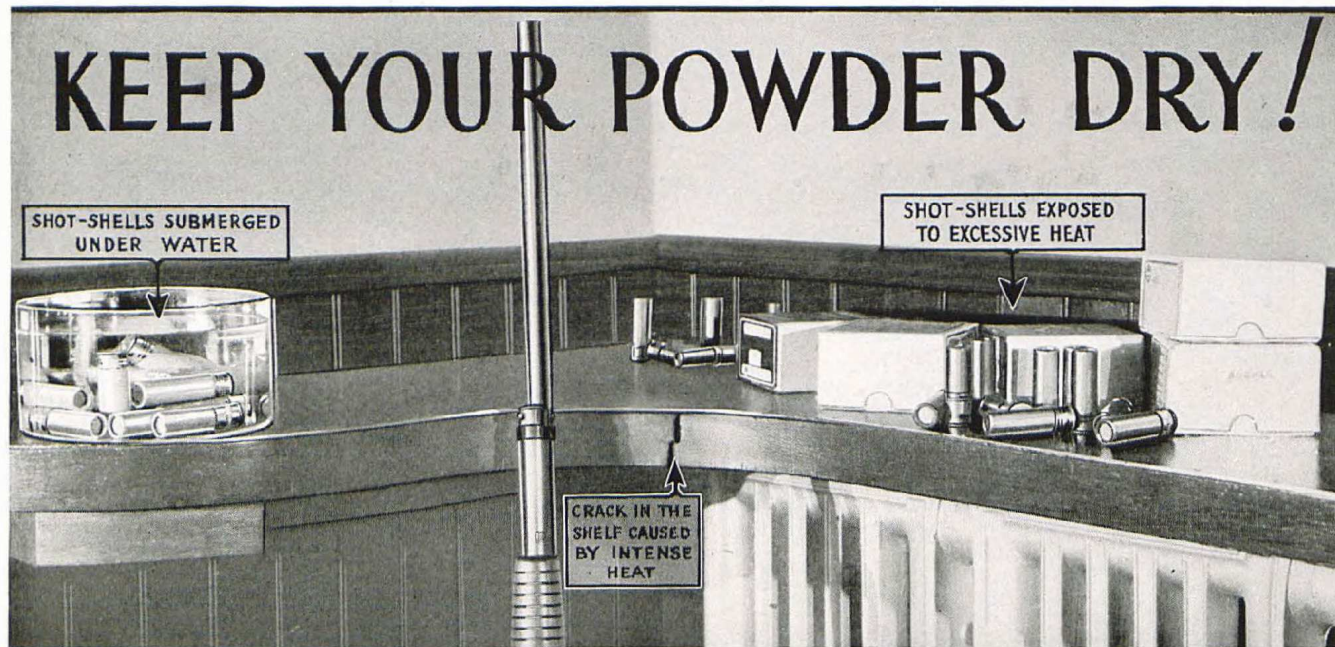






THE old slogan, "Keep Your Powder Dry!", has been handed down to sportsmen so many years that no one would think of storing his ammunition under water. Yet, how many sportsmen realize that the shot-shells exposed to *excessive heat* are *not dry*?

In the above illustration, the shot-shells on the left are submerged under water, while those on the right are exposed to a hot radiator—whose heat is so intense that the wooden shelf has been cracked!

The paper tube and wads of a shot-shell contain a certain amount of wax and oils. They solidify at ordinary temperatures, thereby increasing efficiency and flexibility, and also protecting the ammunition in damp weather from the moisture in the atmosphere. In the dry season, the wax and oils prevent cut-offs and other objectionable features. If the ammunition is stored in a hot, dry, stuffy atmosphere, then the solid wax melts and escapes from the paper tubes and the wads, rendering

them less efficient. Furthermore, the molten wax moistens both powder and primer, causing as disastrous results as does water, and also seriously impairing the ballistic performance of the shot-shell.

The modern shot-shells are very dependable servants in rain or sunshine, on the marshes, in the field—or at the traps. But when you put shot-shells away for future use, subject them to the same living conditions as you would choose for yourself—protect from rain, the sun, a hot, dry atmosphere, or moisture. The shot-shells are made to withstand the exposures of your hunting trip. Keep your shot-shells protected from excessive heat and moisture to ensure satisfactory performance.

The du Pont Company with its experience of 129 years and its present resources can supply to ammunition companies the type and quality of powders required to maintain the reputation of ammunition manufacturers and the confidence of the shooters.

