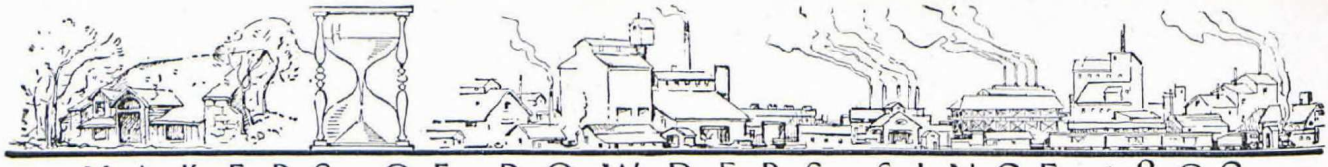
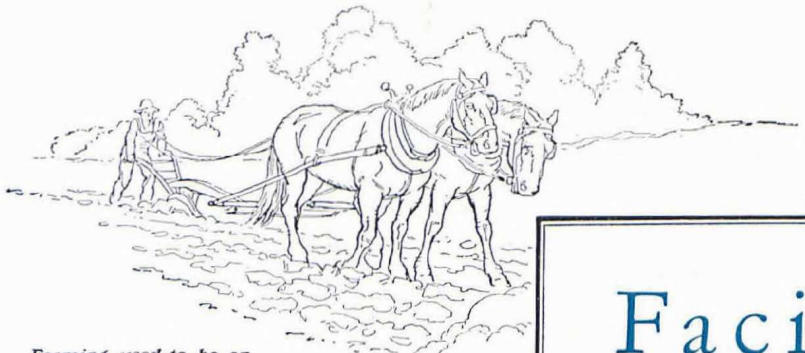

Old Scrooge
I am as Light as a feather, I am as Happy as an angel, I am as Merry as a school-boy. A Merry Christmas to Everybody Hallo here! Whoop! Hallo! ---Dickens' Christmas Carol.
ZACK HAGE



MAKERS OF POWDERS SINCE 1802



Farming used to be an extremely primitive occupation, before the invention of mechanical farm labor.

Facilities

that assure satisfaction

MERELY assembling materials and putting the machinery to work for manufacturing explosives is comparatively easy. However, to produce, out of hand, those intangible and wholly indispensable facilities representing the constant efforts of many years, is a most difficult accomplishment.

The experiences acquired in a century and a quarter of explosives manufacturing and the observations of explosives experts have provided the du Pont Company with adequate facilities to cope with the present demands for explosives. With its plants strategically located and sufficient production assured, du Pont explosives can be specified with entire confidence as to prompt deliveries and satisfactory performances.

E. I. DU PONT DE NEMOURS & CO., Inc.
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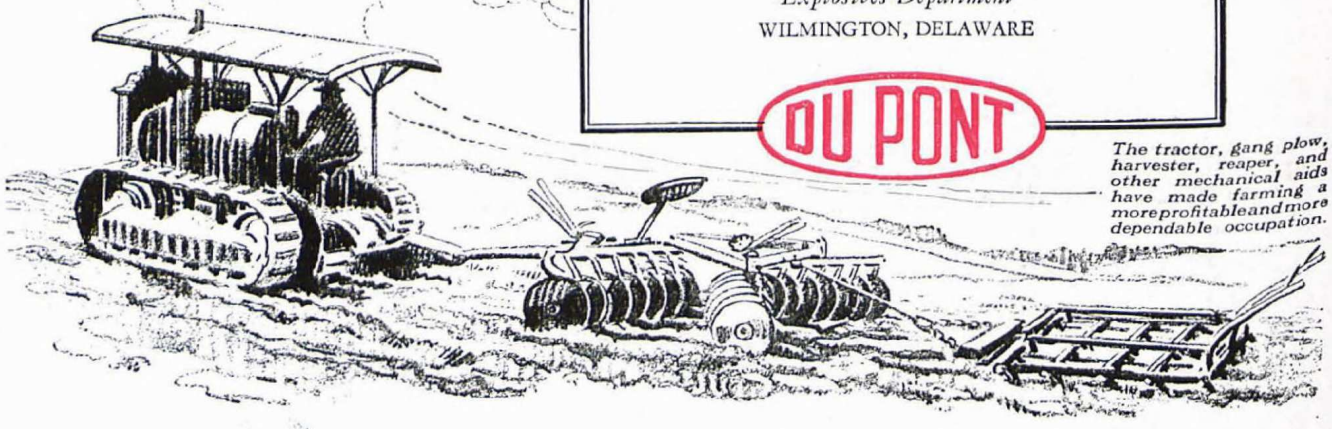


The tractor, gang plow, harvester, reaper, and other mechanical aids have made farming a more profitable and more dependable occupation.

125 YEARS OF LEADERSHIP IN THE SERVICE OF INDUSTRY

The DU PONT MAGAZINE

VOL. XX DECEMBER, 1926 No. 12

"I will live in the Past, the Present and the Future . . . Heaven and Christmastime be praised for this . . ."

HERE they come—the "Christmas Carol" folk. Trooping along in tears and laughter through the pages of a little red book (or if you are quite wealthy, a big, gold one), they will once again be reviewed in a million homes this year. There is Bob Cratchit—remember him? And Tiny Tim, who most certainly did *not* die; there is Marley's Ghost, scraping and rattling his chains; and, last of all, that "wrenching, grasping, covetous old sinner"—Scrooge. From drab London streets and plain people, Dickens wove one of the finest of all Christmas stories. It is a classic. His characters fairly leap from the pages of fancy into real life. Scrooge might be living today in a musty old Manhattan club; the Cratchits within an East Side tenement. Dickens knew how Christmas annihilates time and distance.

"A merry Christmas to us all . . God bless us!" cry the Cratchits over a lordly goose which may not fill the little circle of hungry mouths.

"Christmas? . . . Humbug!" growls Scrooge and turns again to his account books. Here, then, are two forces. When they meet, Scrooge is won over (an ordeal, to be sure) and before we are done with him, the old man is discovered emitting queer little cackles of joy with now and then the whoop of a delighted schoolboy.

Year after year, Christmas arrives to sweep away the world's petty meanness. Skeptics may grunt their disapproval, may avoid smiling crowds, may even resent a greeting. But they are as straws trying to stand against the onrush of a happy world. And how lonely they must be!

Then to you who know the season's joys—our hearty greetings; to the others—our hope.

Merry Christmas



Early rock excavation on the site of the old Madison Square Garden before all derricks were removed to the sides of the pit

A HUGE ROCK EXCAVATION JOB*

How engineers drilled and blasted through fifty feet of Manhattan rock to reach a firm foundation for a 45-story building

By Frank W. Skinner
Consulting Engineer

WITHIN a few months the new tenants of offices in the forty-fifth story of the New York Life Insurance Building will have, from their windows, a wonderful view of a metropolitan panorama unrivaled in the world. This they will see from a point 100 feet or more directly above the place where once stood, 340 feet above the pavement, the exquisite figure of Diana that dominated the Madison Square Garden Building.

This historical structure, so inseparable from many pages of New York's history, has been ruthlessly demolished, and great quantities of the ground beneath its foundation have been removed to make way, over the whole area of a full-size city block, for the substructure, extending four stories below street level, of the new skyscraper. This involved the excavation of nearly 150,000 cubic yards of earth and stone from a pit 72 feet deep. The method and appliances for its safe and rapid excavation, in the heart of the great city, without injury or danger to life or property, was a worthy engineering feat. It is all the more notable because it was accomplished so easily and simply, directed by skill and experience that coördinated an army of men and the most powerful and improved machinery in efficient operation.

Pit Kept Clear of Derricks

Although few buildings in New York have four stories below the street level, yet many of them have foundations carried much deeper than this, and the latter almost invariably stop as they reach satisfactory rock bottoms. They are generally sunk by the pneumatic caisson process through the treacherous quicksands and subterranean rivers. In the new building, such difficulties were encountered that it was necessary to penetrate nearly fifty feet through a solid bed of hard rock, hundreds of thousands

* Reprinted by permission from *Scientific American*

of tons of which were blasted by high explosives and handled by powerful machinery that reduced hand labor to a minimum.

Because the slow demolition of the old Madison Square Garden had greatly delayed the building schedule, the contractor concentrated his energies and resources on securing the greatest rapidity and efficiency of operations. Instead of setting up derricks here and there, or perhaps building a system of railroads to convey the excavated material from all points to a central loading station, thus continually shifting his plant as the pit deepened, he kept the whole 200 by 425-foot area at all times clear of obstruction, and commanded most of it by a great battery of eight huge derricks installed around the edges of the excavation at street level. From here they reached over almost all of the working area as well as the adjacent streets, and were permanently located so as to require no movement throughout the continuation of the job. Also, around the edges of the pit there were installed shops, tool houses, store houses, offices and a power plant, all enclosed by a high board fence protecting them and excluding the public.

At first the great derricks were seated on the old cellar floor and as the earth was excavated below them, they were mounted on timber crib work, built up as the pit deepened until the rock was exposed. Then the cribs were replaced by sturdy timber towers. The rock supporting these towers was allowed to remain, like pilasters in the face of the sides of the pit, until after all the rest of the excavation was almost completed.

At the east end of the lot where old sidewalk vaults extended beyond the building line, heavy blocks of concrete were built in them, on the surface of the rock. These supported sets of projecting horizontal steel I-beams embedded in the upper part of the concrete and anchored to the whole mass so that it served as a 50-ton counterweight to balance the overhanging derrick placed on a little wooden tower on the extremity of the beams.

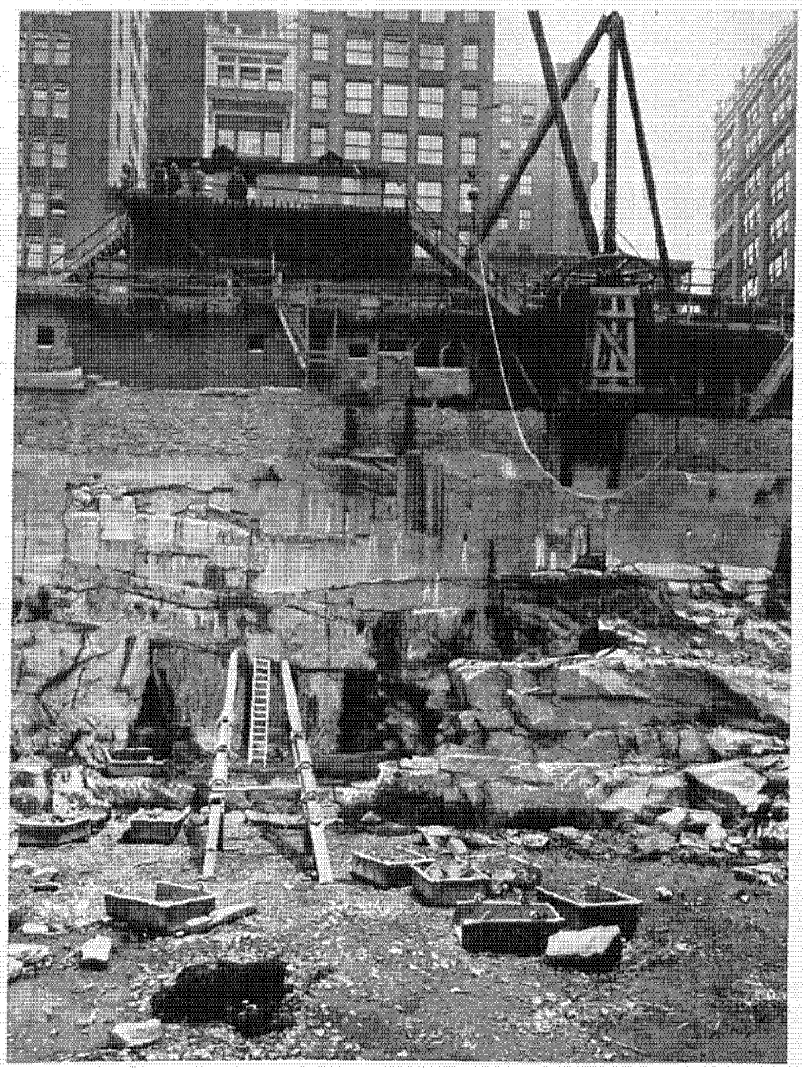
Guard Against Settling of Street

In the bottom of the 72-foot excavation a timber tower was built to carry a platform at the level of the bottom of the 44-foot excavation, and trucks descending the slope from the street were loaded there with rock hoisted from the deep pit by the cantilevered derricks. While the earth was being excavated by steam shovels, similar tower-supported platforms were built on other sides of the pit, permitting trucks on them to be loaded by the derricks without obstructing the street while they waited.



The same scene four months later. Note the ramp leading to the street level; also that the derricks have been relocated at the sides of the pit for greater efficiency of operation

Within the boarded enclosure, all of the work was carried on by an army of sometimes as many as 325 men; three powerful steam shovels; a great number of pneumatic drills; a large fleet of five-ton motor trucks; as many huge rectangular steel "scale pans" in which the rock was loaded and hoisted by the derricks; and by the necessary equipment of powerful electric and gasoline pumps. These raised, to a height of 60 feet or more, the hundreds of millions of gallons of water that flowed in through the seams in the rock and were collected in two temporary wells driven down in advance of the general excavation.



