
The Du Pont Magazine
August 1924
C. C. PEARCE



A new era of taste in motor car finishes

APPRECIATION of quiet, lustrous finishes is notable today throughout the world. Cultured people everywhere prefer this more attractive expression of quiet elegance in their motor cars as well as in their homes.

Centuries ago when the craftsman of Queen Elizabeth's time or the wood-carver of old Spain made his oak and walnut furniture, its embellishment by carving was his chief concern; for well he knew that the touch of many hands and the weathering of many seasons would give to its surfaces a soft, rich finish unequalled by any other means then known.

The discovery and development of DUCO by du Pont Chemical Engineers mark the beginning of a new era in motor car finishing. It gives to your car the deep, vibrant color tones of ancient masterpieces. Its glowing satin lustre grows more beautiful with age and use.

Snow and rain do not crack it, mud cannot scratch, nor dust and grit mar its velvety smoothness, for a car finished with DUCO remains beautiful—always.

E. I. DU PONT DE NEMOURS & CO., INC. *Chemical Products Division,* PARLIN, N. J.

DU PONT DUCO



New Cars

The following motor car manufacturers have already standardized on Duco:

OAKLAND (all models)
CADILLAC (Roadster)
MARMON (Sport Speedsters)
MOON (Roadster model "A")
HUPMOBILE (Roadster, Touring, 2-passenger Coupé, Club Sedan)

In addition the following manufacturers are prepared to furnish Duco on any model when requested:

CADILLAC
CLEVELAND SIX
FRANKLIN
HUPMOBILE
LEXINGTON
MARMON
MOON

Refinishing

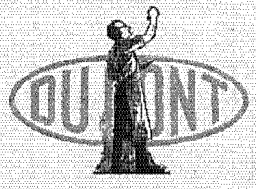
Duco is of extraordinary hardness, and dries almost instantly upon application. It must be applied with a spray-gun. Duco automobile refinishing stations and instruction schools are being established rapidly throughout the country. In refinishing cars, care must be taken to remove the paint down to the metal, as only then will Duco give its characteristic velvety lustre and durability. Name of nearest authorized refinishing station on request.

Other Uses

Duco is adaptable to almost any product requiring a lasting finish in color. Due to its quick-drying qualities, it saves materially in finishing time, storage space and investment in finished product. Demonstration on request of any manufacturer. It is already being successfully used in the following industries:

Automobile Bodies
Truck Bodies
Automobile Accessories
Wood Furniture
Metal Furniture
Office Equipment
Pens, Pencils, etc.
Washing Machines
Lamps
Handles for Tools, Brooms, Brushes, etc.
Novelties
Toys
Electric Parts
Umbrella and Cane Handles
Radio Cabinets, Radio Parts
Gasoline and Oil Pumps
Bath Fixtures and Accessories
Medicine Cabinets, etc.
Toilet Seats
Typewriters
Vacuum Cleaners

THE
DU PONT
MAGAZINE



Vol. XVIII AUGUST, 1924 No. 8

The Business Outlook

Increased activity during the remainder of the summer is not looked for, but the prospect for fall and winter business is encouraging

(Yesterday's business conditions are carefully analyzed and reviewed by economic statisticians in order that today's status may be determined, and tomorrow's predicted with reasonable accuracy. We omit Mr. Hayford's review, but following is his forecast of general business conditions—the latest available for publication in this number.—*Editor*)

By F. LESLIE HAYFORD
Economic Statistician
General Motors Corporation

EVENTS of recent months have not materially changed the general business outlook. Although industry has become less active, there is nothing in the present situation to indicate that the reaction will develop to depression proportions or that it will run for a long period. While it is true that the supply of some commodities is large, it is very doubtful if stocks of goods in many lines are of burdensome size. Certainly, no general evidence of forced liquidation or of the carrying of excessive inventories has been afforded by the movement of prices or by the money market.

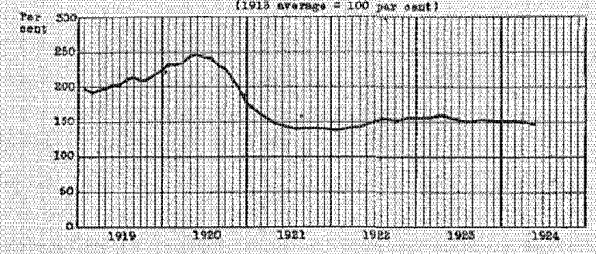
Consumption of goods has quite evidently continued at a high rate, with but little reduction in recent months. The general purchasing power of the public, although probably not quite so great as it was earlier in the year, still is large and seems likely to continue so. Not only has no sign of approaching credit stringency appeared, but, on the contrary, there is present and prospective marked ease in the money market as a result of an unusually abundant supply of loanable funds.

Hand-to-mouth buying continues, however, and in all probability will continue for a while longer; there is no incentive to follow any other course: prompt delivery of goods can be counted on, and there is no sign of an early and rapid rise in prices.

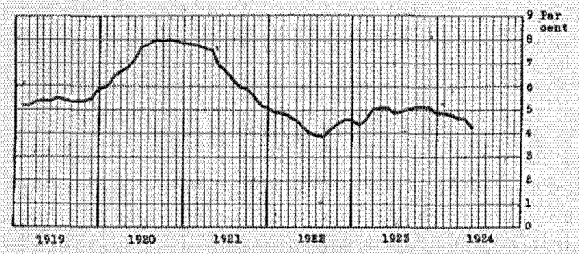
In the summer months business is usually quieter than at other seasons. It is therefore unlikely that much, if any, improvement will take place until after the summer is over. Indeed, there may be some further decline; business in general, however, should be of fair volume for the season. Increased activity either in the fall or in the early winter now appears probable.

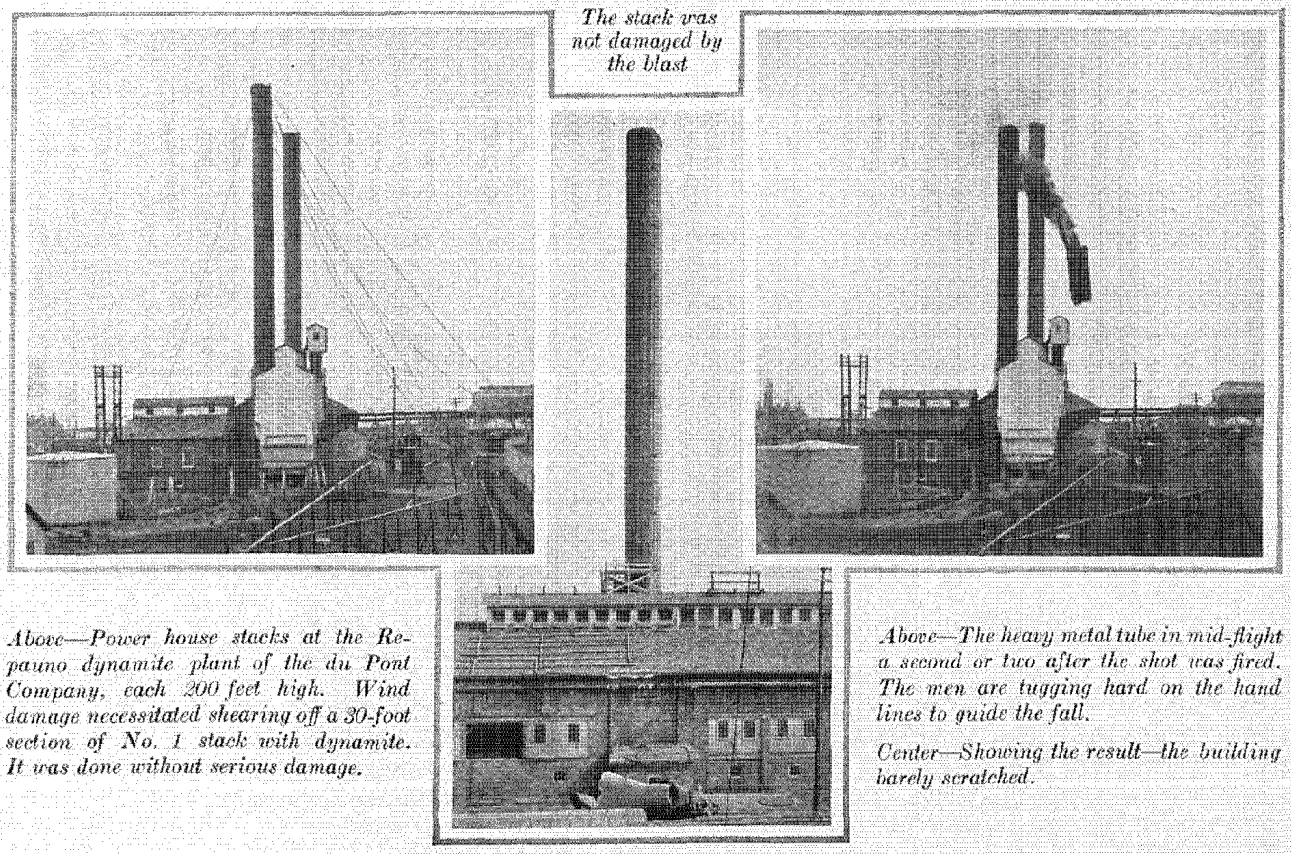
The Graphic Story of Two Influential Factors Affecting Business

Wholesale Commodity Prices
Index Number of U. S. Bureau of Labor Statistics
(1913 average = 100 per cent)



Rate on 60—90 Day Commercial Paper
Monthly Averages





The stack was not damaged by the blast

Above—Power house stacks at the Repauno dynamite plant of the du Pont Company, each 200 feet high. Wind damage necessitated shearing off a 30-foot section of No. 1 stack with dynamite. It was done without serious damage.