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

Smokeless Powder Department, Wilmington, Delaware



Smokeless Shotgun Powders



For information on Target-Shooting, write to National Rifle Association, Barr Bldg., Washington, D. C., and for Trapshooting, write to Amateur Trapshooting Association, Vandalia, Ohio

THE DU PONT MAGAZINE

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No. 4

THE DYNAMITE FEAR COMPLEX

*Dynamite, when safely handled, is no more to be feared
than many other products of common use*

GOOD sense dictates that everyone should have a wholesome respect for explosives. They are dangerous products and should be handled and used with care. But dynamite inspires an unreasoning fear in the minds of many people. They turn pale at the mention of the word. Some of them think that if you touch a stick of dynamite, an explosion is imminent. If you move it from place to place, something terrible may happen. If you use it, you are courting the attentions of the undertaker, which is a fear complex, of course.

Gasoline vapor, too, is explosive. Indeed, it is asserted that in three gallons of gasoline there is as much potential power as in 249 pounds of dynamite, but page the man who dreads to drive his automobile on that account. Many a farmer goes to town in a motor truck well supplied with gasoline, yet you couldn't persuade him to ride home in the same vehicle carrying a single stick of dynamite—even if it were packed in a bale of cotton.

Years ago when dynamite was a new product, railroad companies, too, were skittish about carrying it. They would not accept this freight until they felt sure it would be safe to do so—a wise precaution at the time. Today, an enormous tonnage of explosives is shipped by rail under proper restrictions to insure public safety.

Last year, according to the recently-published report of the chief inspector of the Bureau for the Safe Transportation of Explosives and Other Dangerous Articles, approximately 500,000,000 pounds of commercial explosives were handled and moved by American and Canadian railroads without a life loss, a personal injury or any damage to property whatsoever. In fact, during the past four years about 2,000,000,000 pounds of black powder and dynamite have been carried, and here's the safety record: Fatalities, none; personal injuries, none; property damage, \$286. People who are afflicted with the dynamite fear complex may well ponder the significance of those figures.

Unfortunately, timidity is fostered by the fact that newspapers like to make every dynamite story a thriller, and sometimes reportorial zeal results in implications, exaggerations and misstatements which the public may accept as true. For example—

"Dynamite—Beware!" reads the headline of a news item which informs us that the "police trod *gently* through the police headquarters of the city this week. Three sticks of dynamite reposed there for several days.

"The explosive was handed to Motorcycle Officer . . . by a downtown resident who declared he had found it in his yard, and wanted to get rid of it. The policeman wrapped

each stick with *extreme* care and placed them in a candy box.

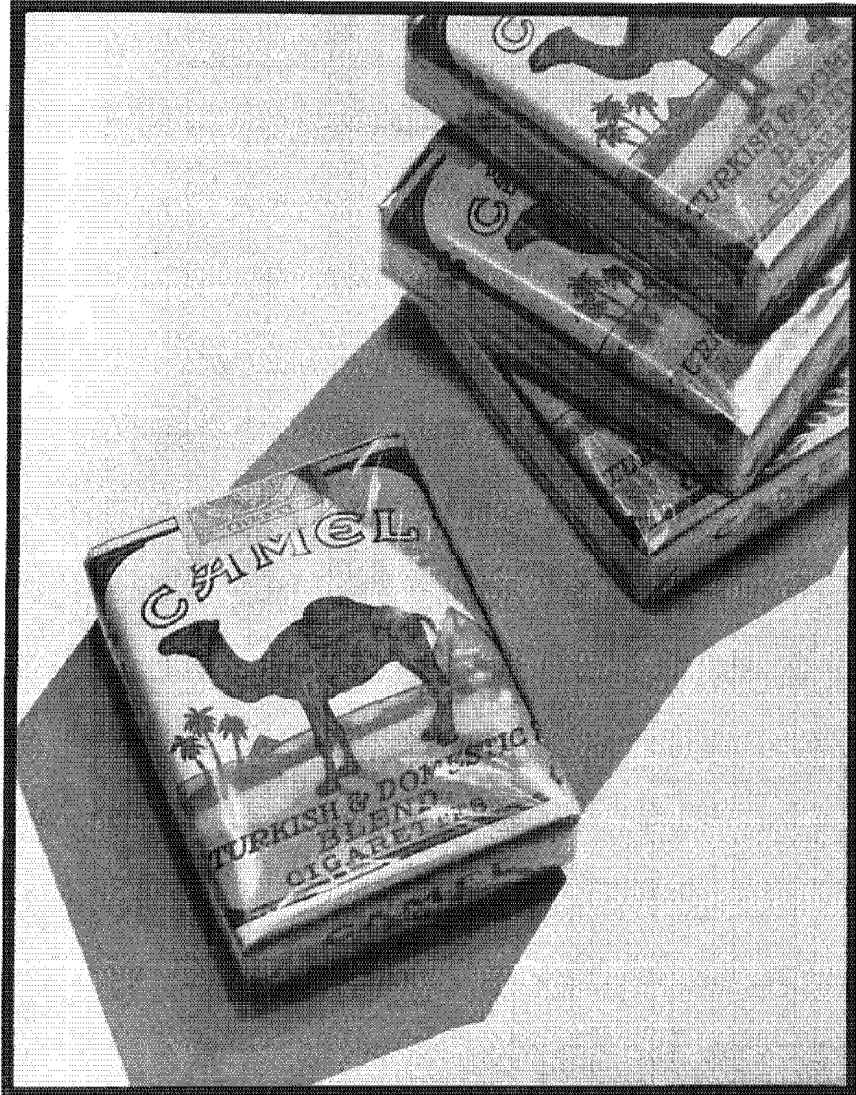
"At the police station, the box was labeled with a huge placard, 'Dynamite, *beware!*' Everyone did *beware* until a quarryman came and destroyed it." The italics are ours.