A section of the deepest excavation. Note particularly the derrick on its cantilever support and the heavy shores bracing the treacherous rock stratum

Long before the base of the beautiful old campanile tower was removed by the wrecking contractor, the steam shovels were hard at work tearing out huge fragments of old foundations, concrete floors and débris, working back and forth across the lot, and gradually descending about 20 feet to the irregular, approximately horizontal surface of the bed-rock. They seemed like great antediluvian monsters bearing a whimsical resemblance to huge mud turtles with their outstretched necks and little heads. Their snapping jaws were steel-toothed buckets, which ferociously devoured earth and rubbish at the rate of a cubic yard per mouthful, and immediately disgorged it into the trucks. A constant procession of these trucks waited alongside until loaded, and then passed on to the steep incline and hastened away to deliver their loads to scows awaiting them a mile or two away in East River slips. From here these were towed to sea where they dumped their burdens in deep water.

To safeguard the vertical earth banks enclosing the upper part of the pit, the excavation around the edges was often finished or trimmed by hand. Where the earth appeared treacherous, it was immediately covered with planks. These were well braced until a massive concrete wall, seated firmly on the solid rock surface, could be built up to line the pit and form a part of the permanent structure. This expedient eliminated a large amount of costly sheet pile driving and effectually prevented any settling of the street.

After the surface of the hard gneiss rock was uncovered, more than forty portable pneumatic drills were set to work drilling thousands of holes two inches in diameter, and about twelve feet deep. Then dynamite shattered the rock sufficiently to enable most of the pieces to be handled by the steam shovels, although some of them had to be drilled and blasted again. The blasting was done in strict accordance with all of the numerous municipal regulations and requirements provided to safeguard the public. The holes were blasted in groups at morning, noon and night, care being always taken to cover each group with from eight to twenty large square mats woven from heavy steel ropes, and weighing about one or two tons each. These blanketed the explosions so effectually that no fragments of flying rock injured any persons or property.

How the Rock Was Moved

Powerful electrically driven machines with a capacity for compressing 2,500 cubic feet of air per minute were operated to maintain pressure in a huge pipe that circled the pit at street level. Vertical branches extended from the pipe down the walls of the pit, and were valved at the bottom to fifty-foot lengths of flexible hose supplying the pneumatic drills.

As much of the shattered rock as possible was loaded into three-sided scale pans or boxes that were chained to the derricks and swiftly lifted out of the pit. Here their 10,000-pound contents were dumped into trucks waiting at street level. Even though their booms were seventy and eighty feet long, these great derricks failed to reach quite to the center of the lot, and a portion of the rock excavated there had to be loaded by the steam shovels into trucks in the pit, which had to climb higher and higher to street level as the bottom of the pit descended day by day.

Great care was taken to avoid swinging the derrick booms over the steam shovels, and their constant operation at so many points supplemented the shovel work, and enabled the rock to be removed as fast as it could be blasted and loaded.

The steam shovels were operated by a crew of seven men—the engineer, fireman, and five "muckers" who handled the rock and loaded the scale pans with fragments not picked up by the steam shovel buckets. One steam shovel loaded as many as sixty-one five-ton trucks in a single eight-hour day, and in ninety-one working days, all the shovels handled 5,870 truck loads of rock, nearly 28,000 cubic yards of which were sold to builders who used it chiefly for foundations, cellar walls, and the like, mostly in nearby localities on Long Island, the remainder being dumped, like the earth, at sea, twenty-five miles away.

The great steel scale pans with their five-ton loads of rock were hoisted from the floor pit to the trucks at street level at a speed of 350 feet per minute. Six or eight of the scale pans for each derrick were available for filling simultaneously in different difficult positions so that the rock did not have to be carried to them, and one was always ready as quickly as another one was hoisted and dumped.

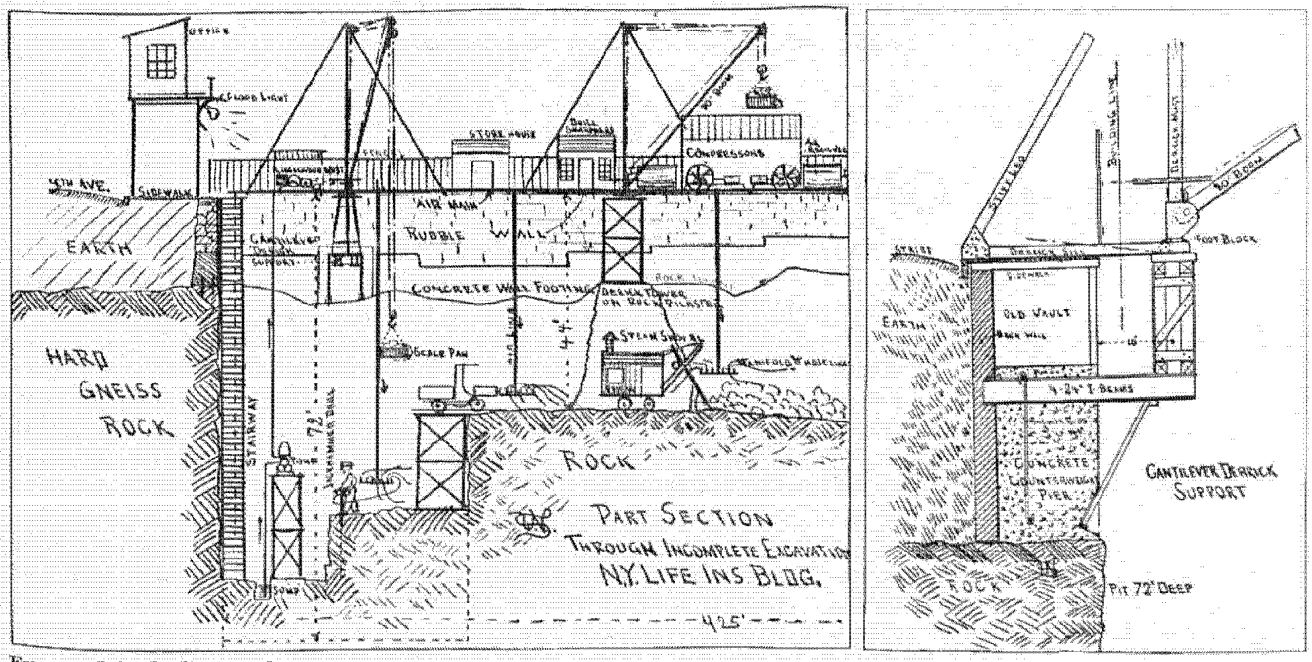
Six Tons of Drill Bits Dressed Daily

Each of the derricks was equipped with a powerful double-drum hoisting engine and an additional smaller engine for swinging the long, heavy boom while the load ascended, thus requiring a minimum of operating time.

The hard rock dulled the six-point drill bits so rapidly that it required six men and two sharpening machines to dress about six tons of them daily. The steam shovels, consuming a ton and a quarter of coke a day, were so sturdy that this hardest of services only entailed a cost of a little less than one cent per yard of rock handled for repairs which, altogether, cost less than $123 in three months. At night, although only the pumps were at work, the entire excavation was brilliantly illuminated by eight 1,000-watt flood lights.

The bottom of the finished pit is at two elevations, one of them forty-four feet, and the other seventy-two feet below street level. It will be lined with waterproof concrete, and will afford ideal foundation for the hundreds of thousands of ton loads from the steel columns in the lofty skeleton of one of the tallest buildings in the world.

Note: Readers will be interested to know that the work described in the foregoing article was done by George G. Atwell Company, Inc., of New York City. Du Pont explosives were used exclusively, the principal brand being 40 per cent gelatin dynamite. All shots were fired with electric blasting caps.



From pencil sketches by the author

The various problems the engineers had to solve are graphically shown in the illustration at the left. The strata of dirt and rock which had to be removed are all indicated. Motor trucks were driven down a ramp to the pit. Cantilever derricks at the eastern end were supported by the novel counterweight and bracing system shown at the right



A Doucet chiffon velvet afternoon gown of emerald green, bolero style, with gold embroidered pockets and other trimmings in black



A rayon suit of molten colors, with floral designs, by Callot. The black satin blouse is banded with peacock blue satin. Photographs reproduced by courtesy of Silk Association of America



A Worth "forget-me-not" blue evening gown of supple chiffon velvet decorated with silver, and blue brilliants. The fabric is made of rayon

RAYON ON DRESS PARADE

By L. B. Steele

THE widespread, ever-growing use of rayon in so many branches of the great textile industry is an impressive tribute to the virtues of this man-made fiber. In the dress manufacturing field particularly it has swept into a prominent place.

Rayon has brought with it many desirable qualities that have readily adapted it for combination with silk, cotton and wool. The skillful and artistic fabric designer has found in this fiber a medium for producing a wide array of attractive and distinctive effects in dress goods that have invariably won wide popularity.

Leading dress manufacturers, quick to sense the possibilities of rayon, have readily accepted it as a necessary and important factor in their business, and today dresses made from rayon mixtures of all types are being marketed in great numbers. Rayon velvets and brocades especially are the height of fashion both in this country and abroad.

The attractiveness of these dresses has been a chief reason for winning favor. Their colorful beauty, their marvelous sheen, their downy softness have all appealed to women buyers everywhere.

Rayon dresses are exceptionally durable, provided they have been properly fabricated from high-grade yarn. With the highest-quality rayon, coupled with proper weaving or knitting and proper sewing, excellent service is assured. Reputable merchants, realizing the advantage of being able to stand back of the rayon dresses they sell, are adopting a policy of handling only the products of dress manufacturers of established standing. These manufacturers, in turn, have given preference to fabrics fashioned from only the highest-grade rayon yarns.

The millions of women who buy and wear rayon dresses are fast becoming aware of the fact that with the usual care given any other fine fabric, the life of these dresses will be exceptionally long. They know from experience that in washing rayon garments it is necessary only to guard against undue strain in laundering or drying. One leading department store recently demonstrated this by subjecting several garments to seven successive washings and ironings, without the least injury.

As fashions change, rayon will undoubtedly find greater adaptation in dresses than in the past. Even now, where is the woman or child who does not possess at least one or more garments woven from this wonderful fiber?

GLEAMING GIFTS FOR CHRISTMAS

The sparkle of Cellophane adds a striking touch to scores of gift packages this holiday season

CHRISTMAS shopping days are here! Throngs fill the streets and stores, seeking—inspecting—buying. Let's join the throngs crowding through the aisles of a big department store. On every side counters are piled with articles of every description—small and large—each competing with the other for our favor. But here and there stands out a package that instantly catches our eye, because it is wrapped in colorful, transparent Cellophane.

The same eye-appealing characteristics that have caused Cellophane to come into wide use on such year-round staples as cookies and doughnuts, bacon and frankfurters, dried fruits, candy, and other food products, recommend it for use on gift packages. Let us see how it is used. A few feet away is the candy counter, heaped with beautiful holiday gift packages. The most attractive of these, we find, have an added distinctive touch in a wrap of Cellophane. Shoppers find it hard to resist the lure.

In the toilet-goods section, again the Cellophane-covered Christmas packages of perfume, powders and other toilet preparations greet our eye. Some have red wraps of Cellophane, some crystal clear, others amber colored, such as Colgate's *Piquante* line of powders. All are extremely attractive and lend to the packages a striking appearance that is certain to appeal to hosts of gift seekers.

Here also we find many combination gift items; for instance, a dainty group of accessories—powder, rouge, perfume, or a dainty razor and compact set for women, both attractively displayed under a Cellophane wrap.

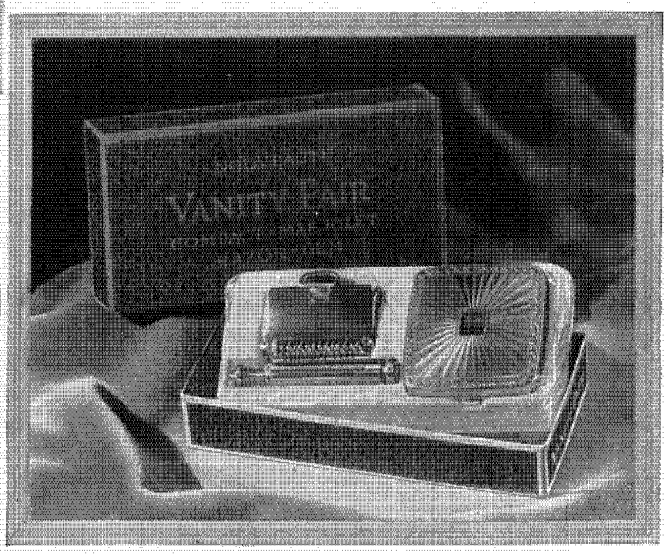
Upstairs, in the sporting-goods department, we see a golfer's special—a dozen balls in a unique humidor package. Each ball is wrapped in linen-like Cellophane.

At the tobacco counter appears another use—the regular Egyptian Deities carton, dressed in gleaming Cellophane. Nearby, too, are cigars, arrayed in this sparkling material.