Above—The heavy metal tube in mid-flight a second or two after the shot was fired. The men are tugging hard on the hand lines to guide the fall.

Center—Showing the result—the building barely scratched.

We Amputate a Stack

It had to be done—quickly, safely; so the plant product was used to do the work, and with gratifying results

By I. J. COX
Manager, Repauno Works
E. I. du Pont de Nemours & Co., Inc.

(We have frequently published stack-shooting stories in this magazine. Usually, the problem has been to demolish a stack by blasting away sections of its base so that the structure would fall safely in the direction planned. The following article presents another angle of stack shooting, or rather, stack shearing, which is "something else again," and therefore of particular interest to blasters and contractors.—*Editor*)

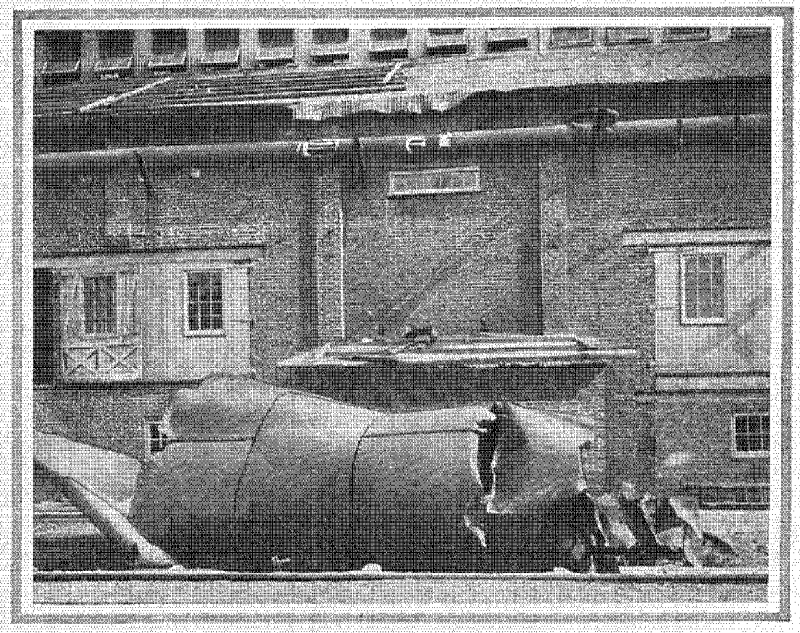
THE main power house at the Repauno plant of the du Pont Company is equipped with two self-supporting steel stacks. Each stack is 10 feet in diameter and 200 feet high, and is made up of plates reducing in thickness from ⅜-inch at the bottom of the stack to ¼-inch at the top. No. 1 stack was erected in 1915, and No. 2 in 1919, but both of them were subject to such excessive vibration during periods of heavy winds that it was decided, after much discussion of the subject, to reduce the height of each one to 150 feet. This was practicable from an operating standpoint for the reason that, since the stacks were erected, we had changed from coal to the use of oil as fuel.

A contract for the removal of the upper 50 feet of both stacks was let on May 8 of this year, and the work was to have been commenced on the 19th. However, events proved that we were too late in getting started; for, in a heavy wind storm during the night of May 11, No. 1 stack was almost broken in two at the rivet seam, 170 feet from the ground. The broken section was tilted to an angle of about five degrees off the perpendicular and, of the 31.4 feet of rivets around the circumference of the stack, only 8 feet remained intact.

An experienced stack man was secured and, after an examination and after guying the broken section from four points, he was of the opinion that the entire section could be safely removed by burning off small pieces at a time and dropping them down inside the stack. This work was commenced but, on account of bad weather and the obvious difficulty and danger of the job, little headway had been made up to May 16 when he reported that some of the remaining rivets in the broken seam were beginning to snap. Not more than three feet of the stack had been removed up to that time.

Here, indeed, was a difficult situation. On the ground was a perfectly good power plant and, above it, most

insecurely supported, was a cylindrical shell of metal ¼-inch in thickness, 30 feet in height, 10 feet in diameter, and weighing nearly five tons. No stretch of imagination was required to see that thousands of dollars' worth of damage or delay could be caused if that weight of metal should fall through the roof on to certain pieces of engine room or boiler room equipment; and it was apparent, too, that no time must be lost in getting it down safely if we wished to have any influence as to where the piece of stack should fall.



This view will enable you to visualize the damage done to the building when the heavy stack section fell. Only minor repairs were necessary

It was decided to cut the remaining eight feet of rivets with dynamite, and to attempt to throw the stack clear of the power house by means of guy lines. The shortest jump to the clear was 35 feet from the base of the stack and, naturally, this was the one it was chosen to attempt. The steel ladder was cut off at the point of the break, and four small holes were cut in the stack just above the line of rivets holding the broken section, and a fifth guy line was fastened to the ladder a few feet above the break. A canvas tube was made up and in it were inserted thirteen sticks (8.3 pounds) of 1½ x 8-inch du Pont Straight Dynamite, 60 per cent strength, the overall length of the charge being 8 feet 8 inches. An electric blasting cap was fastened into the charge, and four wire hooks were fastened to the canvas. These hooks were spaced so that they would meet the four holes which had been burned in the sheet above the rivets. By this means the charge was then placed in proper position by the stack man.

The guy lines were loosened from their moorings and all were brought to a point where a pull on them would tend to draw the stack in the direction in which it was desired that it should fall. Four or five men were now placed on each of the five guy lines, with instructions to wait for the blast and then pull as long as they could exert any force upon the falling section. After as much of the power house equipment had been shut down as it was possible to put out of operation, and after every one had been cleared away from the immediate area, the shot was fired.

A more beautiful result could not have been expected or desired. The broken section seemed to hesitate for an instant, then gracefully leaned over and dived, top first, to the ground. It did not quite make the leap of 35 feet to the clear but missed it by only about six inches. The ends of two or three of the galvanized roofing sheets at the eaves of the boiler room were mashed in, and a little pipe covering was torn from an oil line which hung just below, on the wall. The total damage was repaired at a cost of $12.00, which amount was quite insignificant indeed, in view of the possibilities which appeared to exist before the section was brought down. There was no damage whatever to the portion of the stack left standing.

After a Quarter-Century of Use

REMEMBER our telling you about that 20-year-old Fabrikoid-covered suit case whose owner said it was good for twenty years more? Well, here's the sequel. Let Mr. John Aspinwall, of Newburgh, N. Y., tell you about his Fabrikoid-covered lounge, which has been used since 1899 and still "looks as good as it ever did." He writes:

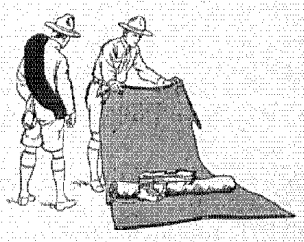
EDITOR DU PONT MAGAZINE,
Wilmington, Del.

"I have had called to my attention a letter from a Mr. Quinlan of this town, relative to a dress-suit case covered with Fabrikoid, which appears on page fifteen of your May issue.

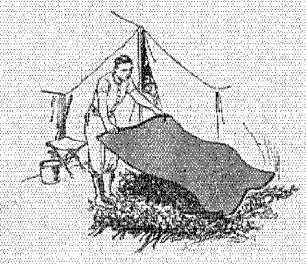
"It may interest you to know that I have a high-back lounge which was covered with Fabrikoid about the year 1899 and was used by me in New York until I moved to Newburgh in 1902, and which has been in quite general use in my billiard room at my house here ever since. There is not a crack in it, and it looks as good as it ever did, the material still being soft and pliable.

"The coating on this lounge was a little heavier than the Fabrikoid sold at that time and is about the same as the coating you are now putting on your fabric.

"With the hope that business is good with you, I am,
Cordially yours,
(Signed) JOHN ASPINWALL."



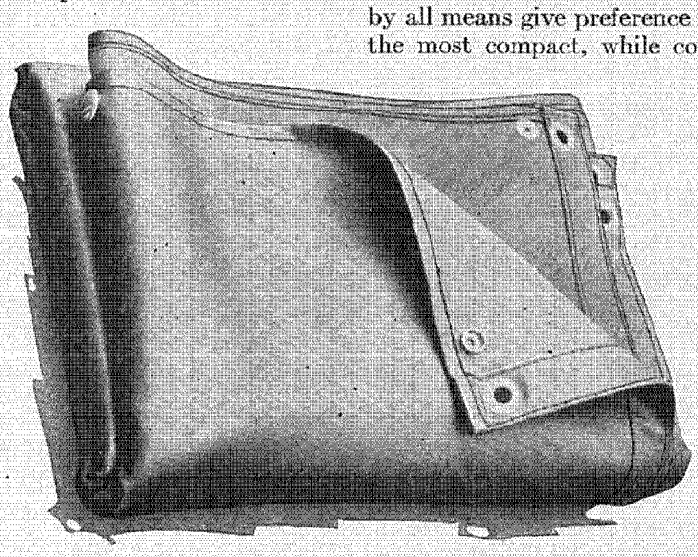
Campal—A Real Pal



A many-use rubberized blanket with some special features at a price that is extremely interesting

By A. H. BERWALD

AUTOMOBILE camping has suddenly become the chief recreation of the American people. Out in the wild places millions are learning to know their own souls better. A finer family spirit is being welded in the glow of countless camp fires. The nation itself grows richer as so many of its people become nobler, more vigorous, more capable through their communion with Nature.



Automobile camping may mean anything from a day's picnicking trip to a season's "roughing it" in the wildest region accessible, or it may mean just "gypsying" through the land. Always, however, it will have as one of its greatest charms a delightful degree of uncertainty and a challenge to one's ability to meet and overcome unusual and unexpected conditions whenever they arise.

