial meeting in November than Engineering Council, based on its present rate of growth, could possibly have had at the end of many years.

The work of Engineering Council is not to be abandoned but is to be carried on and extended under a more comprehensive program made possible by the more representative American Engineering Council.

The deficiencies of Engineering Council are not in the quality of the work that it has accomplished, but rather have been due to its organic limitations and to the fact that it is not sufficiently representative of the local, state and regional organizations and affiliations. The Organizing Conference in Washington laid the foundation for a more democratic organization in which the local, state, regional engineering and allied technical organizations, and affiliations, will be represented, and have a real voice in its management.

The Organizing Conference in its wisdom recognized the success and limitations of Engineering Council and has evolved an organization, in which all of these successes will be utilized and broader opportunity afforded for more effective work on half of the engineering and allied technical professions.

New Bridge Engineer for South Carolina.

Charles H. Moorefield, South Carolina highway engineer has announced that the commission had engaged a specialist for steel and concrete bridge work for South Carolina, this work having assumed the proportions for an engineer of this kind. The new engineer will devote his time largely to bridge projects on the Santee, Wateree and Pee Dee rivers and other structure that will come under the state highway commission.

At present the engineer is connected with other work and until he has officially notified his present employer of his acceptance of the South Carolina job, his name will not be announced. He has already taken the position of bridge engineer in the Palmetto state and only a few days will elapse before his official acceptance will be announced. He is expected to report September 15.

Opportunities for American Engineers.

American civil engineers, railroad contractors, Bridge builders, manufacturers of locomotives and all kinds of railroad rolling stock, would be welcome with open arms in Serbia today, at probably whatever terms America is willing to offer, in the opinion

of American Red Cross officials who have been working in that country.

Serbia proper is bisected by a main trunk line that was not even "two streaks of rust" when the armistice was signed in 1918. At that time every railroad bridge from Belgrade to Ghevgelli had been destroyed by the retreating German-Austrian army.

Today all of these bridges have been repaired in a way, yet every repair job is of the most temporary character. Piling and timber cut in the mountains have been used to support the trucks over which the light locomotives and lightly loaded trains are forced to creep at a snail's pace. Obviously, the whole of Serbia must be equipped before long with substantial bridgework as well as miles of track and hundreds of locomotives, freight and passenger cars.

Common railroad station talk has it that American engineers will soon take over Serb railways on a forty year contract, agreeing to build up-to-date

roadbeds and put in sufficient locomotives to haul the country's commerce.

It is no wonder that American-Serbs are agitating the entrance of American engineering genius into their mother country. All of them have travelled over the main American trunk lines. They have experienced the sensation of riding sixty miles an hour in comfortable coaches and arriving at their destinations on time, while in Serbia for the past three years they having been riding in box car trains that are hours late. For a journey that would take about nine hours in the United States, Serbian trains now require forty-eight hours and even then don't get in on time.

American Red Cross workers in Serbia have been greatly handicapped by the present traffic situation of that country. The transport tieup delayed the American Red Cross relief trains uncounted hours and in many instances these supplies arrived at their destination days late.

Mercantile and Industrial Buildings of Concrete

Portland Cement Association.

BUSINESS executives confronted with the necessity of choosing a type of building that will best meet the needs of their industry consider every factor likely to affect the desirability of the proposed structure. Such features as fire-safeness and consequent low insurance, freedom from maintenance and depreciation, adaptability, speed of construction regardless of season, permanence, and sanitation are desirable factors. Each must be considered from the standpoint of its proper relative importance, although to many of them no definite money value can be given. Nevertheless, all are susceptible of being capitalized.

Today the merits and economies of mercantile and industrial building are judged largely in the cost accounting department. The annual balance sheets will show that first cost of a structure is only one item and not necessarily of first importance. It is ultimate cost that will test and prove economy. Ultimate economy dictates the choice of that type of construction on which freedom from depreciation and maintenance, low insurance and favorable influence on production will, by comparison with some other type of construction, in a short time, more than compensate for any probable additional first cost.