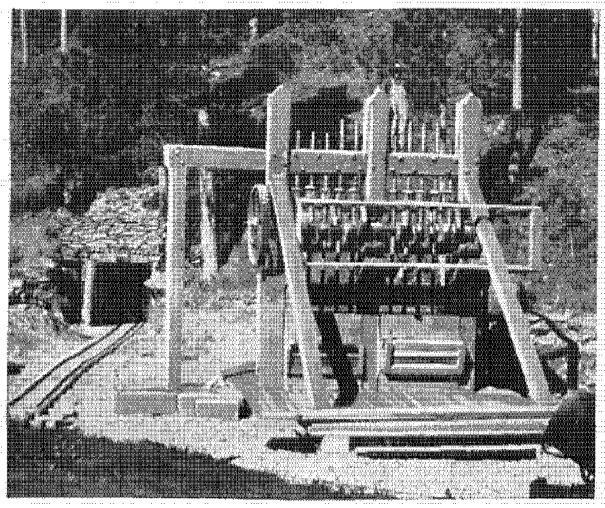
Down in the basement we see some toothsome Christmas offerings—plum puddings, fruit cakes and numerous other delights—shown in all their appetizing goodness through a wrap of Cellophane.

Shoppers appreciate the use of Cellophane on gifts, for it gives complete protection from dust and constant handling that often soil or damage them.





Three popular gift suggestions, all wrapped in Cellophane



The first stamp mill at the Homestake Mine in which ore was crushed preparatory to recovering the gold

FIFTY YEARS OF GOLD MINING

The population of Lead, South Dakota, re-enacts scenes from the early days of the famous old producer in the Black Hills

By E. H. Simpson

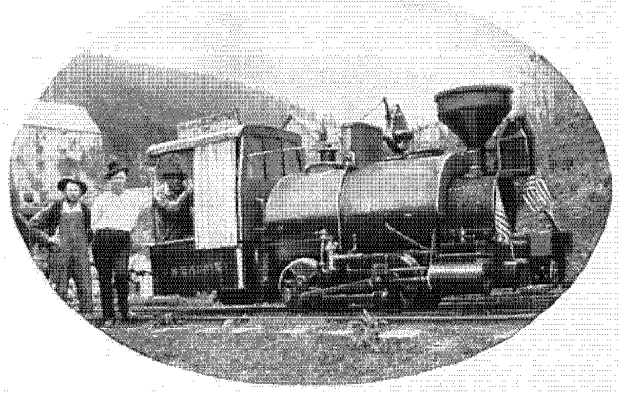
THE fiftieth anniversary of the discovery and continuous operation of the Homestake Mine at Lead, South Dakota, was celebrated August 6 and 7, 1926.

More than twenty-five hundred people—employees of the Homestake Mining Company and members of their families, together with troops of the U. S. Cavalry from Fort Meade, and Indians from the Rosebud Reservation, South Dakota, took the leading part in the two-day celebration. More than thirty thousand visitors attended, coming from every state in the Union and several foreign countries.

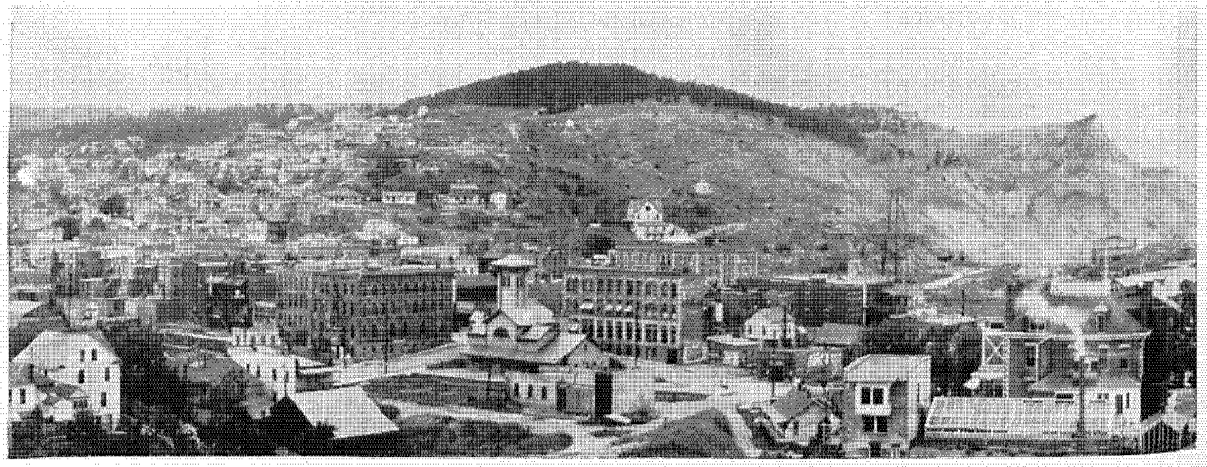
At an expense of about $50,000, a complete mining camp, symbolical of Lead in 1876, was built in Poorman's Gulch near the city and for two days "the clock was set back fifty years." Saloons, dance halls, gambling dens, the miners' court and all that went to make up a camp reminiscent of early mining days in the Black Hills, ran "wide open," except that real money and "likker" were taboo.

Every phase of early day mining was carried on. Claims were staked and automatically "jumped" by shaggy, bewhiskered prospectors, who, in those early days, depended upon their six-shooters to settle all disputes. Thereupon came, in miners' court, "trials and executions."

On the second day a pageant, written by Mrs. Myra K.



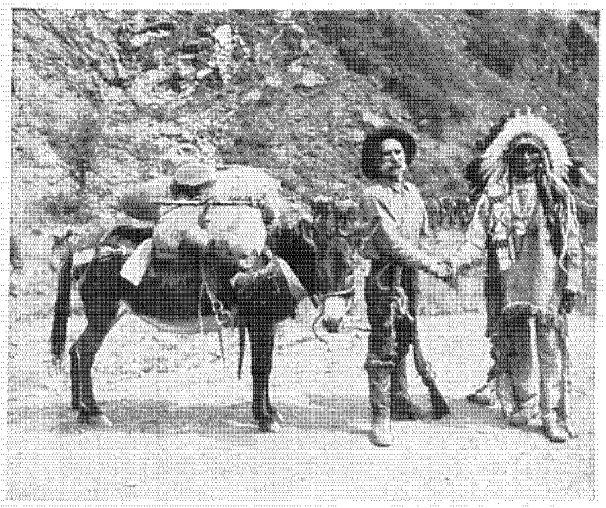
The first locomotive to see service on the mine property. The old wood-burner played a big part in the jubilee



Part of the town of Lead, whose growth has kept pace with that of the Homestake Mine during the past fifty years

THE HOMESTAKE'S BIG ANNIVERSARY

Modern town builds at an expense of $59,000 a complete mining camp of the seventies especially for the two-day jubilee



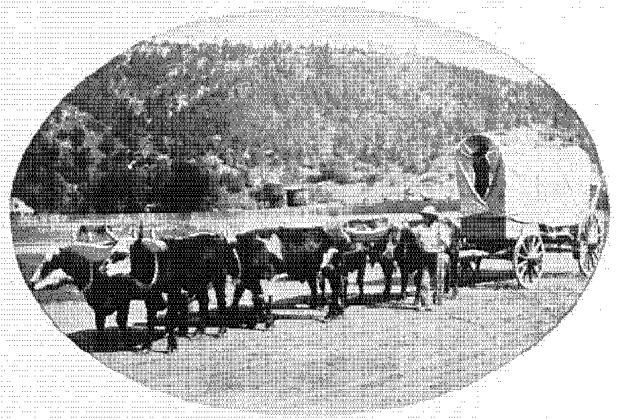
An old prospector of the seventies greets a real Indian at the fiftieth anniversary celebration at Lead

Peters, of Sylvan Lake, South Dakota, was enacted by Homestake employees, members of their families, Indians from the Rosebud Reservation, and U. S. Cavalry troops. The pageant depicted the retirement of the Indians from the Black Hills after the arrival of the white settlers and the discovery of the Homestake Lode, April 9, 1876, by Moses Manuel, a hardy prospector who had sought nature's wealth in many climes. The pageant covered a period of two hours and carried the audience, who were comfortably seated in a three-acre amphitheatre erected on the mountainside, through every phase of the history of the Homestake Mine during the past fifty years.

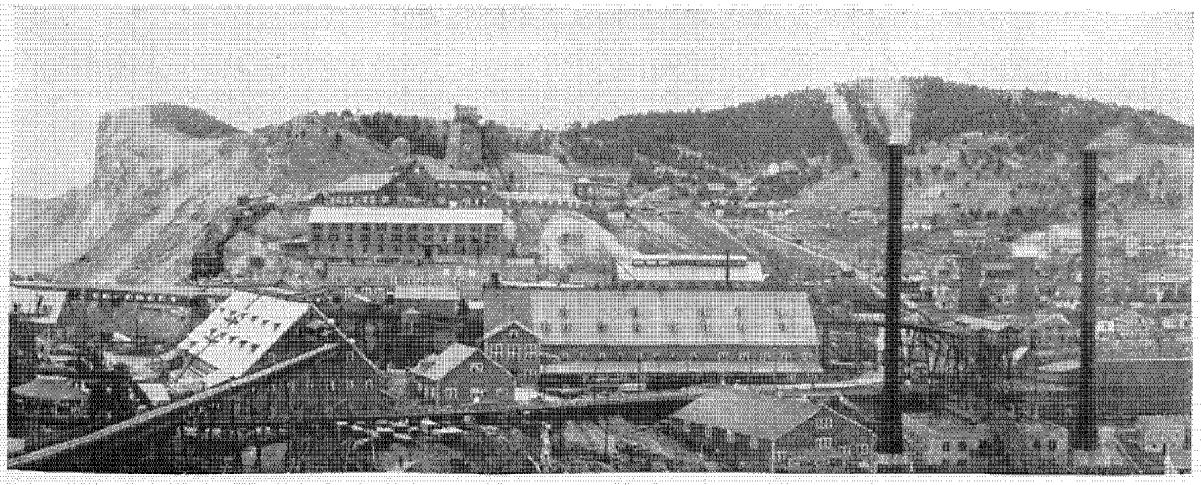
The Homestake Mining Company was incorporated in 1877, having at that time two mining claims aggregating fourteen acres. Today, its mining area covers more than thirty-five hundred acres. First production started in the winter of 1876–77, when $5,000 worth of bullion was extracted by amalgamation in a crude arrastre.

During the past forty-eight years, the Homestake has produced $199,561,748 and has distributed dividends totalling $48,826,924, or more than a million dollars per year. In 1925, it produced $5,999,073 from 1,589,701 tons of ore—an average of $3.77 per ton. Native gold averages nearly one-fifth of an ounce per ton of ore, and is

(*Continued on page 24*)



How equipment was brought to the miners when the Homestake was young. This ox team was a feature of the jubilee



Part of the present-day Homestake property, showing the Amicus and Star mills and the "open cut" in upper left corner



All photographs accompanying this article © by Pickett Photo Company

At the west portal, showing the main tunnel (left) and the pioneer tunnel (right). Note the difference in elevation between them

BORING THROUGH THE CASCADES

The Great Northern eliminates snow-sheds and steep grades on its mountain division by driving an eight-mile tunnel through solid rock

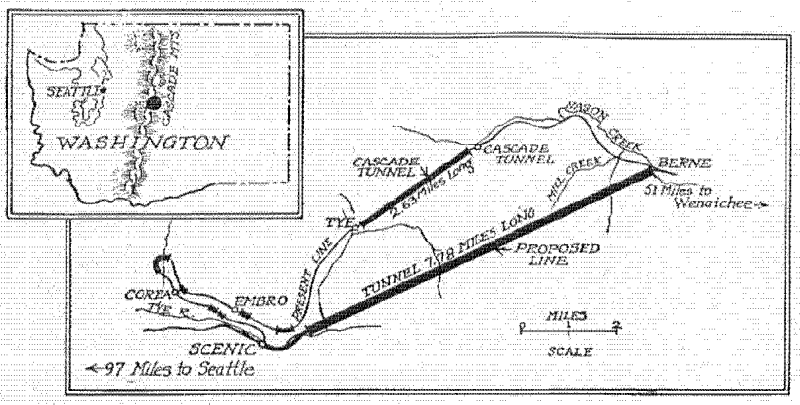
By F. H. Camperson

AGAIN from the West comes a story of an achievement in engineering. High up in the Cascades between Scenic and Berne, Washington, men and machines are boring and blasting through solid granite to complete the nation's longest railroad tunnel. During August, traditional vacation time, these men worked underground each day toward a goal. Came the end of the month. Heavy-booted feet dragged weary bodies to the camp quarters, but faces were glowing. The tunnel was driven forward 937 feet, establishing what is claimed to be a world's record. As the work is but one-tenth completed at this writing, conditions can only be dealt with generally.