Occasionally you will find a motorist who cannot be happy on a camping trip unless he is miserable also. Such a one boasts of the great number of essentials which he *does not take along* and gloats over physical discomforts endured as though the suffering of hardships were the badge of woodcraft. But the problem is not to test the endurance of our bodies; rather it is a test of resourcefulness and skill, backed by acarefully thought-out equipment, to make camp life as comfortable as possible.

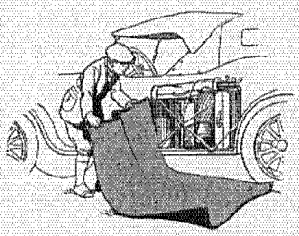
In planning a motor camping trip, after the location, the season and the special purposes, if any, of the trip are given due consideration, the major items of necessary equipment become fairly obvious, and it quickly appears that most of the other articles that minister to our stay-at-home comfort must be ruthlessly eliminated. On our eventual list of indispensables we should by all means give preference to those articles which are the most compact, while covering the greatest range of necessary uses, both under ordinary and emergency conditions.

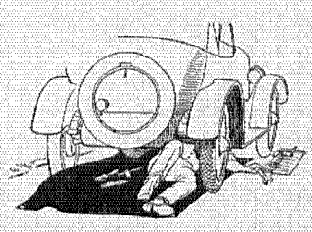
Perhaps the article that makes the least tax upon the space available and the weight that can be carried, yet which contributes in the most ways to the comfort and health of the camping party, is a good rubberized blanket. Such a blanket is small enough when folded to slip into a side pocket of the car—if one has so little imagination as to put it there. As a matter of fact, the blanket should be always in use. May we suggest where and how?

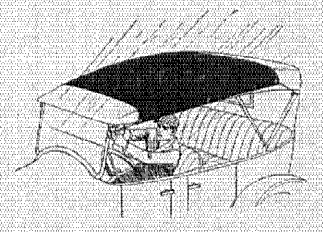
On going to the camp site—and upon returning therefrom—the proper place for the blanket is outside the car giving good service as a waterproof and dustproof cover for the luggage and duffel parked on the running board. We have a particular blanket in mind which is of generous proportions, 54 by 72 inches, large enough to keep a lot of equipment clean and dry. There are three grommets in each of the narrow sides through which ropes can be passed to make the wrapping tight and everywhere secure.

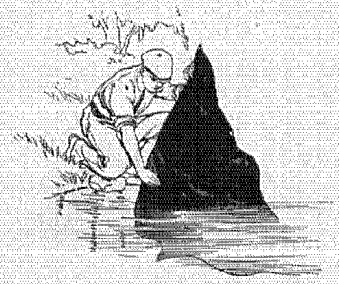
Lucky the motorist who does not have to untie those











ropes before camp is reached and spread the blanket upon the road while he makes the necessary repairs to a stalled car. However, if that happens, he is still lucky in having the blanket under him instead of the muddy — or oily — road. The blanket will earn its cost as a clothes-saver the first time one has to "get out and get under".

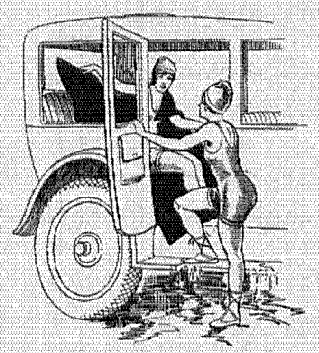
The blanket we are thinking of is especially useful for all kinds of messy emergencies like the above, because, unlike the ordinary blanket, it is rubberized on both sides. There is no cloth side to absorb and *retain* dirt and grease. No matter how soiled the blanket may become, it has only to be carried to the nearest pool of water, swished around a bit, and it will come out clean—on both sides.



And now that we have reached the camping site let us spread the blanket over a little level plot of grass so that the good wife and baby can rest upon it, protected from the always damp and chilling earth as well as from the creeping and crawling things they so dislike. It's a good thing both sides are rubberized because the blanket is going to be used a lot this way and dampness causes moulding and rotting in blankets that have the fabric exposed on one side.

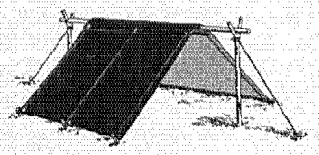
Noontime comes; the blanket is now spread over an improvised table or upon the ground and used as a luncheon cloth. We haven't told you yet that one side of our blanket is of black and the other side of khaki-color rubber, but it is, and now the latter side is used uppermost because it makes a less somber background for the feast.

Did you ever notice what a habit things have of getting spilled around a camp table, especially if it is flush with the earth? The only safe place to put anything seems to be into one's mouth. But our luncheon cloth is not stained or harmed in the least when the coffee gets tipsy or the soup splashes upon it. What is so easy to clean as rubber? Best of all, when the meal is over, the blanket is gathered together by its corners and all the crumbs, peelings and litter are carried in it to the camp fire and burned. This robs the flies and ants of a banquet but it's an easy way of keeping the camp tidier and more livable.



During the heat of the day our blanket can be stretched from the side of the car, or between stakes driven into the ground, to provide an awning or sunshade for the children or the entire party. This makes an equally good rain "shade" if rain follows sun.

At night our blanket is thrown over the bed of browse which we have made up, or upon the bare earth if that is to be our mattress, and we can be reasonably sure of resting comfortably without taking cold. The most hardened hunters and explorers never sleep upon the earth without a waterproof ground blanket of some kind beneath them. If the automobile camper had no other use whatever for our rubber blanket it would still be indispensable and invaluable to him for this purpose.



Many times in camp there are places to go and work to be done in a driving rain. In the seams of our blanket there are three snap fasteners so placed that when the blanket is thrown over the shoulders the fasteners hold it in place. The arms and hands are then free and the blanket is sufficiently enveloping to make a very serviceable poncho or rain cape. Worn with the khaki-color side out such a cape is really an attractive emergency garment.

There are other thoroughly practical uses for the blanket we have in mind which campers will discover before many days of their outing have gone by. There are additional uses for the blanket not necessarily related to camping. As one of our illustrations shows, two of these blankets make a splendid pup tent. Such a tent can be set up in a jiffy whether in camp or on the lawn at home. It will afford the children a great deal of enjoyment and encourage their playing out of doors.

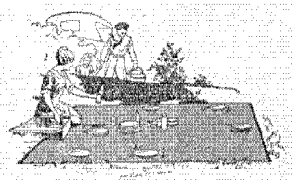
Sometimes we don't mind driving a car that has a leaky top, or that is even badly torn, until an unexpected downpour catches us miles from shelter, when we wish that the top were "all there". Throw one of these rubberized blankets over the offending section of the top, tie it down at either side and you have the best blow-out patch for a leaky top that ever was invented.



The blanket comes in handy for washing the car. When folded to the proper width with a rope passed under the fold, it can be tied around the waist as a waterproof apron. Likewise it makes a good apron for any kind of wet or dirty work. If there is a Boy Scout in the family, he needs one of these blankets on his hiking and camping trips. The way to carry it is as the outside wrapping of his blanket roll. Ask your boy

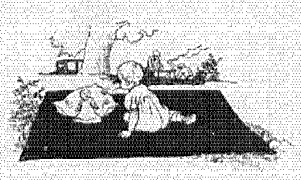
how many uses he can put such a blanket to and you are pretty sure to buy him one.

The many thousands of people who are in the habit of driving to the beach in their bathing suits will find these rubberized blankets a perfect solution to the problem of keeping the car upholstery dry when they drive home in their wet bathing suits. One of the blankets is large enough to cover the entire back seat of the car, and, of course, no moisture can get through it into the cushions. The same blanket can be stretched between the front and back seats of the car, as a screen for those who prefer to put their bathing suits on and take them off in the car.



By this time you should be convinced that the rubberized blanket which inspired this article is a good investment for many reasons—but the question is how to get one—and how much of an investment it is. Right here we have good news for you. You can get the blanket easily and for only $3.00.

A word is in order about the above price, which makes this blanket such an extraordinary value. Campal is made by the Hodes-Zink Manufacturing Company, of Fremont, Ohio. This company is one of the largest producers in this country of automobile accessories made from rubberized fabrics, if it is not the very largest one. During seasonal slack periods for their regular lines they can make up a large number of these blankets without adding anything to their equipment, sales organization or overhead expense. By passing these economies on to the consumer they make the price of the blankets so attractive that they can reasonably hope to keep their factory always running to capacity with this fill-in business.



Nothing in the quality of these blankets has been sacrificed to get the price down on them. The double-coated rubberized fabric is a du Pont product specially developed for the purpose. It has exceptional flexibility and weather resistance and assures blankets of good lasting qualities. All four sides of the blanket have turned, stoutly-stitched edges. Grommets and snap-fasteners are of ample size and firmly placed.

If you are to be one of the more than 10,000,000 automobile campers who will hit the trail this year, and if you are not already provided with enough good rubberized blankets for your entire party, write to the Hodes-Zink Manufacturing Company, Fremont, Ohio, or drop in on any of their dealers. The blanket to ask for is Campal—a good name for a real pal in camp.