Employes' welfare must be considered. Build-

ings which are sanitary, light, well ventilated and hence provide healthful quarters for workers, are certain to contribute to profits because of the contentment developed among the workers and the consequent reduction of labor turnover. A sense of security is felt by owners, operating officials and employes in the knowledge that the building which houses them and their industry is proof against destruction by fire, tornado and earthquake. It is worth money for owners and employes alike to know that none of these visitations can suddenly wipe out the industry on which they are dependent, with the resulting loss of time, money, patronage and prestige that may have taken years of endeavor to build up. Attainment of these desirable ends is certain to favorably influence financing and credits. Permanent, fireproof buildings are also of distinct advertising value to their owners. With concrete buildings, these desirable ends are secured in the fullest measure.

A comparison of the initial cost of fireproof buildings will almost invariably show the low cost of the concrete structure. In many cases concrete buildings designed for heavy floor loads have been built for less than any other practicable type would have cost. Speaking of conditions in 1916, Arthur R. Lord, a consulting engineer of Chicago, said, in

articles published in the Cement World for September and October, 1916: "Under normal market prices of materials, mill construction runs about 5 per cent cheaper than flat slab. Where lumber is cheap, the difference will be greater and, on the other hand, in certain cases flat slab construction has actually been built for the same first cost as mill construction." In the articles by Mr. Lord referred to, buildings of various types are placed in the following order as to fire cost, beginning with the lowest in cost:

Mill construction.

Concrete flat slab.

Concrete beam and slab.

Structural steel, fireproofed.

Since 1916, however, marked changes have taken place in the materials and labor market, but the net result has been rather to reduce the difference in cost between mill construction and reinforced concrete instead of to increase it.

A modern concrete mercantile or industrial building of a certain size and type, built to serve a specific purpose, may, for example, cost \$200,000. A similar building equally modern in appointments, of the same size, built to serve the same purpose, but of another type of construction, may cost \$180,000. At first glance the intending builder might be tempted to favor the seemingly cheaper building, but when it can be shown that the first mentioned type costs several cents less per square foot of floor area, per annum, for interest, depreciation, insurance, repairs and all other annual charges than the building of lower initial cost, the difference in first cost loses its importance. Fortified with these facts, the industrial executive can hardly avoid adopting that type of construction for his buildings which will place his concern on the most profitable economic basis through the elimination of all avoidable annual charges.

It is not possible to anticipate every event that may delay the construction of a building. Fabrication and shipment of necessary materials may be interfered with, labor conditions may change so as to vitally affect progress and cost of construction. Thorough organization takes precautions to reduce many of these possible happenings to a minimum; nevertheless, the unforeseen frequently happens. If the intending builder has chosen concrete construction, many of these contingencies are eliminated or reduced to a minimum. Much of the necessary material required for concrete construction is usually near at hand. The structural parts of a concrete building are built in place. Distant shops and uncertain transportation need not be depended upon for their completion and delivery. Materials arrive in bulk and do not require special equipment for transportation; in fact, transportation is not a large

item because the bulk of materials is usually near at hand. Motor trucks may do most of the hauling. Most of the labor required is of the less highly specialized kind. It can usually be obtained near where the building is going on. Practically all materials may be ordered as soon as preliminary requirements have been decided upon, thus disposing of any uncertainty as to the materials market. Equipment necessary to erect concrete buildings is of the simplest sort. There are no heavy structural members to be handled. Floors and columns are cast simultaneously and possibility of accident is reduced to a minimum.

An estimate of the first cost of a concrete building can be made with an unusual degree of accuracy. The owner thus secures the benefit of a minimum charge for contingencies in the contractor's bid or the benefit of low cost in a cost-plus contract.

One of the first things a business executive wants to know is how long it will take to build. Desire to immediately increase production, desire to meet an existing demand, desire to get invested capital earning money at the earliest possible moment have placed a new value, a premium, on speedy construction. The comparative simplicity of concrete construction and the availability of needed materials are reasons why concrete buildings may be quickly erected.

An estimate of the value of speedy construction from the standpoint of earlier occupancy and operation of newly-organized business may easily be made. To be conservative assume that two months may be saved in time of construction by using concrete. This will make possible a two months' earlier occupancy of the building and a like active operation of the invested capital which would thereby be able to earn its interest during a period that would otherwise be a total loss. This shortening of the period of pre-occupancy idleness and the hastening of the end of the early development period is directly creditable to the greater speed of construction possible with concrete. The quicker turnover of the capital invested in construction equipment should also be taken into consideration. A saving of two months in each construction season means a considerably greater construction capacity without increase in crew or equipment.