The Great Northern Railway Company, with an eye to reducing curvature, eliminating snow-sheds and lowering grades on their mountain lines, entered into a contract on November 26, 1925, with A. Guthrie & Company, Inc., of St. Paul, Minnesota, and Portland, Oregon, for the construction of a tunnel beginning a mile east of Scenic, to run 7.78 miles. When completed, two years hence, it will be the fifth longest railroad tunnel in the world. The contractors are not only using every approved tunneling method, but they are developing new ones as they go along.

The day after the contract was signed, active work started; camp sites were located, supplies and lumber were ordered and a definite plan of action was ready. The engineering problem consisted first of finding a new line affording permanent protection from snow slides, thus eliminating $500,000 in annual maintenance and renewal

costs along six miles of snow-sheds; also of shortening the right of way by seven and three-quarter miles, removing 1,941 degrees of curvature, and lessening the total grade rise and fall, heretofore set at five hundred feet.



Map showing the present and proposed line of the Great Northern from Scenic to Berne. The general location of the tunnel is indicated on the map at the left

Ordinary surveying instruments were replaced with mountain transits, tunnel transits and a large theodolite with a range of many miles. Three men were required to carry it. When used at observation points, it was mounted on a concrete base with steel pipe monuments.

The length of the tunnel and the short time available for its construction made more than two working faces necessary. Controlling features — a grade of 1.565 — all tangent, and presence of water were closely related. Any plan of attack must consider the possibility of encountering water in such quantities that drifting operations downgrade might be brought to a standstill. It was believed that all these difficulties could be overcome by sinking a shaft 622 feet to subgrade at Mill Creek, 2.41 miles west of the east portal. The general plan adopted provided for four faces of attack from three main camps so that in case of serious water difficulties the entire tunnel could be driven upgrade.

Surface indications at West Portal showed that extremely soft ground would be encountered for a distance of from 800 to 1,000 feet. Knowing this would slow up the work, a 30-degree incline adit, 251 feet long, was sunk to intercept the pioneer grade at a point 2,279 feet from the west portal. Subsequent developments justified this move, as the progress through this soft ground averaged only about 100 feet per month. Slow work here, however, was compensated by the speed made in the pioneer drift from the incline adit.

The scheme in use for the west portal is a center heading 10 feet square, later to be enlarged to 18 feet by 25 feet and lined with concrete, together with a pioneer tunnel 9 feet by 8 feet. Sixty-six feet separate the centers of the tunnels.

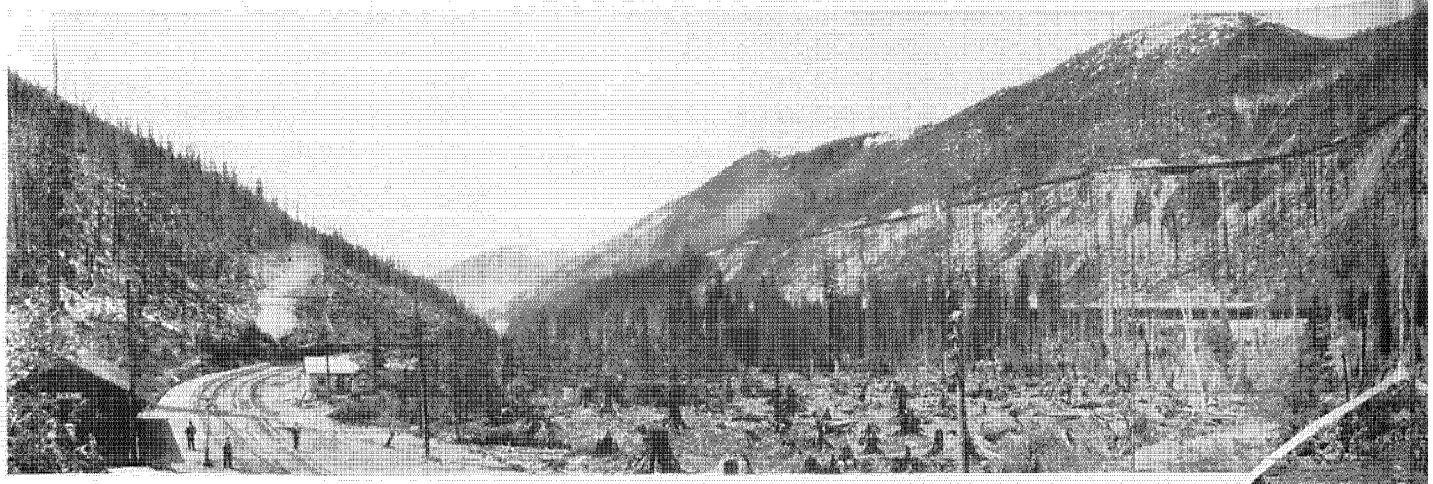
From East Portal a center heading ten feet by ten feet is being driven with no accompanying pioneer. The shaft is working east with a center heading and west with full-size bench and heading. It is also the intention to drive a pioneer tunnel westward from the bottom of the shaft.

The rock encountered is of igneous origin with granite and alter-granite predominating. In the pioneer drift, water pressure has been encountered at times and it has been necessary to load gelatin dynamite in tin tubing and to wedge it in the bore holes; furthermore, a few additional holes to relieve the pressure have been drilled. Except in soft ground it has not been necessary to do much timbering. At the bottom of the shaft, black talc was encountered and is being timbered to full section. The maximum amount of water encountered in the shaft is 180 gallons

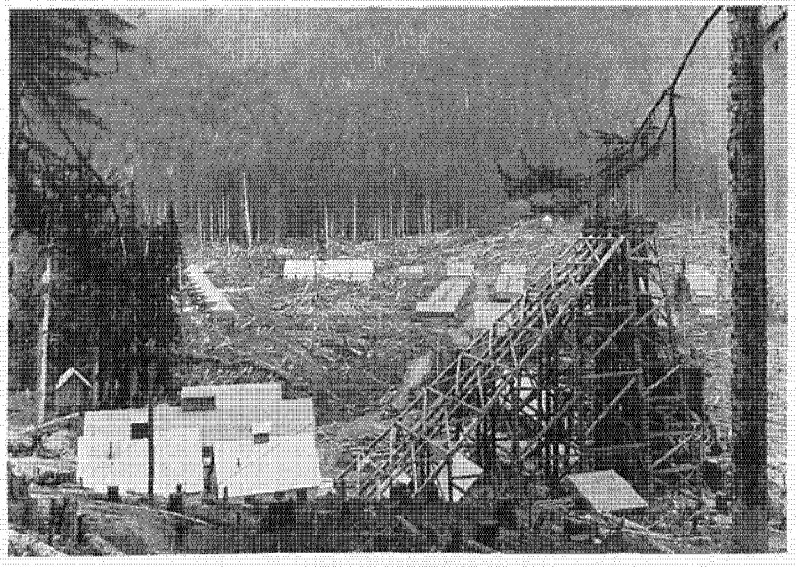


Mucking in the west portal section with the Whaley shovel. In the foreground is an electric engine and one car for hauling away the rock after it has been drilled and blasted

A CAMERA VISIT TO AMERICA'S LONGEST

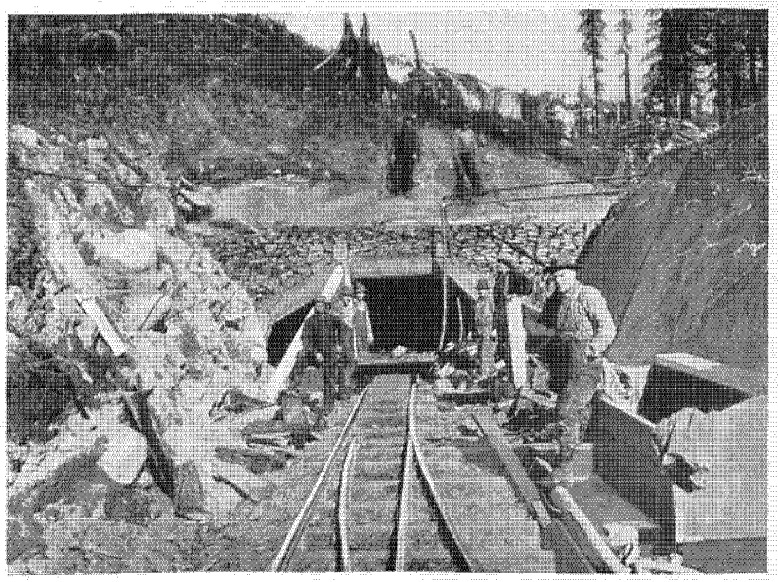


Above—A heavy grade on the Great Northern line at Scenic, Washington. On the mountainside may be seen part of the six miles of snow-sheds on this division



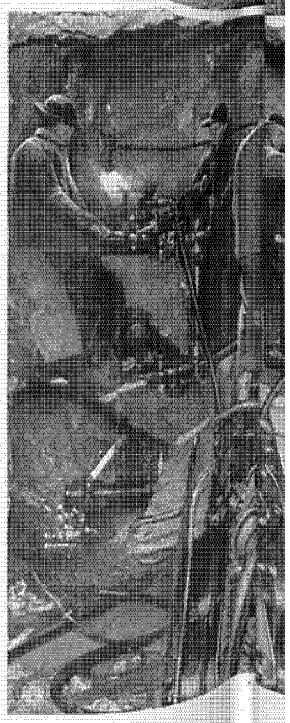
Right—The Mill Creek head frame and camp. The head frame is over a shaft 648 feet deep to sub-grade. Timber for the frame was cut from the nearby forest



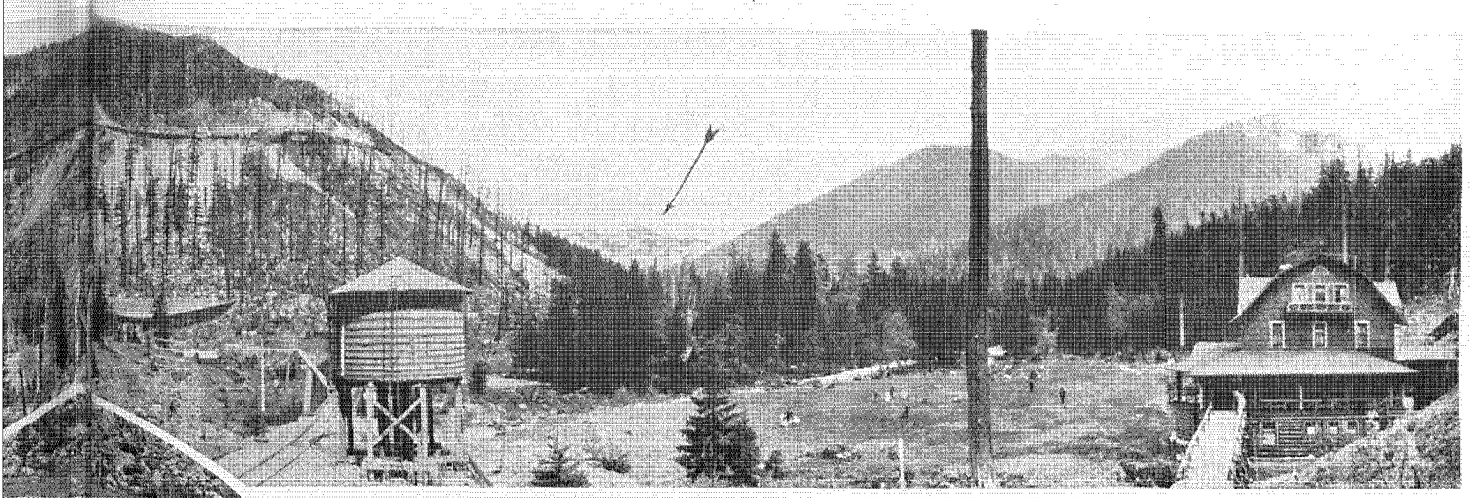


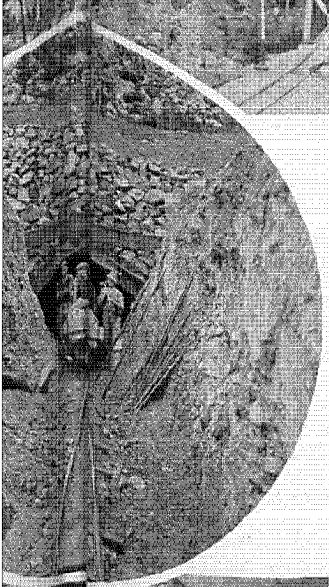
Left—Top heading of the main tunnel at West Portal, near Scenic. The heading will be enlarged to 18 feet by 25 feet and lined with concrete before the operation is completed

Right—A battery of Denver rock drills in the main center heading, West Portal. The four drills are mounted on a truck. The crew pictured here is working 2,500 feet below the surface. The tunnel is practically dry at this distance underground



ST AILROAD TUNNEL UNDER THE CASCADES

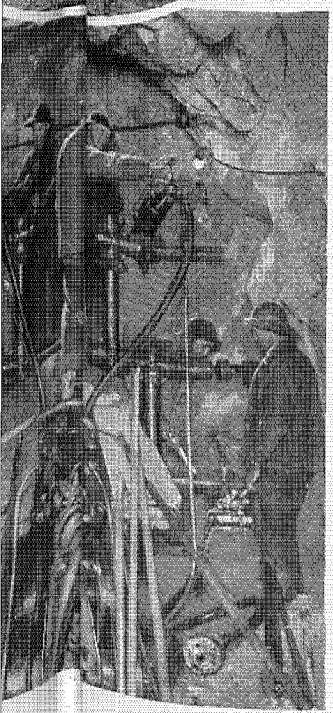






Above—One mile above the water tank, where the arrow points, is the west portal of the Great Northern tunnel. The photo shows the old grade which will be abandoned

Left—A bird's-eye view of the west portal operation showing the nature of the country through which the tunnel is being driven for 7.78 miles



Circle—Top heading on the east portal at Berne, Washington, where the big tunnel reaches its highest level. The elevation at this point is 2,981 feet above sea level

Right—Head of the Tye River incline, a 30-degree incline running down 251 feet to the line of the pioneer tunnel. The incline was sunk to speed up construction, hampered in the pioneer by soft ground



per minute. All pumping is being done with air-operated Cameron sinkers. An intermediate pump station has been installed at the 265-foot level. The east end drift slopes westward and fortunately is comparatively dry.