Duco-Finished Car Wins at Indianapolis

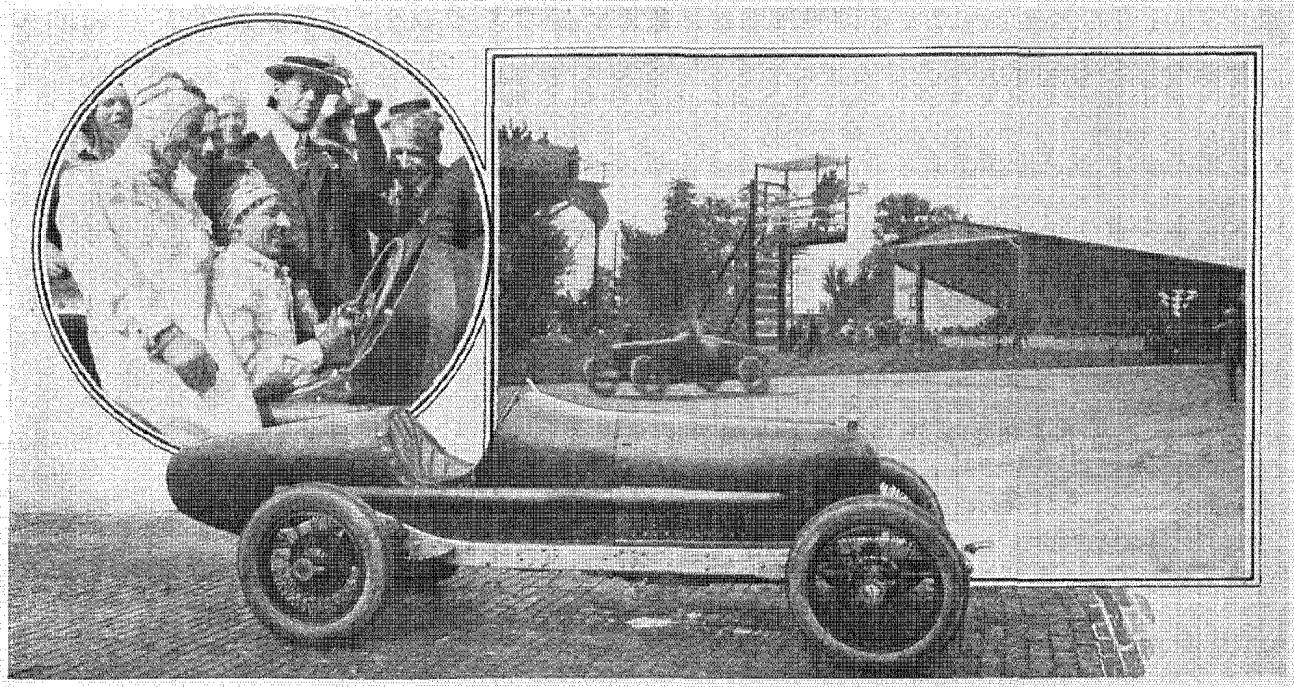


Photo by courtesy of Automotive Industries.

Of the 28 cars entered, 22 were Duco-finished, including the winning Duesenberg Special, driven by Joe Boyer and L. L. Corum. Right, Boyer earns the checkered flag of victory. Below, the winning car. In circle, Corum congratulating Boyer with Fred Duesenberg at extreme right. Duco takes its name from the Company; in Latin it means "I lead"

Battling the Bandits With Pyralin

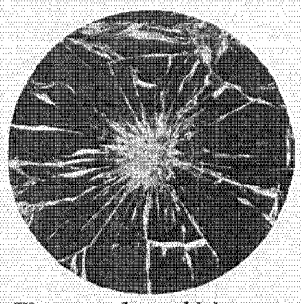
Defensively, of course. The windshields of bandit-chasing cars used by Philadelphia policemen are made bullet-proof with Pyralin

By L. B. STEELE

"THROW 'em up! Let's have what you've got—and make it snappy!"

Astonished, frightened, you comply—for that automatic poked against your ribs looks very convincing. You stand silent while your pockets are quickly frisked, and your watch and wallet transferred to the pockets of the man behind the gun.

"Keep quiet or I'll plug you," says he; then, jumping into the waiting car, his partner steps on the gas, and they're off in a flash. You dash to the nearest policeman or telephone booth and sound the alarm—but usually you're too late. The trail is cold when the chase begins, and your hold-up men escape.

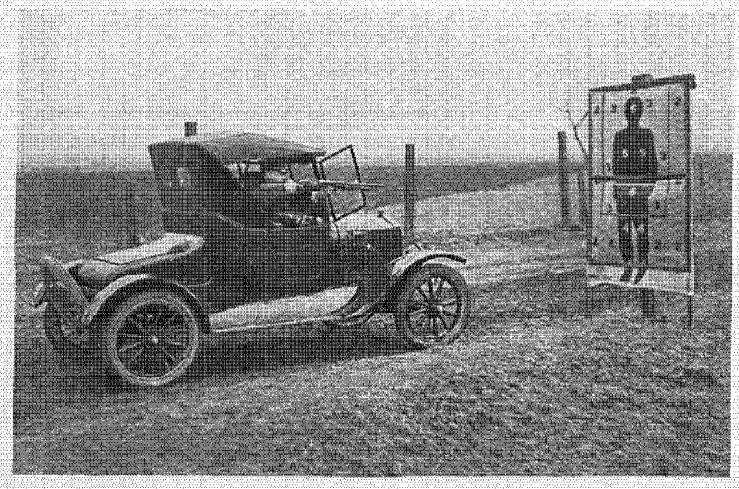


The worst that a high-power bullet could do to Safetee Glass —just cracked it—that's all

No, this isn't the recital of an episode in the days of Jesse James, but is an almost daily occurrence in many of our big cities in this year 1924. "Stick-up" men are everywhere holding up pedestrians, motorists, truck drivers, payroll carriers, trains, even trolley cars—lifting the valuables and speeding away in high-powered cars.

The police forces of these bandit-infested centers are taking all precautions possible to keep hold-ups at a minimum. Notably in Philadelphia, where General Smedley Butler, "the fighting Quaker," is Director of Public Safety, unusually effective methods of combating the activities of bandits are in force.

There is a splendid system of warning signals used to spread the news of a hold-up to all members of the police force in the city. Fleet bandit-chasing cars, manned by policemen with rifles, are stationed at strategic points ready for instant service. One of these cars is pictured here and deserves a word of description about its unusual equipment.



Courtesy of Philadelphia Evening Bulletin

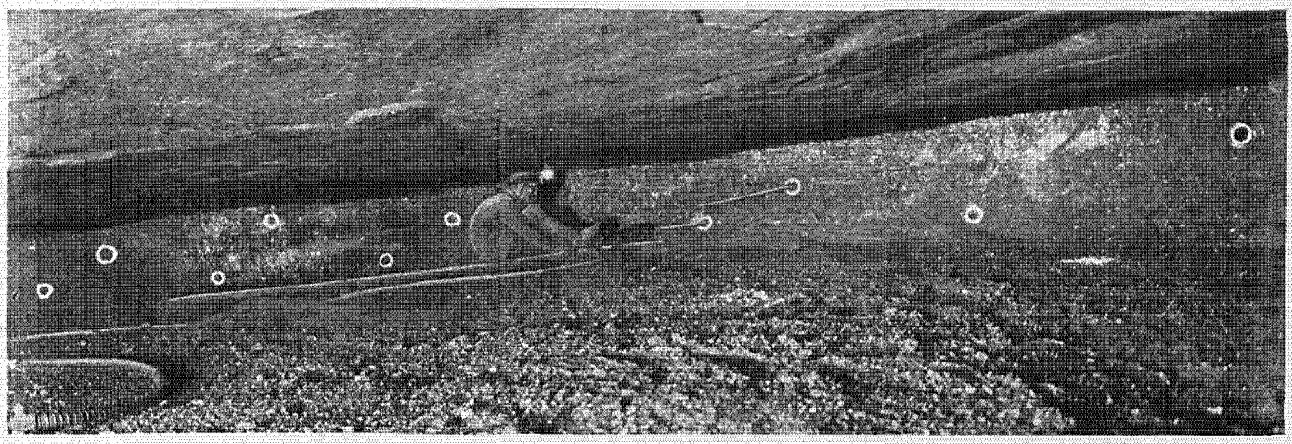
Philadelphia officer at target practice from a bandit-chasing car that is equipped with Safetee Bullet-proof Glass

Geared up for utmost speed, light weight for easy handling, these cars give chase to the bandits, and the battle begins. When close enough to shoot, the officers open fire, their object being either to cripple the bandits' car or force the occupants to stop. But many times the bandits return the fire and bullets come speeding back toward the pursuers.

The officers, however, are protected from this fire by bullet-proof windshields and wind-deflectors made of Safetee Bullet-proof Glass. To the casual observer this special glass has every appearance and possesses all the visibility of regular window glass. An examination of its edge, however, shows it is really three pieces of glass with two thin strips of Pyralin sheeting cemented between them. This sheeting retards the normal fracture of the glass under the impact of a bullet. When a bullet strikes it, there is no shower of flying pieces, but merely a cracking of the glass as shown in the nearby illustration.

These specially protected cars give the police the advantage in a gun-fire chase after bandits, and the Pyralin-made shields have many times stood up against well-directed bullets on a death mission. So useful and practical are these cars that other cities are planning to install them in the near future. And this is not surprising. For Safetee Glass was thoroughly tried out on the battlefields during the World War. It is claimed that more than 85 per cent of the glass used by the American forces was Safetee Glass, much of it having been made into gas-mask lenses, wind-shields and other pieces of equipment.

Its use for bandit-chasing cars developed from a similar use for windows in bank tellers' cages, theater and moving picture box offices, pay cars and bank collection cars, where employees who worked behind ordinary glass shields were exposed not only to the hazard of the bandit's bullet crashing through, but also to the hazard of flying glass should a pane be broken accidentally. Pyralin in Safetee Glass protects against such hazards. Its service in this way calls attention to only one of the many protective uses that have been found for it.