Total loss by fire is unlikely to an industry housed in a concrete building. Contents may of course be damaged or destroyed, but records of big fires have shown that, even when such contents are of highly inflammable character, the injury sustained by concrete buildings is smaller and their salvage value higher than for buildings of any other type. In the case of total destruction of contents, the concrete of the building seldom suffers more than minor injury, if any.

On a building subject to deterioration, maintenance and depreciation increase from year to year—in other words, no matter how carefully or systematically maintenance may be performed, the building can never be made as when new. Maintenance of those parts of a structure which can be replaced may be carried on indefinitely, but many of the most vital parts of a building are practically inaccessible, therefore do not permit easy replacement. Nor can such parts always be reached with treatments or coatings that would tend to prolong their useful life. It is therefore impracticable to maintain indefinitely buildings whose vital parts are subject to rust or rot.

Concrete grows stronger with age. Many city building departments recognize this by allowing greater loads to be placed on a concrete building several years old than would be permitted when the building was new. Because of their ability to resist the usual destructive agencies, concrete buildings require but little maintenance, and for all practical purposes are permanent. They do not require painting, there are no joints to be pointed up, no wornout or rotting structural parts to be removed and replaced, no sagging or warping of floors or floor beams. Concrete floors will wear indefinitely and their smooth, dense surface is easy to clean and keep clean. Germicidal or other cleansing solutions may be used on them without fear of injury. Concrete floors in a concrete building maintain their original level. Machinery mounted on them stays in adjustment longer, shafting keeps in line. The efficiency of concrete buildings therefore does not grow less with time, while in a building subject to deterioration there is the inevitable reduction in operating efficiency.

In comparing the economy of various types of buildings, maintenance may be taken as an average of 1 per cent per year of the cost of the building. When this charge is capitalized at 6 per cent it is seen that over \$16 more per \$100 original cost could be spent for a maintenance-free concrete building than for one of depreciable type. Yearly maintenance, however, must be considered separate from gradual depreciation which, after a term of years, renders the structure unfit for use, regardless of the maintenance done on it.

As concrete buildings are now designed they have great reserve strength. The unit stresses used in designing them are very much below the stresses to which concrete may safely be subjected.

Any well-built concrete structure may be used for light manufacturing purposes or for an industry requiring operation of rapidly-moving machinery. Non-inflammable occupancy may change to inflammable occupancy, a mercantile building to a warehouse, a warehouse to a manufacturing plant, and

vice versa. If the changes in environment are so radical as to preclude the profitable use of the building in its original location, it may be moved, provided its construction is such as to withstand the racking effects of moving without injury. Concrete buildings being monolithic possess the greatest possible rigidity. When necessary such buildings can be moved with the assurance that they will suffer no serious damage in the process. The expense of moving will be minimum since the great strength and monolithic nature of the structure permits moving it with greatest facility. Recently a three-story reinforced concrete building in Detroit used as an office building by the Hyatt Roller Bearing Co. was moved 450 feet, the full length of a city block and across street car tracks, while the office force carried on its work as usual. This work was done by the L. P. Friestedt Co. of Chicago at a cost of only 20 per cent of the original cost of the building. As the concrete building which can be moved does not suffer any ill effects from moving, its value as a usable structure is preserved and may actually even increase in the new location. Concrete buildings, therefore, are the type most likely to escape obsolescence.

Concrete buildings possess many qualities that make them most adaptable to practically any occupancy. It is difficult to express in dollars and cents the value of certain qualities inherent in a concrete building. It is evident that buildings in which people work should be sanitary. Sickness, poor health and generally low vitality of employes affect in a vital way their efficiency and therefore the efficiency of the business or industry. Concrete construction affords the utmost sanitation. Monolithic floors, columns and beams provide no recesses where filth may lodge. The dense, smooth surface of concrete is non-absorbent; cleansing solutions may be applied in any quantity to maintain surface cleanliness and concrete floors will protect lower stories from water damage. There are no interwall or interfloor spaces where rodents may lodge or nest in hidden spaces inviting the accumulation of vermin, rubbish and filth to propagate disease germs.