The shaft, 8 feet by 24 feet and 622 feet to subgrade, is equipped with two balanced Kimberly skips, operated by a motor-driven hoist. Loading pockets are installed at the bottom, with storage bins at the surface. The line speed of the skip-hoist is 900 feet per minute. The headframe was cut from virgin timber nearby, broad axed, adzed and erected 26 feet from the opening. Although weighing 115 tons, it was moved into place in one section and was in operation within fifteen hours.

Eighteen-gauge, 20-inch steel pipe is used throughout for ventilation, the fans sucking and pushing the air.

Mucking is being done by electrically-driven power shovels of the conveyor type. In the main bore, air-operated railroad-type shovels with caterpillar traction are used. Hauling from the drifts is accomplished by six-ton electric trolley locomotives, equipped with gathering reels which allow the locomotive to operate 500 feet beyond trolley suspension. For the main bore, 20-ton locomotives of the same type are used. For drifting operations, all-steel cars of 50 cubic feet capacity are used, and for the main bore 6-yard, 36-inch gauge, dump cars do the hauling.

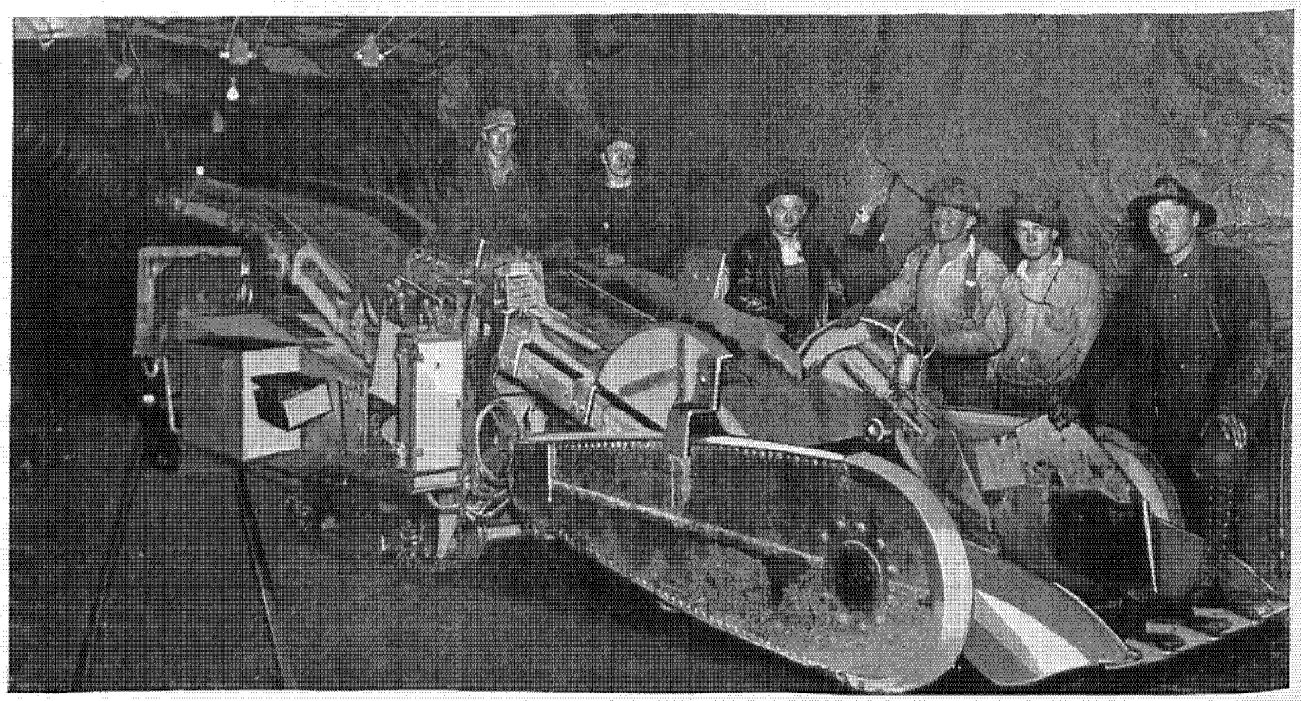
Several drilling methods are practiced. At East Portal drilling is being done from a horizontal bar. At West Portal a carriage mounting four drills is in use. Eleven angle compound compressors, each with a capacity of 950 C. F. M., provide the necessary air. All the drill sharpeners use automatic pyrometer control for the heats and magnetic indicators for the tempering. It is well known that drill steel varies in carbon content and men's eyes are not infallible, with the result that the drills may be either too brittle or soft. The magnetic indicator is practically fool-proof.

The work is carried on under the general direction of J. R. W. Davis, chief engineer, Great Northern Railway, St. Paul, and under the personal direction of Col. Frederick Mears, assistant chief engineer, lines west, Seattle. M. J. C. Andrews is the resident engineer. He is assisted by E. S. Jackson at Berne, and M. A. Clegg at Scenic.

For A. Guthrie & Company, Inc., the work is under the personal direction of J. C. Baxter, vice-president, St. Paul, Minnesota. The field forces are under the following staff: R. F. Hoffmark, general superintendent; W. E. Conroy, assistant superintendent; O. C. Hartman, Frank J. Kane and C. G. Jones, superintendents at West Portal Mill Creek Shaft, and East Portal, respectively.

* * * *

NOTE: Since this article was written, we learn that the August record referred to has been broken. From September 1 to October 1, inclusive, the center heading, which is being driven west from Berne, was advanced 984 feet. During October this record, in turn, was broken by an 1157-foot advance in the pioneer tunnel eastward from West Portal. To break the world's record three times in as many months is a remarkable feat. A. Guthrie & Company may well be proud of such an achievement. Readers of this magazine will be interested to know that du Pont explosives are being used exclusively on this job.



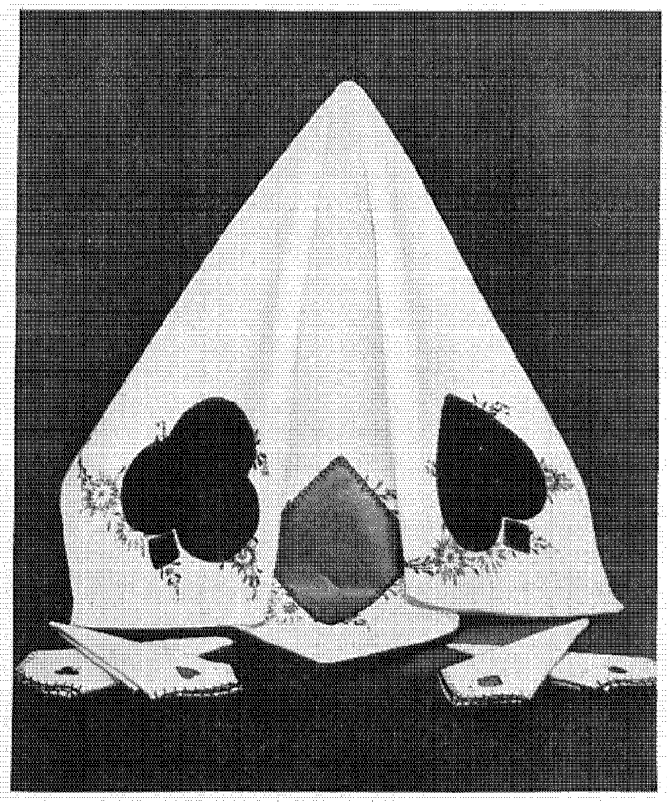
The Myers Whaley "mucker" moving into position for an attack on blasted rock in the Great Northern tunnel. Solid granite is encountered along most of the route

FOR HER NEXT PARTY—

Speaking of gift suggestions, why not consider an attractive bridge cover set like the one described here?

SINCE the time of the great German Yule feasts when the custom of exchanging different types of bread and rolls for Christmas gifts began, people have utilized every ounce of their creative powers to devise and develop new and clever things to express their thoughtfulness at Christmastide. One of the most attractive and practical gifts that has been seen this year is the new stamped bridge set, illustrated here, which is a combination of cotton or linen with Fabrikoid. It is called the Coaster Self-adjusting Bridge Cover Set. Since it allows a woman plenty of latitude in which to express her originality when plying the needle, it is enjoying remarkable popularity from coast to coast.

Similar to many other attractive articles offered by the needlework departments of large department stores, this set comes completely stamped and ready for working. Heretofore, bridge table cover sets have been made entirely of cotton, linen, satin or other like materials. This novel set, however, combines two types of material to make it attractive and practical.



The corner design of card characters is only one of many offered in these unusual covers. Four dainty napkins are included in the set

The corner designs of the Coaster Set, whether they be card characters, floral, or landscape designs, are all attractively appliquéd in genuine Du Pont Fabrikoid, which is both washable and waterproof. Since the corners are waterproof, the difficulty that was formerly experienced when serving lemonade or ginger ale is eliminated. There need be no fear of spotting or staining the cover, no inconvenience encountered in getting the cards damp or wet. When the center of the cover becomes soiled, the whole set can be tubbed.

Another interesting feature of the Coaster Bridge Set is its self-adjusting corners. Each of the four corners has a piece of elastic sewed diagonally across the back. This allows the cover to be slipped on and off any standard-size bridge table very easily. Former styles of bridge covers were kept in place either by weights attached to the corners or by tape strings tied around the legs of the table.

Four stamped napkins are also included in each set. The corner designs of these napkins are in miniature and match the designs of the bridge cover. The design on each napkin also matches in color the Fabrikoid in the bridge cover, adding a delightful and charming complimentary touch to the entire set.

French knots, solid, lazy daisy, and cross-stich embroidery are all suggested in the many different types of Coaster Bridge Sets, and a woman when selecting one or two has a difficult time in choosing, since each successive one examined seems more attractive than its predecessor. In all, there are twenty-four different types of floral, card and landscape designs from which to choose. The colors include black, white, tan and green, with complimentary embroidery designs suggested and Fabrikoid of contrasting colors for the corner pieces. The entire set is stamped for embroidery and also to indicate the appliqué. Included with each set is the Fabrikoid, with directions for cutting, and suggestions for embroidering. These sets have a remarkable appeal as Christmas gifts because of the fact that the woman purchasing them may, in turn, embroider and present them to her friends as gifts practically made with her own hands.

They are creations of the Ideal Art Needlework Co., a Philadelphia concern that manufactures an extensive line of children's dresses, rompers and other needlework products. Incidentally, Fabrikoid is also being used for collar and cuff sets and luncheon sets. Merchandise of this kind is sold through large department stores in America as well as in Bermuda and Hawaii. The company's show rooms are located at 220 Fifth Avenue, New York City, to which address interested readers may forward inquiries.

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MAGAZINE

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E. R. MANCHESTER ..... *Editor*

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Vol. XX DECEMBER, 1926 No. 12

SAVE YOUR RADIATOR

As cold weather approaches, all automobile owners will want to know about the proper care of radiators, and the quantity of denatured alcohol which should be used to afford protection against freezing. Below are shown the amounts of denatured alcohol solutions for various temperatures:

Parts of Denatured Alcohol (188 proof)	Parts of Water	Per Cent of Alcohol By Volume	Freezing Point Degrees Fahrenheit
5	95	5%	30° above
15	85	15%	20° "
25	75	25%	10° "
30	70	30%	Zero
35	65	35%	10° below
40	60	40%	20° "
45	55	45%	30° "
55	45	55%	40° "

For example, if your radiator has 5 gallons (20 quarts) capacity and you want protection against freezing down to zero, multiply 20 quarts by 30% which equals 6 quarts of alcohol.

Alcohol is sold by all garages and filling stations, and is as easily obtainable as gasoline. Due to its low cost it is the least expensive of all anti-freeze mixtures, and its use for more than 20 years has established it as the most satisfactory anti-freeze, safe for all makes of cars.

Filling station operators are being taught to use a hydrometer to read the specific gravity of the alcohol solution in your radiator, and to add alcohol accordingly. This eliminates guesswork and will give you protection against freezing if you will spare a moment to have the solution in your radiator tested.