Blasting in a 30-inch seam. The chamber is 26 feet wide. First two holes at right are cut holes, fired with E. B. caps. Others were rotation shots fired with delay electric igniters; 2d holes with 1st delay, 3d holes with 2d delay, and so on

The Proper Use of Permissibles

Helpful points on blasting practice in the anthracite field are developed in this article

By GEORGE EVANS
Technical Representative
E. I. du Pont de Nemours & Co., of Penna.

PRIOR to 1908, the principal explosives used in the northern anthracite field were black powder, straight nitroglycerin dynamite and gelatin dynamite. Black powder and nitroglycerin dynamite were used mostly for blasting coal; gelatin dynamite, for blasting rock in tunnels.

These dynamites would stand a great deal of abuse and still give fairly good results when used. Very little trouble, if any, was experienced from partial explosions or burning in the boreholes, excepting when the dynamite was frozen or when black powder was the detonating agent. These dynamites, however, were not adaptable for coal blasting because of high velocities and high sensitiveness. The velocities were such that the shattering effect upon the coal reduced the yield of prepared sizes quite materially; also, the high sensitiveness made these explosives more dangerous to handle than others. Most of the nitroglycerin dynamite was used in coal along with black powder; that is, from two to four cartridges of dynamite were loaded in the borehole with from 8 to 24 inches of black powder as the detonating agent. This practice was dangerous, and it became quite evident that it was desirable to get an explosive which would blast the coal in better lump sizes and be safer to handle than nitroglycerin dynamite.

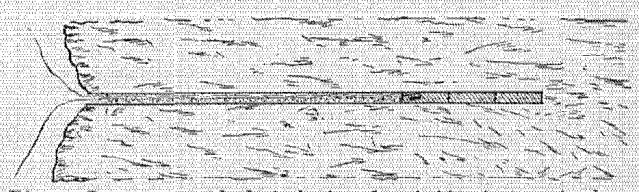


Fig. 1. Improper method of placing electric blasting cap in charge

It was about this time that permissibles—safety explosives they were then called—were introduced in the anthracite mines. Little attention was paid to these explosives at first except in gaseous mines, but after considerable missionary and demonstrating work, coal companies began to realize that these explosives were better adapted for coal blasting and were safer to handle than nitroglycerin dynamites. Today there are very few mines in the northern anthracite field that do not use some permissibles for coal blasting.

Almost all permissibles used in the anthracite mines are of the ammonia nitrate type, to which class the Monobels belong. The physical properties of these explosives are such that they cannot be abused to any extent without impairing their efficiency. All ammonia nitrate permissibles are susceptible to moisture; therefore, it is quite obvious that more care is necessary to protect them than the nitroglycerin or gelatin dynamites. This is especially true after the permissible has been taken into the mine. These explosives are packed at the factory so that they will withstand the effects of moisture for some time. The moisture-protective feature is destroyed, however, when the miner opens the original 25-lb. box and empties the contents into a bag, because it is easier to carry into the mines that way. After arriving at his working place, the miner puts the bag of explosives in his tool box and leaves it there until used. As a rule the bottom of this tool box is damp and sometimes quite wet, so that the explosive, if left there for any length of time, becomes affected and loses some of its efficiency. The storage of these explosives under such conditions brings about a deterioration which affects their sensitiveness to such an extent that at times when

from four to five cartridges are loaded in a borehole, only two or three will explode, leaving the others unexploded in the borehole or in the loose coal blasted.

Another bad practice which affects these explosives is when the miner, after charging the borehole, finds he has more explosive than is needed and places the extra sticks in a crosscut, on the gob or some other convenient place, leaving them there for hours, sometimes days, before using them. This is especially true of mechanical loader operations where from 12 to 20 holes are fired at a time, using delay electric igniters. Makeshift storage of explosives doesn't pay.

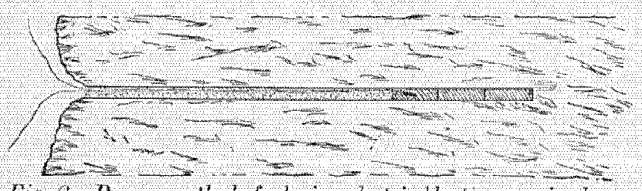


Fig. 2. Proper method of placing electric blasting cap in charge

All boreholes should be tamped to the mouth to obtain the full efficiency of these explosives. This applies particularly where jackhamers are used and more than one hole is fired at a time, using either delay electric igniters or fuse. Where delay electric igniters connected in series are used to fire from 4 to 20 holes, unless the boreholes are firmly tamped, the connecting wires of hole No. 1—which are also connected to hole No. 2, and the wires of No. 2 to No. 3, etc.—are likely to pull the primer cartridge of hole No. 2 far enough away from the other part of the charge to cause a partial explosion of the charge. Sometimes only the primer cartridge explodes owing to the distance between it and the other cartridges in the charge. When this occurs, say with hole No. 2, the coal remains in place intact, acting as a block to holes 3, 4 and 5, etc., so that the result obtained from these holes is practically nothing. Then it becomes necessary at times to redrill the face in order to blast the coal satisfactorily. This causes much extra labor and expense on the part of the miner who could eliminate this trouble to a great extent, at least, if he properly tamped the boreholes.

The same thing applies to fuse where it is used to fire delayed shots. The concussion from the hole fired first is likely to separate the primer cartridge from the other part of the charge unless the borehole is tamped properly, causing the same result as mentioned. The practice of using fuse for delayed shots, however, is a dangerous one and should be eliminated.

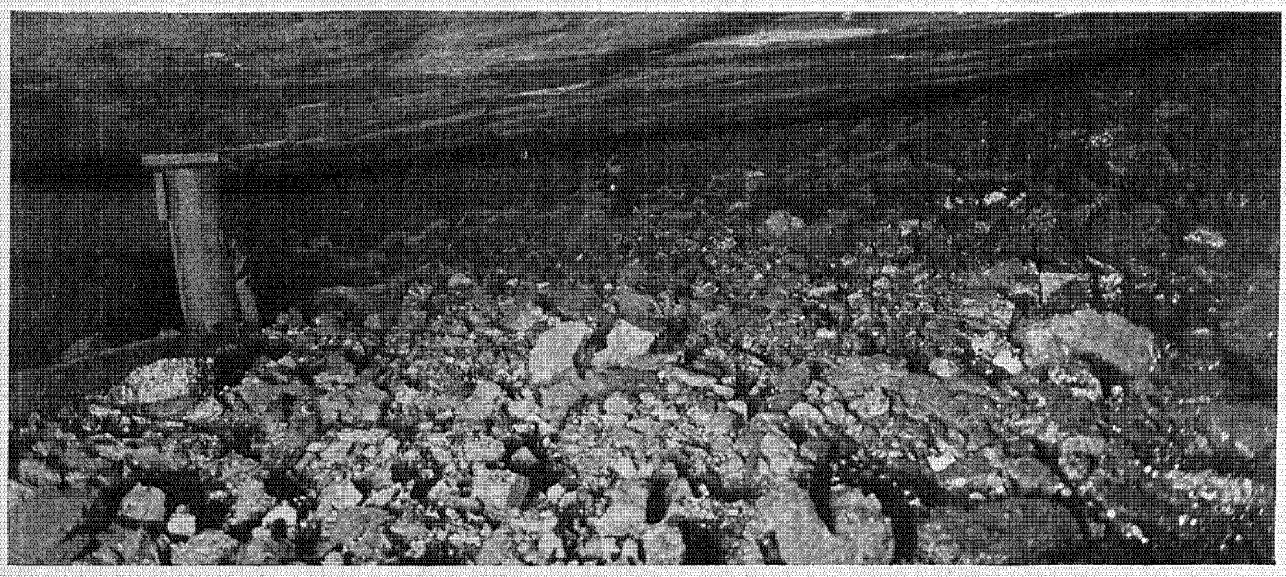
Coal dust in the boreholes also affects the proper detonation of ammonia permissible dynamites. Where jackhamers are used, a ¾ to 1-inch gas pipe is connected to the air line and then pushed into the borehole two or three times, so as to blow out the dust. This procedure does not clean out all of the dust, especially if these holes are from 6 to 9 feet in length. Enough dust remains so that when the dynamite cartridges are loaded a certain amount of this dust will lodge between the cartridges. The results of coal dust between cartridges of ammonia permissibles can be readily seen from the following tests, which were made by placing a certain amount of coal dust between two 1¼ x 8-inch cartridges of permissibles. No tamping was used and the charges were unconfined.

Result of tests with explosives not confined

½" coal dust between, 5 detonations of second cartridge
¾" " " " 5 " " " "
1" " " " 5 failures " " "

Note that one inch of coal dust was sufficient to prevent the detonation of the second cartridge.

(*Continued on page 12*)



The half-tone opposite showed where the holes were drilled and loaded. This shows you the result. Monobel No. 4 was used

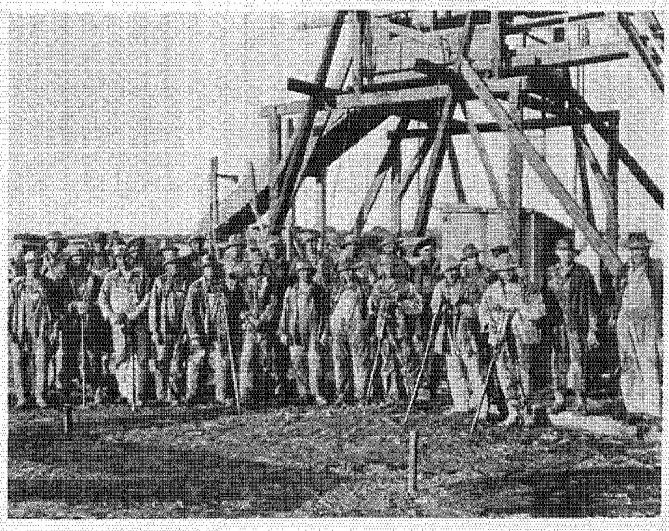
Opening a New Mine in Illinois

The Illinois Coal Corporation expects its new mine at Nason to produce from ten to twelve thousand tons a day

By R. A. SINCLARE
Contractors' Section
E. I. du Pont de Nemours & Co., Inc.