What a harrowing experience!

From another news clipping we learn that "eighteen sticks of dynamite, *enough to raze a city block*, were found wrapped in a newspaper at 11th Street and W. . . . Avenue shortly after Tuesday midnight by two pedestrians," who did not touch the explosive, but notified two patrolmen, one of whom "soaked the sticks in a tub of water and took them to the police station."

Any explosives manufacturer would pay well to know the formula of a dynamite as powerful as those eighteen sticks were said to be.

Dynamite is most frequently caricatured as a destructive agency. And the things villains do with it in the movies! Sinister situations discussed by the press, in the pulpit and over the radio are usually referred to as "loaded with dynamite." No wonder many people shy away from this product with almost a superstitious horror. And it is unfortunate, too, because thousands of them could and would use dynamite for constructive purposes, if they could only conquer their unreasoning fears.



Camel cigarettes as the smoker now receives them, in their sparkling wrap of moistureproof Cellophane.

CAMELS TAKE OUT QUALITY INSURANCE

The R. J. Reynolds Tobacco Company adopts the Cellophane wrap to insure uniform flavor and quality of cigarettes in any climate

By J. C. JORGENSEN

A FEW weeks ago a startling headline appeared on full pages in more than six thousand newspapers covering every state in the Union, at a cost of over one million dollars.

It reads as follows: "\$50,000 reward for the best answers to this question:

"What significant change has recently been made in the wrapping of the Camel package containing 20 cigarettes, and what are its advantages to the smoker?"

For two or three weeks Camels had already been on the market in their new Cellophane wrapper, and when

the prize contest opened the response was electrical. Everywhere, in every corner of the United States, those who smoked or who did not smoke, even those who hadn't written a letter for years, rose to the occasion, looked at the new package and began writing feverishly. Answers began pouring in by the hundreds of thousands to the contest editor of the R. J. Reynolds Tobacco Company at Winston-Salem, North Carolina.

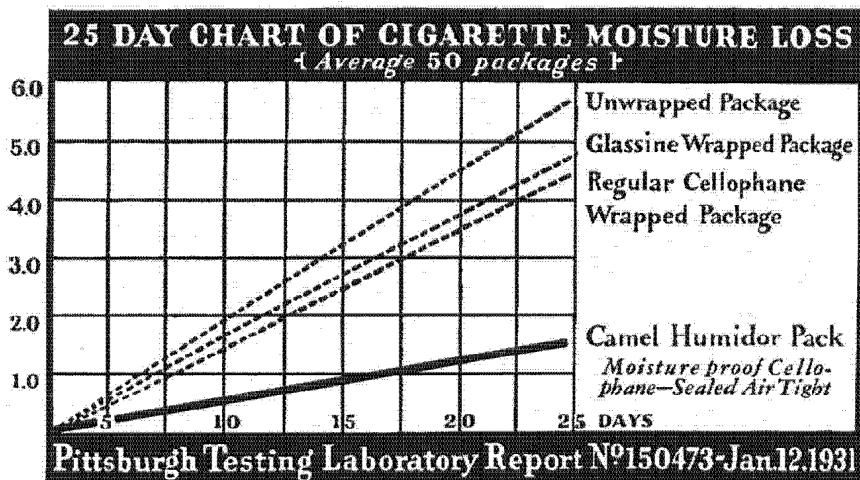
We are even told that an armored truck escorted by the militia was backed up at the Winston-Salem post office and the answers were transferred to it with the same regard for safety and security that one might expect if the Government were moving a great quantity of gold to or from the treasury at Washington.