While industrial buildings are primarily designed to serve in the best possible manner a certain definite use, they may, nevertheless, be made architecturally attractive at small expense. This will greatly improve their appearance. Ornament may easily be added in the form of concrete cornices, balustrades and raised or depressed panels. Proper attention given to the selection of aggregates, leading to special exterior finish, will result in pleasing effects. Stucco in considerable range of color may also be used as a surface finish.

Warmth and dryness are qualities desirable in all buildings. These may easily be obtained in a

concrete building. In general, warmth and dryness depend on insulation. Even without the aid of insulating materials, concrete is a poor conductor of heat, and when used either with insulating membranes or by providing dead air spaces in walls possesses ideal insulating qualities. Both of these methods of securing insulation are easily carried out with concrete. The usual inside finish of furring, lathing and plaster furnishes the necessary insulation to prevent condensation of moisture on the walls and provides added resistance to the passage of heat or cold. No moisture passes through dense, well-built concrete. Concrete buildings are easy to keep warm in cold weather and comfortably cool in warm weather.

An exceptional degree of security against loss of life from tornado, earthquake and explosions is provided by the practically indestructible monolithic concrete structure. Many cases are on record where concrete buildings have successfully withstood the effect of these destructive forces. The San Francisco earthquake and fire, the Baltimore fire, the munition ship explosion in Halifax Harbor, the Fergus Falls (Minn.) tornado, earthquake in San Domingo and Guatemala, and numerous other similar examples testify to the great resistance of concrete buildings against destruction or serious damage by the forces of Nature. Life and property are truly conserved by such structures. Their occupants have the assurance at all times that they are enjoying the highest measure of protection against personal injury and loss.

Concrete and Cement Plants.

Demopolis, Ala.—Gulf States Portland Cement Co.; reported to erect \$2,000,000 plant addition; daily capacity 2500 bbls., increasing cement output to 3500 bbls.

Charleston, S. C.—Carolina Portland Cement Co., Joseph S. Hanahan, Secy., 1 Broad St.; increased capital to \$2,000,000.

Blacksburg, S. C.—N. W. Hardin, Mayor; interested in organization \$1,000,000 company; build Portland cement plant.

Regland, Ala.—Geo. E. Nicholson of Nicholson Construction Co., Commerce Bldg., Kansas City, Mo.; organize company to mfr. Portland cement; overhauling plant; develop stone quarry 5 mi. from quarry; installing crusher; proposes daily production 3000 bbls. cement.

Chattanooga, Tenn.—Signal Mountain Portland Cement Co., Geo. P. Deickmann, Mgr., Demopolis, Ala.; build plant with daily capacity 3000 bbls. cement and increase to 5000; purchased site at foot Signal Mountain, 5 mi. from Chattanooga; purchase include 600 acres limestone land; contracted for coal from nearby coal mines.

Birmingham, Ala.—Lehigh Portland Cement Co. has secured 400-acre site at Tarrant City, in suburbs of Birmingham, and will erect cement plant; tract has large deposits of limestone and dolomite; initial unit of plant will have capacity of 1,000,000 barrels, and other units will be built from time to time; cost of plant, \$3,000,000. Construction will begin at an early date.

Birmingham, Ala.—Marquette Cement Mfg. Co., Chicago, contemplates erecting cement plant in the Birmingham district; situation investigated by John C. Barker, assistant to the president of the company who has secured, it is reported, options on several desirable sites.

Foreign Trade Opportunities.

Where addresses are omitted they may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., and at the branch offices of the Bureau, 315 Custom House, New York, N. Y.; 629 Federal Building, Chicago, Ill., and Association of Commerce Building, New Orleans, La., and 310 Custom House, San Francisco, Cal. For convenience in filing, please use separate letter sheet for each trade opportunity request.

33391.—A commission agent in POLAND desires to secure an agency for the sale of machinery, heating plants, plumbing supplies, cast-iron articles, cement, crenes.

33448.—The municipal board of a city in AUSTRALIA desires to purchase cast-iron pipe, 4 to 12 inches; steel tubes, ½-inch to 4 inches, for water service; and 10,000 barrels of Portland cement. A copy of the conditions of contract and schedule of quantities and prices was forwarded and may be examined at the Bureau or its district office. (Refer to file No. 13103.) Quotations should be given c. i. f. and e. Australian port. Payment to be in pounds sterling against receipt of merchandise.