The commercial grade of denatured alcohol is 188 proof.

The Eastern Alcohol Corporation (a subsidiary of the du Pont Company) is producing alcohol for anti-freeze purposes. The product is being sold under the FreezFoil trademark and branded Solox. The authorized dealers who sell FreezFoil are designated by a signboard on their stores and are pledged not to adulterate the alcohol.

AFTER THE COLD SHOWER—THE EXHILARATING RUBDOWN

THEN it is that the full benefits of the shower are realized. And to experience that "all aglow" sensation you must use deep-piled, fluffy, *massive* Turkish towels.

Sad, but true, there are but comparatively few brands of Turkish towels which measure up to these high standards. Even rarer are those combining perfection of weave and fiber with permanency in the colors used.

It was the writer's pleasure, a few days ago, to handle, admire and use a Martex Turkish towel and then to learn that it was because vat dyestuffs of du Pont production were used to produce the many rich shades that the manufacturers were able to state:

"There are available the loveliest shades imaginable in towels of solid color, or in stripes on the ends of the white. Green, blue, lavender, pink, black or gold—every color is guaranteed against fading from sunlight, soap or boiling."

The W. H. and A. E. Margerison & Company, of Philadelphia, Pa., are to be congratulated upon the high quality of their Martex line of Turkish towels.

DUCO'S SERVICE RECORD

SIX months ago, Duco joined Battery "C," Sixth Field Artillery, and it was duly reported in this magazine. But even the hostlers of the famous "Sixth" were convinced that here was just another experiment loaded upon a patient and long-suffering Army.

Duco has proved a sturdy soldier. A thorough examination of the battery's equipment, made recently at the Sesqui-Centennial Exposition, where the unit is encamped, showed the olive-green Duco finish to be in excellent condition. When rubbed up a little, it regained its original polish and revealed no apparent effects of the hard daily usage to which it had been put.

Among Army officers, more than usual interest attaches itself to this test and, in all probability, other artillery units will have their equipment finished in Duco. A finish that will stand up under all kinds of weather conditions for six months must be reckoned with.

It may also interest you to know that furniture in the Delaware Building and the stairway and bathrooms of the Doctor Shippen house on High Street were finished in Duco.

NATIONAL CRUSHED STONE ASSOCIATION TO MEET

THE National Crushed Stone Association will hold its annual convention at Detroit, January 17 to 20 inclusive. Prominent speakers will address the various meetings on subjects of interest to quarry men, and there will be an unusual exhibition of quarry equipment, machinery and supplies.

Worth-while meetings and a good time are assured to all who attend.

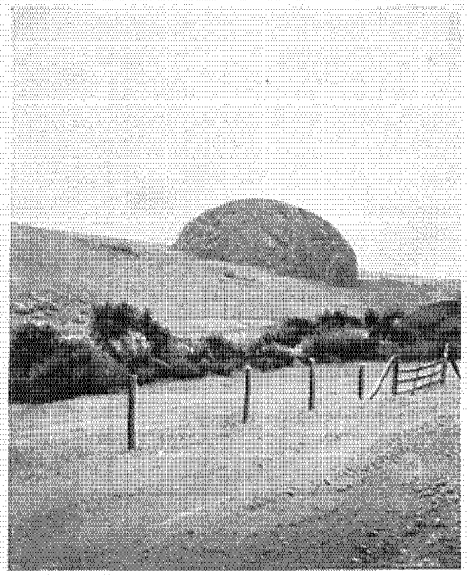
BLASTING ROCK FOR ROADS

Some notes on methods used by contractors in procuring material for hard-surfacing, together with two photographs of unusual interest

By R. W. Brehm

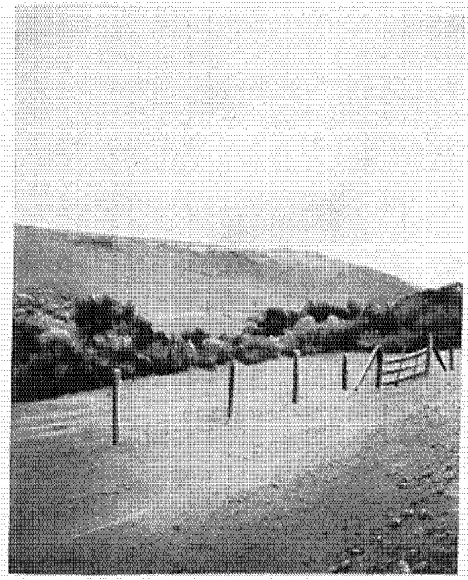
THE average person about to witness a quarry blast for the first time expects to hear a loud report and see rock thrown in all directions. He is usually disappointed. A well-balanced shot produces only a rumbling noise, heaves the rock up and sets it down again, broken and ready for the crusher. Again, one may think he has seen all that occurs when a shot is fired; but in many cases the action of the explosive is either quicker than the eye or too sudden for the mind to retain what the eye sees.

The upper photograph shows a shot containing 240 kegs of black blasting powder loaded in 24 down holes, primed with electric blasting caps and fired simultaneously. It further shows what a comparatively small charge of explosives, well placed, will do to 7,000 yards of rock. The object resembling a haystack is really the rock in the air just after the blast was fired. Those familiar with explosives have often seen the rock in this position, but this is the first picture the writer has ever seen which caught it just at the right instant.



No, it isn't a haystack in the background, but 7,000 yards of rock caught by the camera at the instant the blast was fired

The lower photograph was taken from the same location shortly after the rock had settled back.



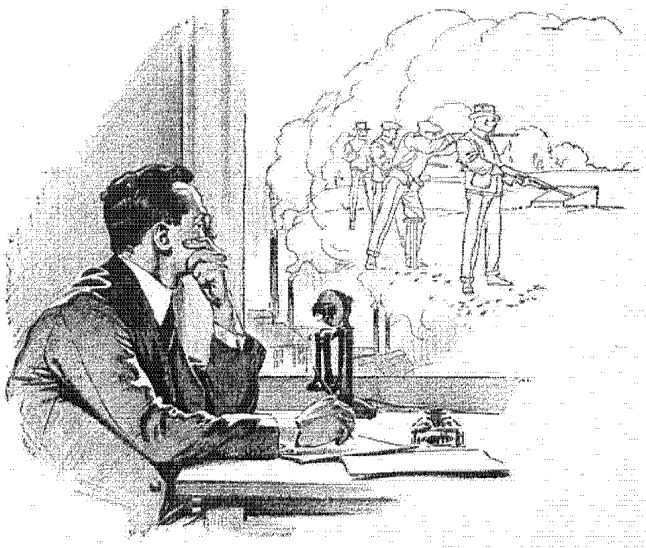
Another view from the same location after the smoke from the blast had cleared away. Note the rock fragments near the crater

The building of highways frequently necessitates quarry blasting work. Explosives are not only used for cutting roads through rocky places encountered in grading operations, but also in breaking rock required for surfacing the roads after the grading has been completed.

When the contractor requires rock for surfacing material he will first look for a natural quarry site—usually some rock bluff exposing a perpendicular face on which he may work. After selecting the site, he may elect to break down the rock by drilling a row or several rows of down holes, spaced at regular intervals along the top of the bluff. These holes are "sprung" by discharging dynamite in the bottom, until the resulting pocket in each hole is large enough to hold the charge of explosives calculated to break the rock required. When the charges have been placed, they are primed either with electric blasting caps or with cordeau, and the holes are tamped to the collar with earth. Then all the charges are fired simultaneously.

If, however, the contractor decides to use the coyote-hole method, he proceeds to drive a small tunnel into the base of the bluff. This is just large enough to allow a man to work. At the inner end, a crosscut tunnel is driven on each side, generally at right angles to the main tunnel, and at the extremity of these crosscuts, pockets are cut to receive the explosive charges. Such crosscuts are generally referred to as "tees" and there may be more than one pair. The length of the tunnel, the number and length of the "tees," as well as the number and size of the explosive charges, are determined by the character of the rock, the height of the bluff above the main tunnel, and the amount of loose rock that may be required. The explosive is placed in the pockets, the charges are primed with electric blasting caps or cordeau and the tunnel and its crosscuts are filled with earth or the broken rock previously excavated. The charges are fired simultaneously.

Among highway builders these two methods are used extensively. The action photograph reproduced on this page shows the compact form of a well-balanced shot of the down-hole type, the absence of flying pieces of rock and the ease with which the material may later be handled. To an eye-witness such a shot is not so spectacular, but in most cases it yields the best results.



DON'T PUT YOUR GUN AWAY

Trapshooting affords year-round sport which, for keen enjoyment, mental relaxation and physical benefit, is mighty hard to beat

By Lloyd R. Lewis

TRAPSHOOTING is the most characteristically American sport; it satisfies the inherent American desire to use firearms. Golf may boast of its Scotch origin, polo trace its line from England to India, and cricket pride itself on British birth, but shooting at clay targets is American born.

Let us pass by the alien sports we have adopted with pleasure and benefit and compare trapshooting with another distinctively American game—baseball.

The baseball fan goes to the ball grounds, sits in the stand and watches his favorite team reach a heartbreaking crisis in the game, but much as he longs to share in the glory and the thrill of the contest, his part is limited to cheering his side on to victory, or sitting helpless while it goes down to defeat. His sole participation in the sport is mental. But in trapshooting he is the "player." He knows all the zest of competition, and to follow his hobby he need not be tied down to any time schedule.

The open season for trapshooting comprises the entire year and may be enjoyed regardless of weather conditions. Any large field is hunting ground with plenty of game. The clay "birds" fly every day. Trapshooting knows no caste. One's success or failure at the sport is entirely in his own hands. The game appeals to all ages and conditions of men, and is one of the few sports in which both sexes meet on equal terms.

Watch a squad of shooters. You will perhaps see an eminent member of the bar standing beside a clerk whose income precludes membership in a country club. His neighbor, in turn, may be a successful manufacturer, whose fondness for the gun has never waned, but who no longer can stand the exposure of days afield. The next man is a physician whose professional duties permit only a short period of relaxation, so he has driven his car to the club grounds for an hour or two at the traps. The fifth shooter is often a woman who loves the great outdoors and its pastimes.

To the man or woman possessed of a tender heart, who sees no pleasure in the destruction of living creatures, trapshooting affords pleasure without regret. As a sport for women, it is rapidly growing in popularity. Hundreds of women are taking up the pastime, and in many cases are proving themselves formidable competitors for high honors heretofore held by men.

No other sport can show so large a number of participants in its annual meet as does trapshooting. In the big events, the number of shooters runs into the hundreds. The attendance at the Grand American Handicap in 1926 numbered thousands.

In general, trapshooting consists of shooting with a shotgun at targets thrown from traps. The targets, or "pigeons" as they are generally called, are composed of river silt and tar, moulded into a shape similar to that of a saucer. They dart into the air, impelled by the releasing of a strong spring when the word "pull" is called to the boy at the trap. The shooters, usually in squads of five, take their places sixteen or more yards in the rear of the traps and shoot in rotation.

Your skilled trapshooter is a fellow with steel nerves, quick and unerring judgment, and unfaltering action. In the majority of cases these positive, manly qualities were as latent in the trapshooter as they are in the average man, until the devotee of the trap and gun took up this most fascinating of recreations.

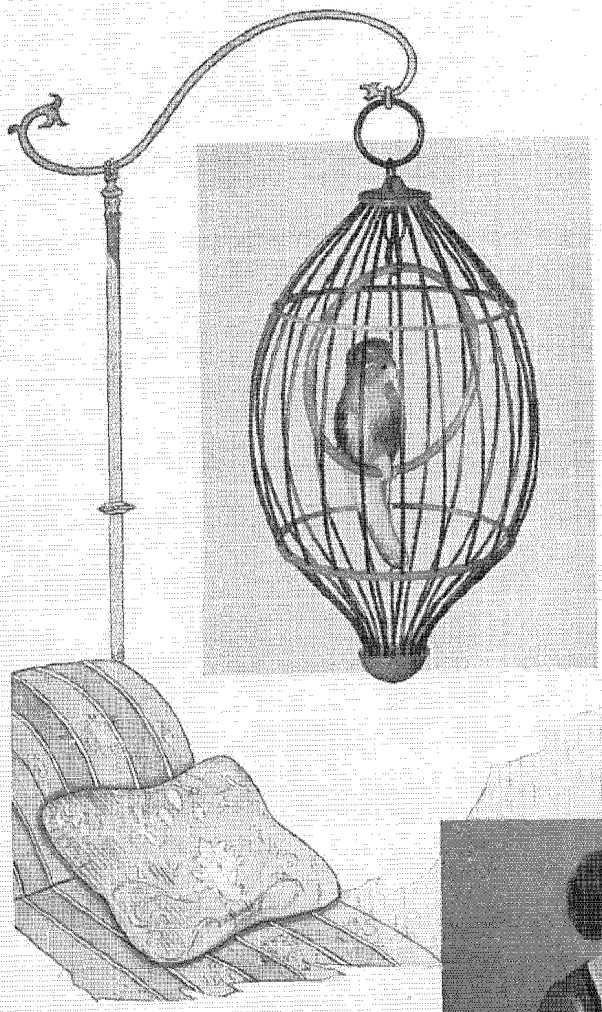
With a full understanding and appreciation of trapshooting by the public at large, it must, solely on its merits, eventually become the premier of American sports.