NASON, Illinois—where is it? You may not find it on your map, but this will help you locate where the town of that name is being built: Draw a straight line from Evansville, Indiana, to St. Louis, cutting through southern Illinois. Now about half way between these cities you'll readily find Jefferson county, and Mount Vernon, the county seat. Then let your eye follow down the page in a southwesterly direction, scale off eleven miles—and there you are.

It's a new town, and a new railroad from Mount Vernon leads to it. A gasoline-operated motor coach of the latest design makes two trips daily over the rails to give passenger service. The new town site is well located; natural conditions, such as drainage and water supply, are of the best. In the town, streets have been laid out and opened up, many new homes have been built, and a number of stores are now in operation.



The shaft-sinking crew at the Nason mine. These men made an excellent progress record in putting down the two shafts

There is a reason for this enterprise. One word explains it — coal; also the need for proper living conditions for those who will operate the mine now being developed there. In that vicinity the Illinois Coal Corporation owns approximately 30,000 acres of valuable coal land so situated that mining conditions are unusually favorable. The average thickness of the coal deposit is more than eight feet, with good roof and bottom strata, and the grades encountered are not exceptionally heavy.

Ground was first broken at the new mine March 27, 1923. The work of sinking "B" shaft was started April 23, and "A" shaft, May 8. The former is 12 feet 5 inches by 31 feet 5 inches, inside dimensions, and contains three compartments—two for hoisting and one for an airway. The latter is 12 feet 5 inches by 21 feet 5 inches, inside dimensions, and contains three compartments—two for hoisting and one for a stairway.

The strata passed through in sinking these shafts consisted largely of sandy shale and sandstone, although some limestone was found. Quicksand was encountered in both shafts at a depth of 70 feet, and this caused a loss of about six weeks' time in sinking operations. Notwithstanding this, "A" shaft was driven to the coal seam, at a depth of 720 feet, in 187 calendar days, while "B" shaft reached coal in 224 days. Considering the large dimensions of these shafts, and the difficulties encountered, the work was accomplished in a remarkably short period. At times as many as eight vertical feet of shaft were driven in twenty-four hours with the men working in three shifts of eight hours each. This work was done by the Illinois Coal Corporation under the direction of Mr. Garner Williams, general superintendent. Mr. J. L. S. Dowell had charge of the work at "A" shaft, and Mr. Matt Heck at "B" shaft.

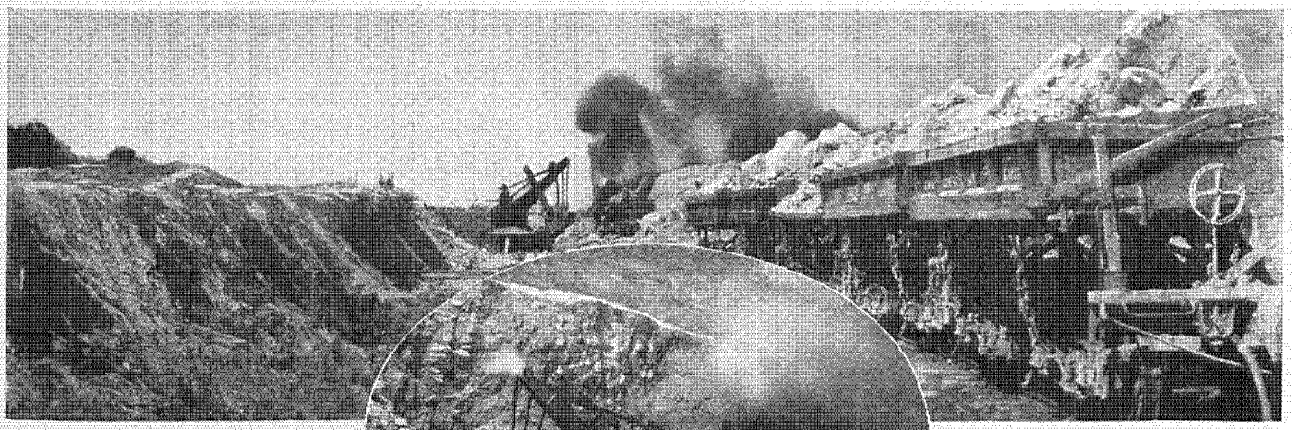
Du Pont explosives were used extensively in the shaft-sinking work. The boreholes were put down with rotator drills, the number of holes and the quantity of explosives used for a charge varying with the nature of the ground penetrated. From 37 to 60 holes constituted a round. The general practice was to shoot a sump cut crosswise of the shafts, although sometimes it was made lengthwise. At the start Du Pont Red Cross dynamite was used, but as the shafts were driven deeper du Pont 40 per cent gelatin dynamite was substituted as an explosive better adapted for use under closely confined conditions. Du Pont electric blasting caps and blasting machines were used to fire shots, and all electrical connections were tested with a du Pont galvanometer.

Since striking coal at these shafts development work underground and at the surface has been proceeding rapidly. This mine is destined to be one of the large producers of the country. When it is fully developed, from ten to twelve thousand tons of coal will be hoisted each eight-hour shift.

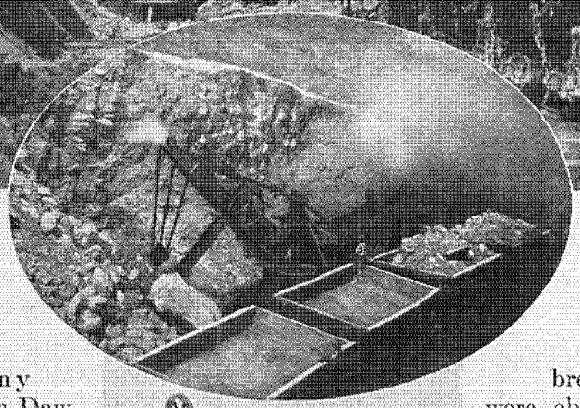
The Illinois Coal Corporation, which will operate this mine, also operates other mines in Montgomery county and in central Illinois. Albert J. Nason is president of this company and is naturally much interested in the new mine and in the town that bears his name.

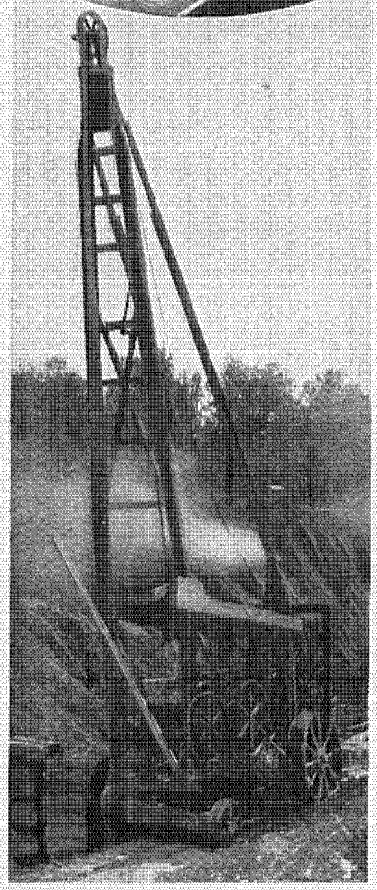
Railroad Work at Central City, Kentucky

By H. G. HORTON, Contractors' Section, Explosives Department



Above—A view of the excavation operation in one of the temporary cuts at Central City, Kentucky





Oval—Typical rock work in the "big" cut, Central City, Ky. Below—One of the drills at work

MORE than a year ago the Illinois Central Railroad Company started to build a new line from Dawson Springs to Central City, Kentucky, to give rail connections to new coal fields and to provide a larger outlet for mines now operating. This work was described in the June number of this magazine under the title "Opening a New Railroad in Kentucky," and mention was made of the necessity for revision of grades and alignment near Central City. A new yard just north of the city had to be built in order to take care of the increased business resulting from operating the new line.

The States Corporation of Chicago had the contract for this track elevation and yard. Approximately 1,000,000 cubic yards of material, about 75 per cent of which was rock, had to be moved. A large part of this was in one cut known as the big cut, which is about 4,000 feet long and 300 feet wide. Material from this cut was used in the construction of the yard and in elevation work.

On account of the shallow depth of the overburden, the blasting was done as follows: The rock was well-drilled 7 feet below grade and shot with column-loaded shots fired by Cordeau-Bickford. The rock varied so in hardness that many combinations of explosives were used to break it properly. Best results were obtained by using 40 per cent gelatin below the ground water line and 40 per cent straight dynamite above. Du Pont dynamite in 4 x 8-inch sticks was used in the well-drill holes.

Two large railroad shovels, mounted on "caterpillars," handled the job of excavating the big cut, which represented the greater part of the work. Two smaller shovels were used in the lighter cuts and also in cleaning up after the big shovels. All of them were equipped for night work, and from the start, operations were carried on daily in two 10-hour shifts.

The excessive rainfall of over 74 inches during 1923 greatly delayed the work of the contractor. It was impossible to maintain tracks anywhere without a foot of cinder ballast. Cinders had to be used, because the rock encountered in the excavation work soon deteriorated on exposure and generally proved to be unsuitable for ballast.

Operations were carried on under the supervision of Mr. F. L. Phipps, resident engineer for the Illinois Central Railroad Company. Mr. R. N. Samson superintended the work done by the States Corporation.