33548.—A commercial agent with branch offices and agencies throughout the NEAR EAST desires to secure the representation of firms for the sale of structural iron, builders' and other hardware, References.

Important Industrial Consolidation.

The Austin Machinery Corporation of Chicago and New York has announced the consolidation of the F. C. Austin Machinery Co., Inc.; the Linderman Steel & Machine Co., the F. C. Austin Drainage Excavator Co., the Toledo Bridge & Crane Co., the Municipal Engineering & Contracting Co., and other large manufacturers of kindred lines with plants at Toledo, O.; Muskegon, Mich.; Winthrop Harbor, Ill., and Woodstock, Ont. It is further stated that the combined energy and capacity of these organizations will be devoted to mass production of a complete line of steam and concrete mixing machinery to

meet the requirements of an unprecedented period of construction, good road making, reclamation and ir-

fore, a direct connection between the Council and its Executive Board.

The By-Laws provide, in Chapter II, Section 7, "4. Members of the Executive Board repre-

How Members of The Executive Board Are Elected.

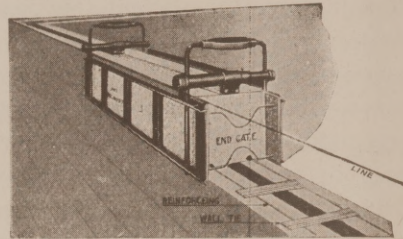
The Joint Conference Committee has recently received the following inquiry from one of the organizations which are considering membership in The Federated American Engineering Societies:

"Are the members of the Executive Board, outside of the officers of the American Engineering Council and the representatives of the National Societies, to be elected by the organizations of the district or by the members of the American Engineering Council from that district? If the former, how can one properly call it an executive board of the American Engineering Council for there would be no direct connection between the Council and the members of the Executive Board, other than the six officers?"

The Constitution provides that the members of the Executive Board, including the officers, are members of the American Engineering Council as representatives of the Member-Societies of The Federated American Engineering Societies.

The intent of the Constitution and By-Laws is that the Executive Board shall be selected from the representatives on the Council and the district member shall be selected from and by the representatives on the Council from that district. The Executive Board is subordinate to and constituted from the American Engineering Council and there is, there-

For 50% Build the Hollow Wall Way 50%

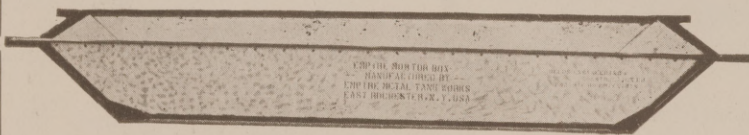


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senting national societies shall be selected by the said societies in such manner as they may determine; the secretary shall be advised of this selection.

“5. Members of the Executive Board representing local, state and regional organizations and affiliations shall be nominated and elected from each of the several districts by the representatives therefrom on the Council, at a meeting duly called for the purpose, provided three fourths of all representatives of said district are present or represented; the selection shall be reported to the Secretary.”

Making Concrete Pipe.

In the Hume centrifugal process of manufacturing concrete pipe, as described by W. Wolstenholme to the South African Institution of Engineers, the cement is mixed with crushed stone from the Witwatersrand mines, and material from the large quantities of discarded mining ropes is added for reinforcement. The ropes, slowly rotated, are cut into suitable lengths, annealed, unstranded, and then woven into cages which are inserted into the moulds as the skeleton of the pipe. The necessary amount of concrete being then poured into the moulds, the machine is speeded up, and the centrifugal force

both packs the solid material evenly and dries out the water. Six pipes 4 to 6 inches in diameter can be completed in 8 or 9 minutes, four of 15 to 18 inches in 15 minutes, and single specimens of larger sizes up to 60 inches in about 20 minutes. In the tests made, the pipes below 9 inches in diameter withstood pressures of 300 to 350 pounds per square inch, the larger sizes resisting 210 pounds. At excessive pressures the pipes do not give way suddenly, but develop pores and cracks.

Concrete Institute Meeting.

The American Concrete Institute held a sectional meeting July 16 in New York City, which was called by President H. C. Turner. W. A. Slater of the U. S. Bureau of Standards gave a talk in which he described a number of the tests on especially designed beams for the concrete ship section of the Emergency Fleet Corporation, in which special attention was paid to the investigation of shear strength.