So do not put your gun away because the hunting season is over. Beyond a doubt, one of your friends is a trapshooting enthusiast. Let him tell you the pleasure and benefit he receives from an afternoon at the traps.

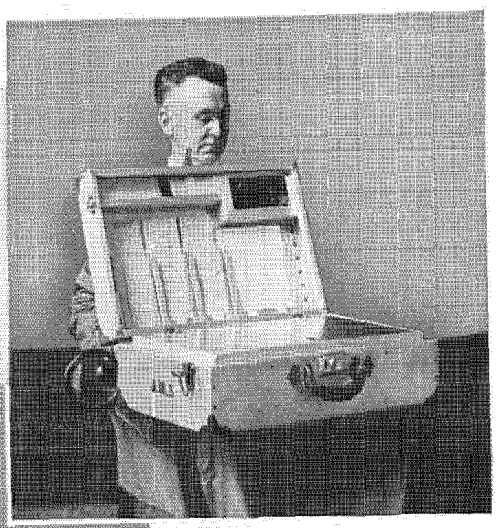
The Sporting Powder Division of E. I. du Pont de Nemours & Company, Inc., Wilmington, Delaware, publishes, and will send on request, the "*Trapshooter's Handbook*," an interesting volume describing how to organize and conduct a gun club, with complete information regarding necessary equipment.

"WE HAVE WITH US TODAY..."

A few pictures to show you in what ways du Pont-made materials are applied in the manufacture of novelties and specialties

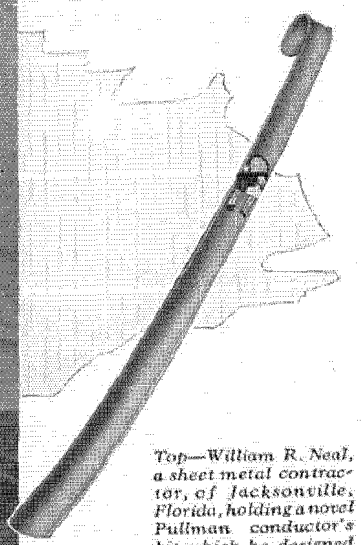


Above—This Pyralin bird cage is finding favor in many homes and may be used to decorate either boudoir, dining room or den. It is a pretty little cage—and the bird requires no food. These cages are made in various color combinations so that it is an easy matter to select one that will harmonize with the room for which it is desired

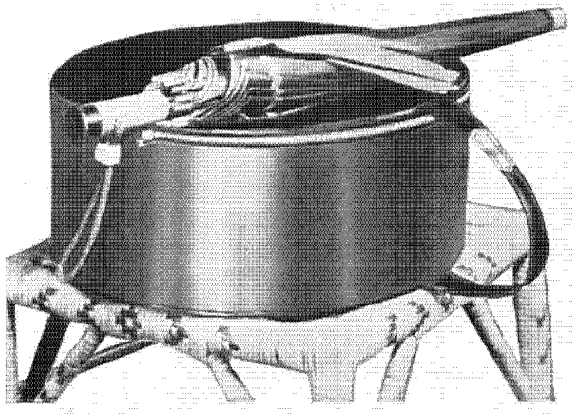




Right—A decidedly useful Pyralin shoe horn. Milady need no longer stoop to don her slippers. With the aid of this accessory, she may accomplish it from a comfortable sitting position. These shoe horns are of the newest pearl Pyralin and may be purchased plain or hand-decorated. Both the shoe horn and bird cage are manufactured by the Pacific Novelty Division of the Du Pont Viscoloid Company



Top—William R. Neal, a sheet metal contractor, of Jacksonville, Florida, holding a novel Pullman conductor's kit which he designed and had built in his shops. It is made of polished aluminum, finished in clear Duco



THAT'S A DAISY

The appearance of a Daisy De Luxe Bag creates much favorable comment about its good looks and all-round convenience

By R. A. Applegate

WHETHER the trip be by steamer for a foreign tour, by train for the week-end, or just one of those brief, delightful shopping excursions, the Daisy De Luxe Bag is an indispensable companion.

Capacious, but extremely light, these chic bags end the necessity for the heavy, cumbersome hand luggage that has made traveling such a burdensome effort in the past. Smart and attractive in appearance, they combine unusual utility with highest-quality workmanship. Made of durable, waterproof, and wear-resisting Fabrikoid, they may be had in various leather grains in the new shades of red, tan, blue, gray and green, as well as in the popular and serviceable black. The linings are of variegated chintzes in conventional, floral, and futuristic effects. Each bag has a shirred pocket.

The Daisy Bag not only carries toilet articles comfortably but it also provides ample room for an extra hat, a dress or two, shoes and other traveling requirements. It is made with two styles of opening devices. One model has the patented hookless fastener which opens or closes with just an easy pull — an exclusive Daisy De Luxe feature. The other is equipped with turn-buttons.

One of the most practical features of the Daisy Bag is its flexible handle of Fabrikoid, the same material from which the bag itself is made. This handle enables the traveler to carry the bag over her arm, leaving both hands free for her purse, tickets, money or passport. Either the hookless fastener Daisy De Luxe Bag or the Daisy button model may be had in 12, 16 and 18-inch sizes. The accompanying illustrations show a Daisy Bag with the hookless fastener, but the beauty of the Fabrikoid grain is lost in the reproduction.

In addition to the models described, two other attractive and serviceable types—the Daisy De Luxe Bathing Bag and the Daisy Wetandry Utility Bag—are produced by the same manufacturer.

The Bathing Bag is made up in gay, summery color combinations. A rubber-lined inner pouch, which is attached to the inside of the bag, is its unique feature. Like the outside opening, the pouch is equipped with the hookless fastener. Such a bag is indispensable for carrying wet bathing suits and towels, without damage to dry clothing and shoes.

The Wetandry Bag, like the Bathing Bag, is also equipped with the inside separate rubber pouch. It is made in the regular conventional Fabrikoid grains and colors, and is used extensively by mothers for carrying clothing for babies. Here again the separate dry compartment may be used for wearing apparel that is to be kept away from the damp pieces. Wetandry and Bathing Bags are made in the 12-inch size only.

This smart and attractive line of utility bags with either the hookless fastener or turn-buttons is made exclusively by Daisy Products, Inc., 320 Fifth Avenue, New York City. The bags are sold through regular retail channels. For identification each bag is trade-marked with the word "Daisy" on the handle.



The Daisy De Luxe Bag has a flexible handle, so that it may be carried over the arm. It's just the thing for shopping

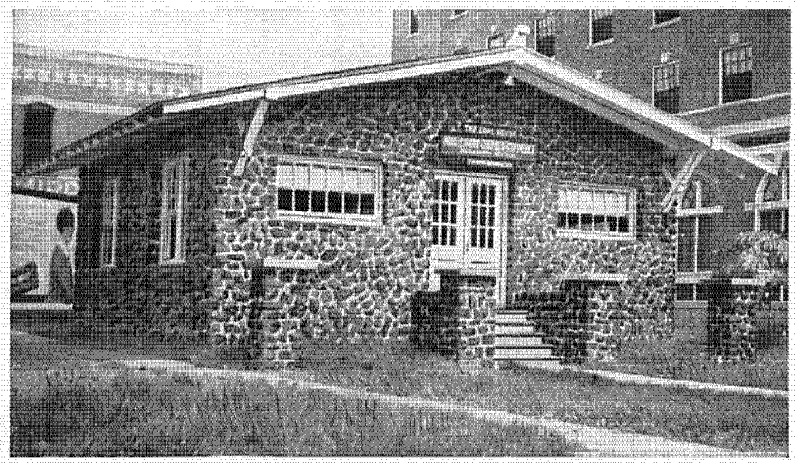
KENTUCKY'S HOUSE OF COAL

The Middleboro Chamber of Commerce built its new home entirely of coal to advertise that region's industry

By A. L. MILLIGAN

THE Chamber of Commerce of Middleboro, a town of 9,000 population situated in the southeastern Kentucky coal fields, had, until a few months ago, been paying out nine hundred dollars each year for office rent. Furthermore, the organization was rapidly outgrowing its quarters.

One of the members suggested that a permanent home be built through public contributions, and that individuals and firms in the community be asked to give what they could in the way of either money, materials or labor. The plan was enthusiastically received, and resulted in the "House of Coal," illustrated on this page. The Chamber of Commerce now has a $14,000 home which actually cost the organization but $100 more than the amount which had heretofore been paid out each year for rent.



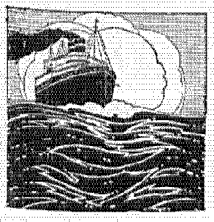
This unique building provides headquarters for a Chamber of Commerce and exhibit and rest rooms for visitors who are attracted by its novel design

The new headquarters is of modern frame construction and is veneered with native coal, mined in the vicinity of Middleboro and contributed by a mining company. Business firms sent window frames, doors, plumbing and lighting fixtures for the new building and many individuals gave their services in erecting the new home. The Cumberland Hotel, a new and up-to-date hostlery adjoining, agreed to furnish heat free of charge.

The "House of Coal" contains three rooms. Of the two front rooms, one serves as an office for the president and secretary of the Chamber, while the other is maintained as a rest room for tourists and business visitors. Views of Middleboro and the nearby coal fields are hung on the walls of this room. Here, also, is provided an information bureau for the convenience of strangers. In the rear of the building is located a large assembly room where meetings of the Chamber of Commerce and other civic bodies are held.

The use of coal for construction purposes in Middleboro has created widespread interest and given rise to much comment. The question, of course, arises: how long will a wall of coal withstand the elements? In answering this, residents of the Kentucky town state that coal from the native seam is easily lumped and very hard. Furthermore, they claim that it has been known to lie exposed to the weather for more than thirty years without showing the slightest signs of deterioration.

SPEAKING OF MOLASSES—



WITH more than a million and a half gallons of African blackstrap molasses rolling in her holds, the S. S. *Athelbeach* recently completed a long overseas voyage from Durban, Natal, and swung up to the du Pont dock at Deepwater Point, New Jersey, to discharge her cargo into the huge tanks of the Eastern Alcohol Company.

This is the first supply of molasses received from Africa for distillation at the new plant, which is supplying the du Pont Company and its associated interests with ethyl alcohol for industrial uses. The cargo is of interest because it came from far-away Natal and because this raw material could be delivered on American soil more economically than from sources nearer by, thanks to the efficiency of marine engines of the Diesel type.

The people of Natal were among the first to convert molasses into alcohol for use in automobiles but later they found that gasoline was a more satisfactory fuel. So they are shipping molasses to this country and are scheduled to receive, in return, a cargo of American gasoline.



Photos by courtesy of Scranton Lace Company

Figured rayon draperies, in harmony with lamp, cushion and rug, make this an inviting corner of the living-room

RAYON WINDOW DRAPERIES

Beautiful fabrics in gorgeous colors and striking designs are now available for window draperies since rayon has entered the home-decorating field

By Frank Scull

IN planning the home of today much thought is given to interior decoration. The proper selection and arrangement of the furniture, the right lighting effects, correct draperies, appropriate floor coverings—all contribute to a harmonious atmosphere—inviting, home-like.

Perhaps no other one thing offers such a wide scope for the exercise of good taste as the choosing of proper window draperies that will be in keeping with the room.

In the selection of draperies for spring two things are important. Fabrics of appropriate shade and type must be chosen and the correct style of draping must be used. The purchase of the most costly materials on the market will avail nothing if they are not adapted to their surroundings, or if they are not properly arranged.

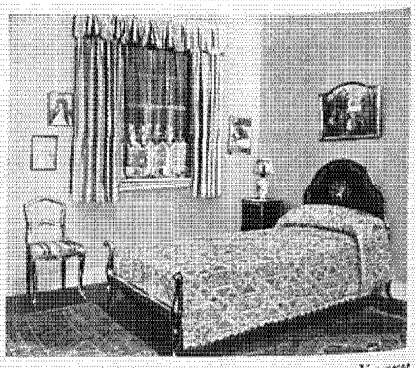
There are appropriate styles of window draperies for every room. Some are made especially for living-rooms, matching portieres where desired. Other styles are particularly adapted for dining rooms. Still others are suitable for bedrooms, and in many cases match the bed cover. Each room presents its own particular problem—one that can be solved only by giving consideration to all the elements present. Failure to observe any of these factors naturally lessens the chance of securing the best results.

Since the introduction of rayon in the textile industry, this man-made product has come to play an important part in drapery manufacture. It possesses distinct qualities of its own. It can be used in draperies to produce either the most brilliant effects or beautiful subdued harmonies. Its affinity for dyes is great, so that its colors are fast to sunlight and washing. Then, too, the smooth surface of rayon fiber gathers little dust and makes the fabrics easy to clean.

Because the specific gravity of rayon is greater than that of silk, the fabrics have greater weight and better draping quality.