THE
DU PONT
MAGAZINE

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Vol. XVIII AUGUST, 1924 No. 8

Du Pont Calendars

HAVE you received yours? If you buy, sell or use du Pont explosives and blasting accessories, the chances are that one of these attractive calendars is now hanging in your office or store, for distribution has already been made to the customers of the Explosives Department. But there is still a limited supply of these calendars on hand, and we are permitted to distribute them among Du Pont Magazine readers.

This calendar, prepared for the Explosives Department, is 14 x 20 inches in size, with top and bottom edges reinforced with metal. The ornamental design is printed in four colors—gold, blue, red and black, forming a frame for the date pad, which is 10 x 12 inches. Each sheet shows three consecutive months, with the middle section showing the current month in a contrasting color to give it prominence. The calendar is designed to serve until April, 1925.

Address all requests for calendars promptly to the Advertising Department, E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware. "First come, first served" will rule until the available supply is exhausted.



The Du Pont Building, Wilmington, Del. (Published by request)

The Proper Use of Permissibles

(*Continued from page 9*)

Additional tests were made to determine what results would be obtained if certain amounts of coal dust were placed between two 1¼ x 8-inch cartridges of permissible explosives loaded in a borehole, but in this case with the charges well confined by tamping. Much better results were obtained as indicated below:

Result of tests with explosives confined

2″	coal	dust	between,	5	detonations	of	second	cartridge				
3″	"	"	"	1	"	and	1	failure	of	second	cartridge	
4″	"	"	"	1	"	"	1	"	"	"	"	
5″	"	"	"	1	"	"	1	"	"	"	"	
6″	"	"	"	1	"	"	1	"	"	"	"	

It will be noted that the first failure of a confined charge did not occur until two inches more of coal dust had been introduced than was the case with unconfined charges. This again proves that tamping boreholes full to the collar is necessary to obtain satisfactory results from these ammonia permissibles.

The position of the detonator, blasting cap or electric blasting cap in the borehole is also important. To obtain the best results, the explosive end of the detonator should point toward the main charge, not toward the mouth or collar of the borehole. See Figs. 1 and 2.

Some practical pointers

A brief summary of what to do and what not to do may be outlined as follows:

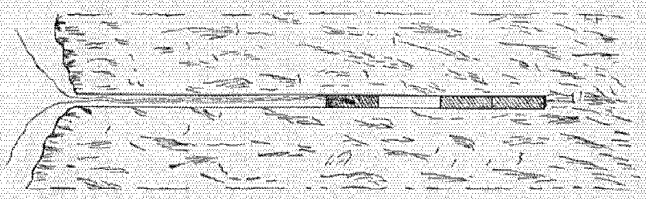


Fig. 3. Untamped Hole—Priming Cartridge pulled away from main charge due to explosion of previous hole

1. Carry the dynamite into the mine in the box. Store in a dry place away from the main air current as far as convenient.

2. Do not place unused cartridges of dynamite on the gobs or in crosscuts; return them to the box where the dynamite is stored.

3. Do not slit cartridges of ammonia permissibles when charging wet holes.

4. Fire wet holes as soon as possible after loading.

5. Tamp all boreholes to the mouth. Tamping is cheaper than dynamite; also, it will eliminate a great deal of extra labor and expense.

6. Scrape all dust out of the boreholes with a scraper made for this purpose. Coal dust between the cartridges will cause trouble.

7. Store blasting caps and delay electric igniters in a dry place. Moisture will affect them to such an extent that they will not function properly, causing trouble and extra expense to the user.

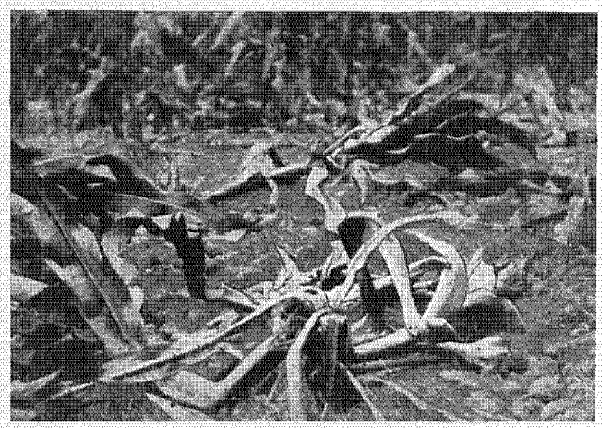
Is the Crow-Shooting Contest Justifiable?

"Let us face the problem squarely and throw away foolish sentimentality about the crow"

By F. A. HANAWALT
Professor of Zoology, Otterbein College
Westerville, Ohio

I HAVE read a great deal about the crow during the past few months and have come to the conclusion that the crow-shooting contest put on by the du Pont Company will do more than anything else to put the crow in his right aspect before the general public. Many people have approached me on the subject of crow shooting, many of them "knocking" the company that would use this means to increase the sale of its powder, and I have had the pleasure of convincing nine out of ten of them that there were other reasons for staging the contest, and that the contest would result in good rather than harm.

Many people who object to crow shooting know almost nothing about the bird and could not shoot ten crows in a week's time without special training. They think the contest will result in the near extinction of crows rather than the killing of a fraction of one per cent of the crows in our country. Little do they realize how crafty the crow is, or how reprehensible are his habits. We who have studied the crow in the field, year after year, know that he does both good and evil—the evil preponderating in most cases.



This photo, taken in 1919, shows corn blown down after crows had pecked into the base of the stalks. These birds ruined five acres of corn in one field

While a large part of the crow's food is made up of insects at certain periods of the year, it is also true that during the nesting season the crow constantly ranges the fields and forests for eggs, young, and even adults of other birds much more beneficial than the crow. One has only to watch a crow range over a meadow to find out how thoroughly he seeks for birds' nests. That every crow surely destroys ten nests of insectivorous birds each season is a very conservative estimate. Only those birds building well-covered nests in the meadows can escape. Robins nesting in places removed from farmhouses and cities have no chance against the crow and have long since given up the attempt to build their homes where man cannot protect them.

Since crows are such notorious egg-eaters, why can we not agree on the plan to reduce the number of crows and thus save millions of the smaller insectivorous birds that are unquestionably beneficial?

"There is no opposition to reducing the number of crows where they are destructive to crops and bird life," says *Bird Lore*, "but there is a decided opposition to a country-wide campaign of crow extermination." In localities where crows are scarce and therefore not particularly destructive to crops and bird life, nobody bothers to shoot them. In districts where crows are numerous and very destructive, this campaign provides an incentive to kill crows where protection against them is most needed. Its object is not extermination, but control of the crow. Practically speaking, this campaign is directly in line with the thought just quoted.

A gamekeeper I know has observed that crows eat many young rabbits, taking them right out of their nests in the clover fields. Four robbed nests were found in one small alfalfa field this spring. Another gamekeeper at the edge of a small town has had little success with his wild ducks, which have free range, because crows invade his back yard and eat the duck eggs as rapidly as they are laid. I have found the remains of several kinds of small birds in crow nests, among them birds as large as the bobwhite.

Crows are great chicken thieves in this part of the country. While driving about in this section it is not unusual to see at the edge of a chicken yard a dead crow suspended head downward from a pole. This type of scarecrow is usually a sufficient hint to the black rascals to keep away from the premises, but it isn't easy to get the crow for exhibit. One farmer a few years ago lost twenty-seven ducklings and about fifty young chickens as a result of crow depredations. Where a dead crow now hangs, more than one hundred chicks were taken before the farmer discovered that crows were regularly visiting his brooder coop, which was located only four or five rods from the kitchen door.

Crows are worse than hawks in taking young chicks, for a hawk usually gives notice by soaring above the chicken yard before he swoops down upon a stray chick. The crow makes more sure of his game. I have watched crows stealthily fly into a farm orchard and remain quietly concealed from the chickens—and the farmer, too—until some unsuspecting barnyard fowl came within striking distance. Chickens may become alarmed when a crow alights in a nearby tree, but they soon return to feed and are easily picked up.

(*Continued on page 16*)

Kodel As You Go

A complete long-distance radio set in a camera case

IN seeking to build a truly compact, portable radio set, what better model to follow than the camera, which for easy carrying and the effective use of every inch of contained space has long been a triumph of convenience. The Kodel Manufacturing Company has taken the camera as its model, and now, wherever you go, you can carry your Kodel set with you—phones, batteries, aerial, tube and all—just as easily as your camera.



The manufacturers claim this is the most compact and yet complete long-distance radio set ever built to make you and your radio inseparable. You can use the Kodel at home, in your car, on the train, in camp, at your office. You can open it and get your first station in less than a minute—you can close it and put it away even more quickly.

It is claimed for this set that many stations within a 250-mile radius are received without an antenna, using only a ground. Long-distance stations are received by stretching a short antenna in the room, and the set is so simple that a child can operate it.

Like many radio sets—and millions of cameras—Kodel is covered with Fabrikoid, so that it can withstand rain and exposure without injury, and will always present a neat, attractive appearance.

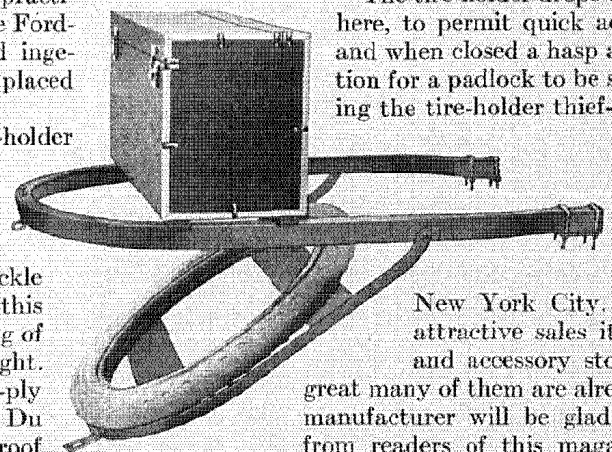
Kodel is comparable with the camera in price as well as in size. The price, without accessories, is $18.50. The accessories consist of a standard tube, dry cells and head set, which cost about $10.00 more at any good radio store.