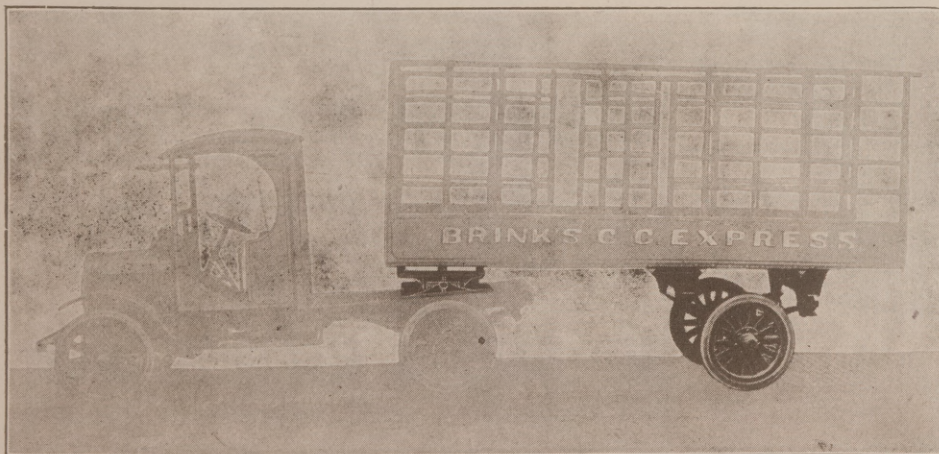
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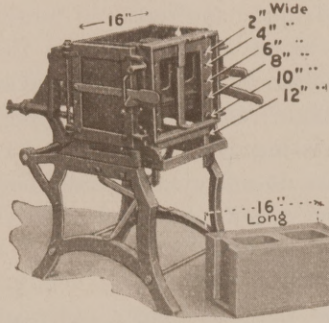
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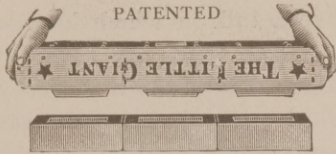
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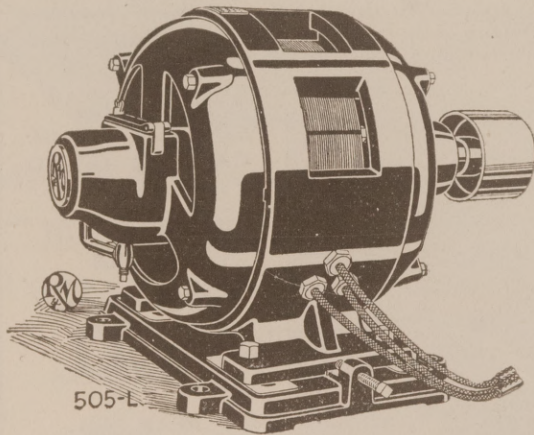
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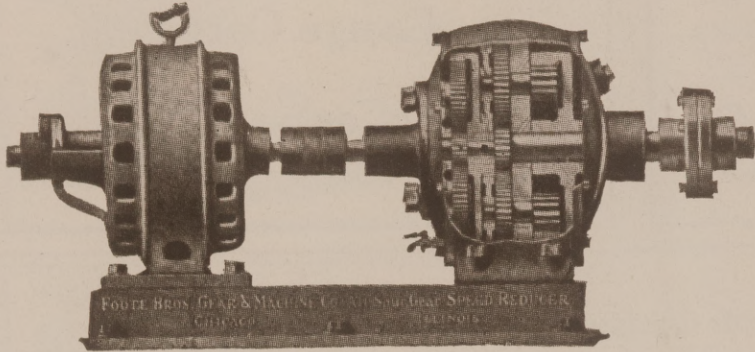
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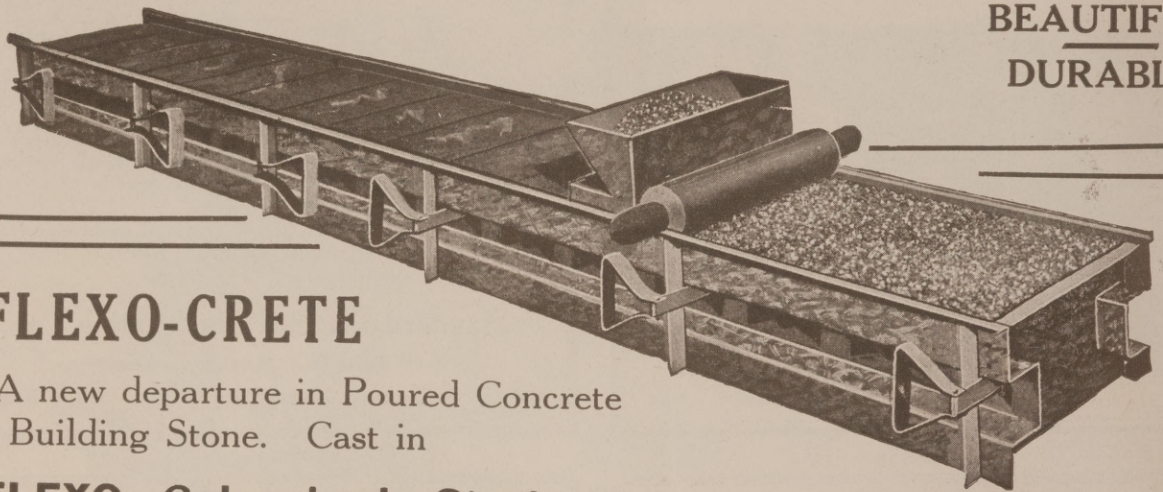
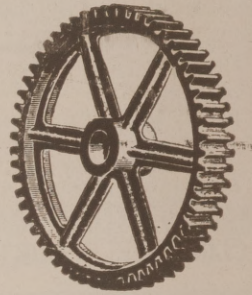