Rayon may be found in an infinite variety of the most expensive as well as moderately-priced fabrics. It has enabled drapery manufacturers to produce for multitudes of people curtains silk-like in appearance that heretofore have been out of reach. The products of the Du Pont Rayon Company are used extensively by leading drapery manufacturers in various parts of the country. Du Pont Super-Extra Rayon with its dull luster, exceptional softness and ease of draping is a favorite for certain types of drapery fabrics.

Using this high-quality yarn, drapery manufacturers have woven many beautiful fabrics of striking designs. You can purchase these fabrics from reputable retail stores in any city with full assurance of satisfaction. To those of our readers who may be interested in rayon draperies, the Scranton Lace Company, of Scranton, Pennsylvania, one of the leading drapery manufacturers using Du Pont Rayon, will be very glad to furnish an interesting booklet entitled "New Outlooks for Every Home."



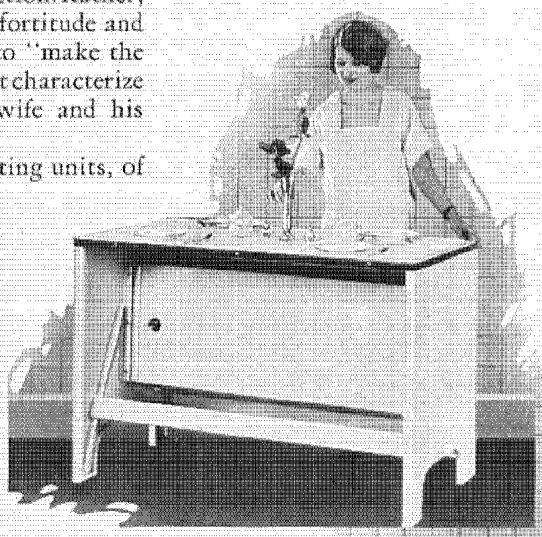
How tasteful draperies can make an ordinary bedroom window the feature of a decorative scheme

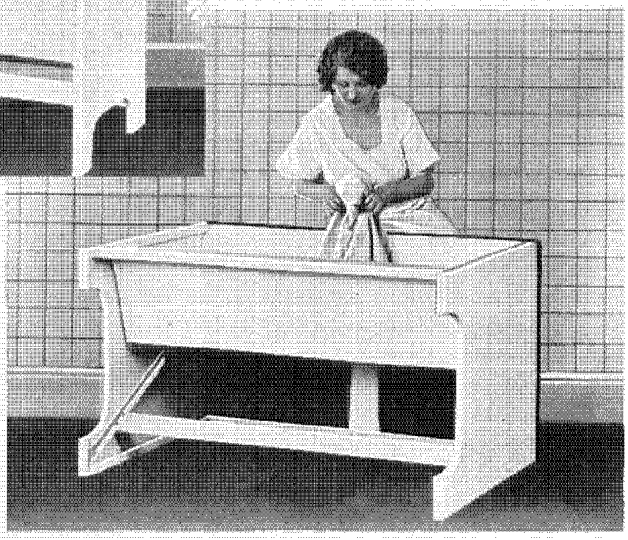
AID TO THE FARMER'S WIFE

Every day is a busy one for this combination table and tub, now finding wide use in rural sections of the country

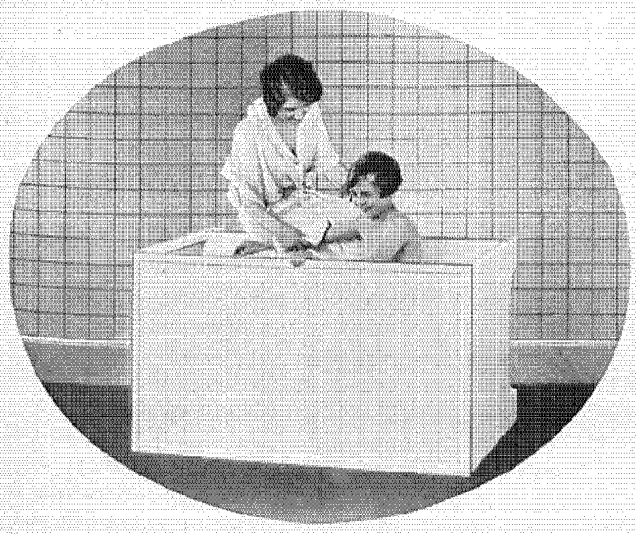
MANY of us are prone to forget that water, gas and electric systems, while constantly serving the townsman and his neighbor, do not reach thousands of rural people. The fact is no reflection. Rather, it emphasizes once again the fortitude and patience, the cheerful desire to "make the best of things as they are," that characterize Mr. American Farmer, his wife and his family.

Modern plumbing and lighting units, of course, have brightened many farm homes during the past few years, but every one cannot afford them. There is still a wide difference between the city dweller, who can add a laundry unit to his home by merely tapping a water main, and the farmer, six or eight miles from such town conveniences. Their desires may be similar. It is purely a matter of location and costs, and the farmer is obviously at a disadvantage.





Three daily uses to which the Sani-Tabl-Tub may be put to save the housewife many steps



To meet this situation in rural sections practical home conveniences of all sorts are being manufactured. One of particular interest is the Sani-Tabl-Tub, developed and introduced by the Sani-Tabl-Tub Company, of Alliance, Ohio. Three uses—table, laundry and bathtub—may be gained by tipping it over on its side, as shown in the accompanying photographs. The device approximates the standard kitchen table in size, being forty-eight inches long, twenty-seven inches wide and thirty-two inches high. It is sturdily built throughout and is designed for simplicity of handling. Solid-welded joints, rigid reinforcements and a four-foot flexible connection for tub drainage constitute three features of its construction.

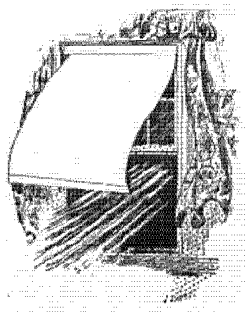
Durability has also been emphasized. The top is made of fine quality porcelain enamel. The tub construction and ends are of sheet steel. A foot rest runs along the full length of the table and a wide ledge which may be used for a seat surmounts one side of the tub.

In their effort to combine attractiveness with extreme durability, the manufacturers of the Sani-Tabl-Tub chose Duco with which to finish the steel portions of the device. Duco is tough, waterproof and easy to clean—three properties which are required above all others for a finish on this type of household furniture. In addition, it lends to the Sani-Tabl-Tub an attractive and pleasing appearance that is immediately noticed by prospective buyers.

With all these features to distinguish it, this combination table possesses a direct appeal to thousands of farmers' wives who long for relief from hard, inefficient labor, heretofore believed inescapable.

NEW SHADES FOR OLD

Tontine at the windows has brightened up thousands of homes and offices



NEVER before has color played such an important part in decorating the home. Dull tints of a generation ago have given place to brighter tones. The modern room, due to this change, is a cheerier place in which to live.

It is only natural that window shades should fall in line with this toning-up process. A few years ago dark greens, dull browns and deep blues were the predominating colors for shades. But with the vogue for more cheerful decorations came a variety of tints.

However, light-colored window shades show dust, dirt and finger-prints to an infinitely greater degree than did their darker predecessors. To the fastidious housewife, nothing is more unsightly than a dirty, spotted shade. Consequently, frequent replacements have to be made. The du Pont Company some years ago set out to devise a shade that would combine the new and beautiful lighter colors with year-after-year service, and after long experimental work a *washable* window shade was produced.

This shade, called Tontine, combines several features. The fabric is much tougher than that used in the average unwashable shade. As a result, it will not crack or develop unsightly pin holes, which, in the ordinary shade, are due to the falling out of the "filler," or substance with which the cotton base is coated. Dust, dirt or finger marks can be removed from Tontine shades with soap, water and a brush. They are supplied in light colors as well as in the more conservative, darker tones, so that the housewife may now choose shades in keeping with any decorative scheme. These new washable shades assure her of windows as bright and fresh as the rest of the room, with years of added service as an extra consideration.

FIFTY YEARS OF GOLD MINING

(*Continued from page 9*)

distributed irregularly through the ore bodies in such fine state of division as to be invisible to the naked eye, except in rare instances. Mining and metallurgical practices of the highest order have been characteristic of the successful operation of this property. Milling practice consists of amalgamation followed by cyaniding, and the recovery is 94 per cent of the assay value of the ore in the ground.

The mine has reached a depth of twenty-three hundred feet. Drainage is easily taken care of, as the normal mine flow is only four hundred gallons of water per minute. Ventilation is adequate, and an abundance of fresh air reaches all working places.



A street scene in the $50,000 "jubilee city" built at Lead for the big Homestake anniversary celebration last August

Hard and fast methods of mining and blasting cannot be followed, since almost every level presents different physical conditions. Forty per cent gelatin dynamite in 1⅛ x 8 inch cartridges is used in all blasting. The Homestake Company has been a regular buyer of du Pont explosives for the past thirty-five years. More than eighteen hundred men are employed, and relations between the management and the men are not only satisfactory, but on the friendliest of terms. The labor "turnover" is very low. A large number of the employees were born and reared in and near Lead. The Homestake Veterans' Association, composed of employees whose continuous service is twenty-one years or more, is quite large.

The record of the Homestake for production exceeds that of any other gold mine in the United States, and when consideration is given its long life, perseverance in production of low-grade ore, the total value of the gold recovered, and the regularity with which dividends have been paid, it stands out as the premier gold mine of the world—even though Canada and the Transvaal may have greater producers today. The Homestake's success directly reflects the ability of its executives, both past and present.

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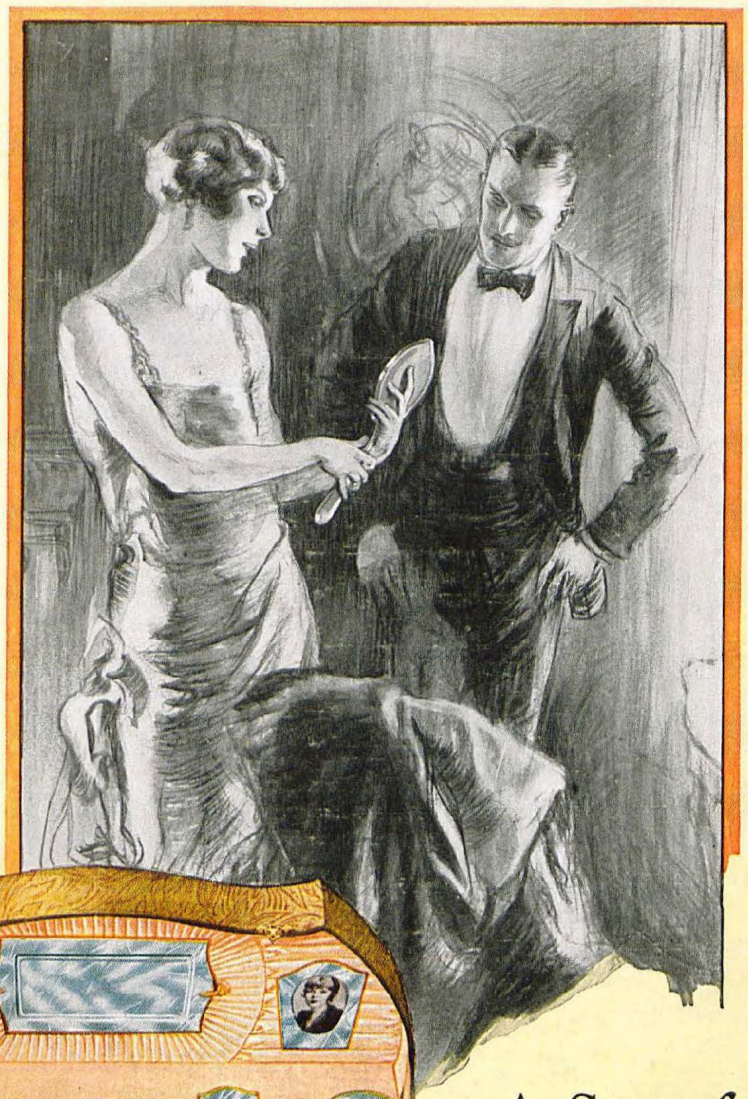

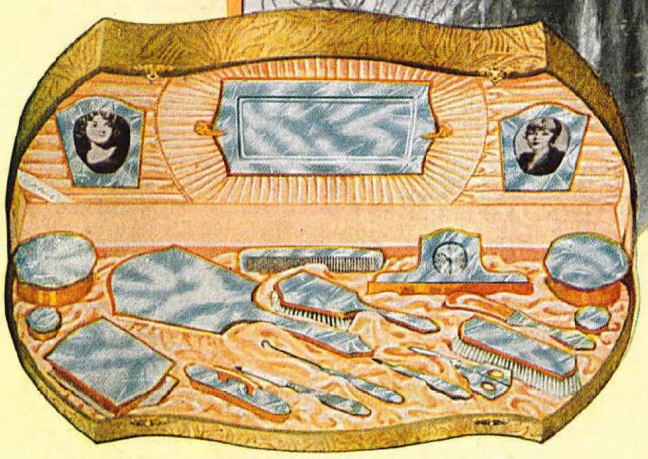

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