A letter to the Kodel Manufacturing Company, 118 West Third Street, Cincinnati, Ohio, will bring you full information about the set, including the name of the dealer in your city who handles it.

The Ford-O-Trunk

An auto-trunk, rack, tire-holder and bumper—all in one

SINCE the trunk-rack, trunk, tire-holder and bumper all belong on the back of the car, what could be more to the point than to combine them all in one device? Our illustration shows how practically this has been accomplished in the Ford-O-Trunk, one of the most useful and ingenious Ford accessories that has been placed upon the market in many months.



In this device the trunk-rack, tire-holder and bumper sections are made of substantial angle steel and the whole is attached to any Ford model by lifting the body and simply attaching the arms to the frame. Two shackle bolts are supplied with the trunk for this purpose. There is no fussing or drilling of holes; just a few bolts to be screwed tight.

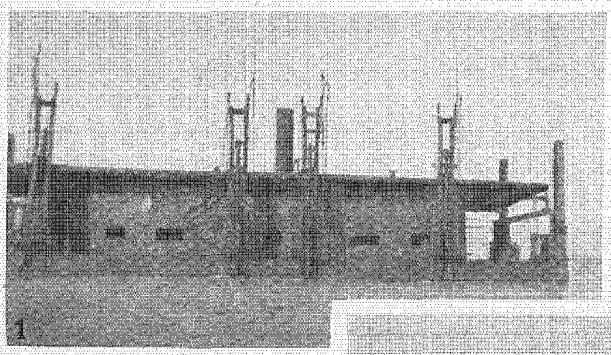
The trunk itself is made of three-ply basswood veneer and covered with Du Pont Fabrikoid to keep it weather-proof and of lasting good appearance. Its utility as well as its attractiveness is further increased by the aluminum metal with which the edges of the trunk are bound and reinforced. The trunk has good locks and catches and an extra storm cover is provided with it.

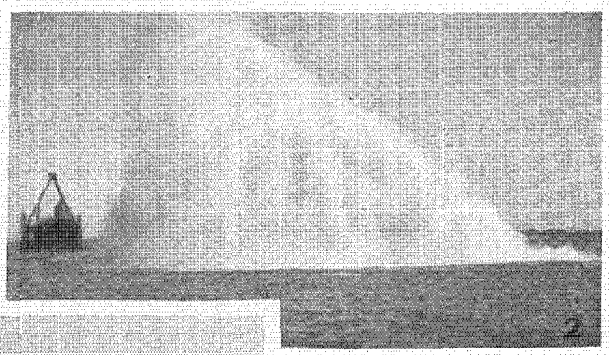
The tire-holder drops down, as we show you here, to permit quick access to the "spare," and when closed a hasp and staple are in position for a padlock to be slipped through, making the tire-holder thief-proof.

The Ford-O-Trunk is manufactured by Xcluso Auto Trunk & Specialty Corporation, 588–590 Broadway, New York City. It is an especially attractive sales item for Ford dealers and accessory stores generally, and a great many of them are already stocking it. The manufacturer will be glad to answer inquiries from readers of this magazine, regarding this moderate-priced accessory that transforms the Ford into a car of greater convenience.

Widening Livingstone Channel

Du Pont explosives are shown at work in the Lower Detroit River







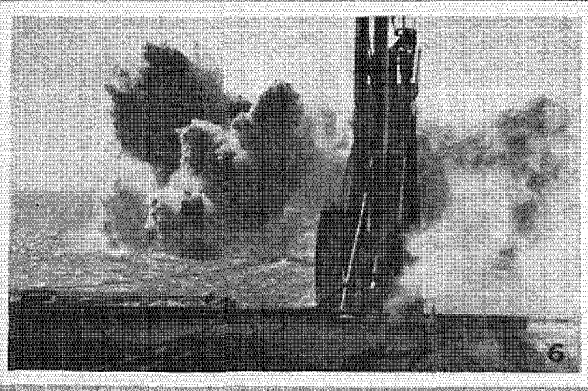
The dredging equipment shown is that of the M. Sullivan Dredging & Drilling Co.

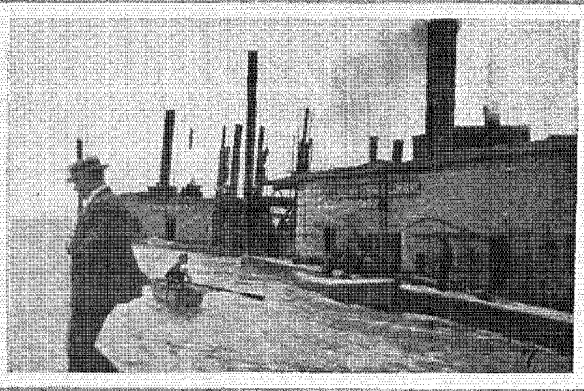
Photographs by courtesy of R. M. Roberts, U. S. Gov't Inspector, Amhersburg, Ont., Canada.





1. *Broadside view of drill boat putting down holes in the Detroit River bed.*
2. *One of the big blasts throws up a huge volume of water in the air.*
3. *Inspector Roberts standing beside a large rock brought up from below. Note the drill hole.*
4. *This rock taken from the Lower Detroit River bed weighed twelve tons.*
5. *A small blast stirs up the water at the surface, but imagine what happened below.*
6. *Du Pont explosives again in action. This view was taken from the top of the dredge boat.*
7. *Mr. H. Hodgman, U. S. Engr., and drill boats. Colonel Edward M. Markham, U. S. Engr., is directing the work.*





Is the Crow-Shooting Contest Justifiable?

(*Continued from page 13*)

The fact that crows pull up corn sprouts and eat the seed corn is well known. I know of one twelve-acre field that was about three-fourths despoiled by crows a few years ago. Many people do not appear to know that crows will attack the young corn stalks, when they are about waist-high. In 1919 I saw several fields attacked in this manner. One twenty-acre field was about one-fourth destroyed. The crows would walk along the rows and peck into the canes near the ground. Usually only one hole in a cane would be found, but sometimes as many as five would be found in a single stalk. Most of this corn grew to have ears upon it, but with the first high wind the greater part of the corn was blown down. Corn thus affected will blow down about the time the ear begins to fill out, if not before, and, of course, represents a total loss to the farmer.

To cite an example of how crow shooting achieves results, in August, 1919, I shot about fifty crows in the woods nearby one of these affected corn fields. Each spring since then a few crows have been shot or their nests torn down in these woods. Although crows still frequent the place, they keep well hidden and have not done any noticeable damage to corn fields nearby during the last four years.

Those who desire to know what gamekeepers and game wardens think of the crow will find an article entitled "Conservation in Virginia," by Col. McDonald Lee, game commissioner of Virginia, of interest. This article appeared in the April number of the 1924 Bulletin of the American Game Protective Association. It shows us that we must do something to control the increase of crows, now numbering, it is said, more than 200,000,000, in our country, according to a most conservative estimate by N. J. Allen.

The International Crow Shoot will accomplish good in more than one direction. It will be helpful in checking the increase of the crow, which is the main object. More important, the agitation aroused by this contest will be very helpful in acquainting the public with the true facts about this bird.

Let us face the problem squarely and throw away foolish sentimentality about the crow. He has been indicted on many counts for serious crimes against song, insectivorous and game birds of unquestioned value to man. He is entitled to justice, but nothing more. From my own study of the crow, considering both his good and bad habits, I do not hesitate to say that he deserves no better treatment than sportsmen and farmers in many parts of the country are giving him.

EDITOR'S NOTE: Details of the crow-shooting contest referred to in the foregoing article were outlined in the March number. The contest ended June 15, but at this writing complete returns are not yet available. We expect to publish the story of the contest in the September number.

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Yours very truly,

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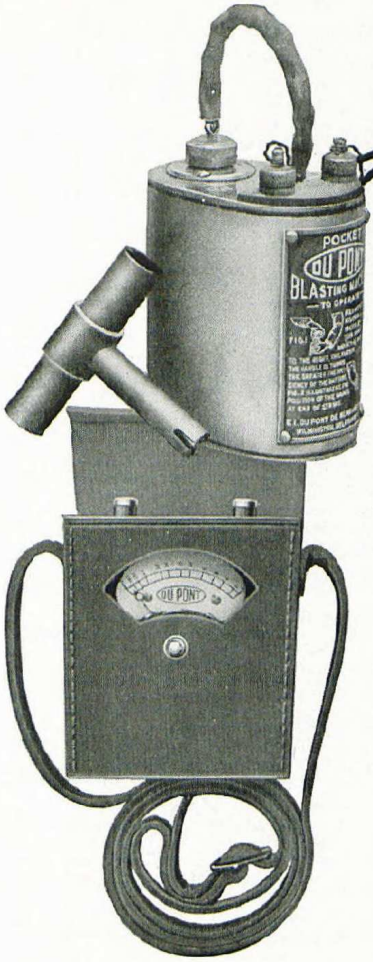



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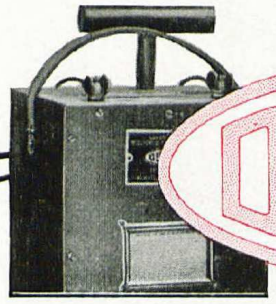

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