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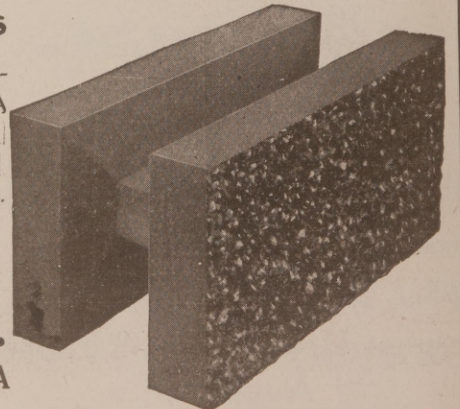
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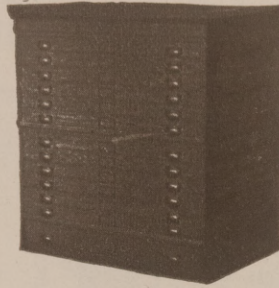
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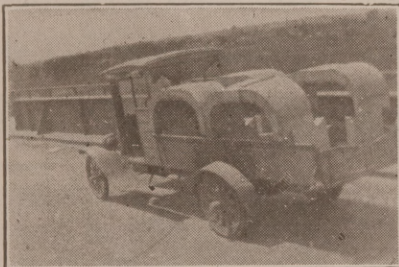
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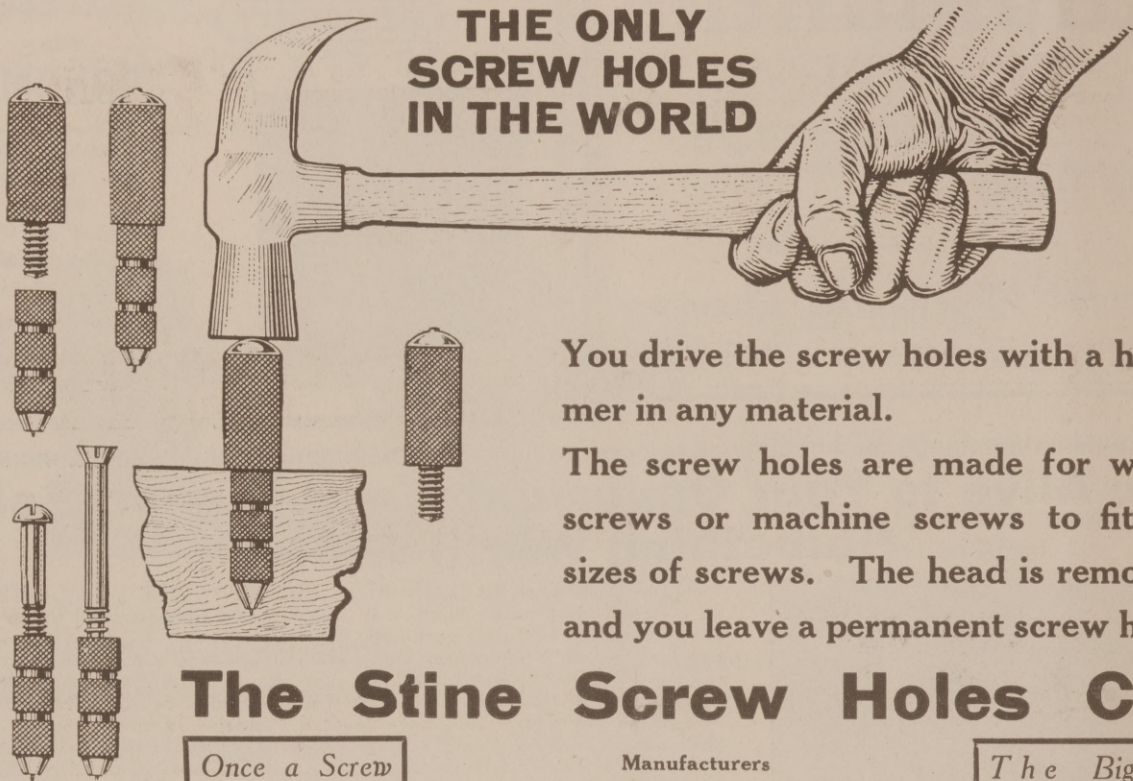
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- 14—Every shop and factory where screws are used must also have these screw holes to fit the screws.
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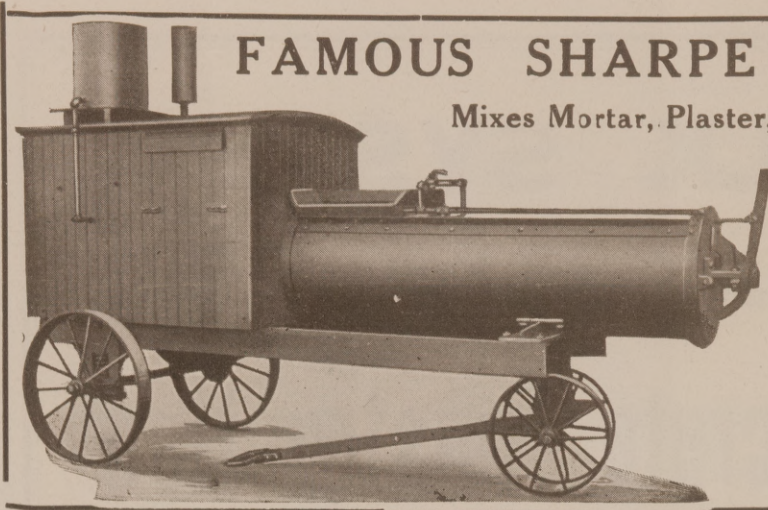
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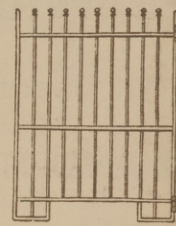
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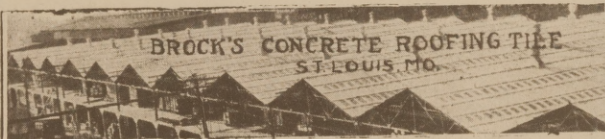


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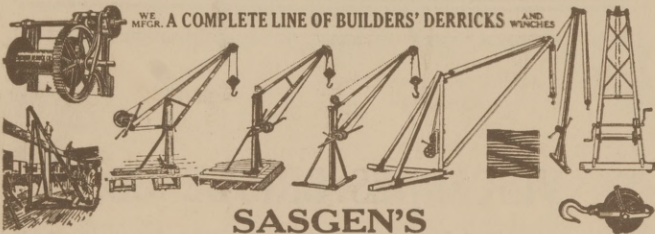
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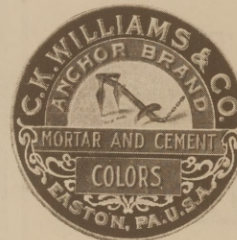
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