Soon after followed additional advertisements containing the Reynolds Company's own explanation of its adoption of the Cellophane wrapper on the Camel package. In substance, the main objective was to insure freshness and uniform quality of cigarettes to the smoker.

Editorial comments in various tobacco trade papers referring to the new method of wrapping Camels tell the story completely. One of the leading publications in the field, *The Tobacco Leaf*, said in part:

"One of the heretofore apparently insurmountable difficulties of the cigarette manufacturer lay in the absence of any practical method for maintaining effectively the condition of cigarettes until they reached the smoker. No moistureproof material that was practically usable was on the market, and even if the material had been available, no machine had been developed which would put the material on the package with all joints tightly sealed. The problem was, therefore, twofold.

"The invention and introduction of moistureproof Cellophane by the du Pont Company seemed to answer the



This chart graphically shows that only the Camel Humidor Pack delivers cigarettes to you in prime condition

condition in which a cigarette is at the time of smoking has almost everything to do with his comfort and enjoyment while smoking it.

"The Reynolds Company feels that the moistureproof Cellophane wrapping with the tight seal, with which every package of Camel cigarettes now goes to the smoker, will prove the greatest boon to smokers in a generation and the most outstanding improvement developed by any manufacturer in the history of cigarettes."

It used to be said that the same cigarette tasted differently in every state in our country. This was due to exposure, to changing atmospheric and humidity conditions, and also to the distance the cigarettes had to travel and the time consumed in reaching the smoker. Now it is interesting to learn that we may smoke Camels in Winston-Salem, where they are manufactured, in mile-high Denver, in tropical Manila, or in the frigid Yukon, and find them all of the same uniform flavor and quality.

question of what material could be used, and the R. J. Reynolds Tobacco Company, through its own laboratory and in collaboration with other scientists, proceeded to make studies and laboratory tests and experiments through a long period of months. Out of these experiments came the conclusion and proof that moisture-proof Cellophane was the long-looked-for material.

"Meanwhile, through its own mechanical department and in collaboration with a machinery company, another line of experimentation was being carried on with a view to developing a machine which would apply the moistureproof Cellophane

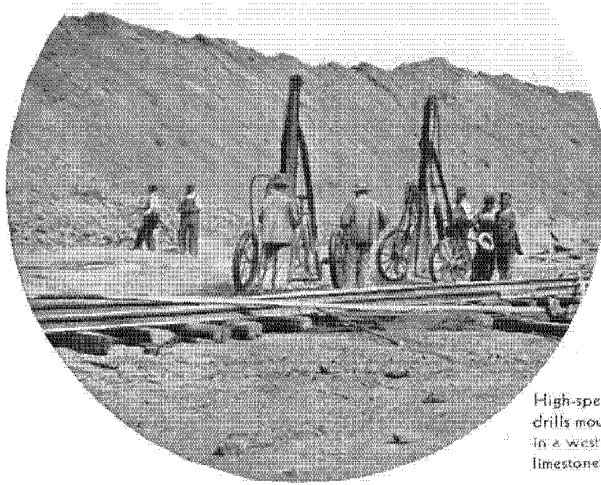
with a seal as tight against moisture as is the Cellophane itself. With such a machine eventually developed, the Reynolds' plants were promptly equipped with it and all production was immediately put in the moisture-proof Cellophane wrap under the tight seal, made possible through the new machines.

"It is reported that the laboratory test for moisture loss of cigarettes wrapped in moistureproof Cellophane under the new tight seal is at a rate of only a fraction of the moisture loss in an unwrapped package or in a package wrapped with the glassine paper in ordinary use.

"Every smoker realizes that the

Contestants' letters being transferred from the Winston-Salem post office to an armored truck, guarded by state militia, for delivery to the Reynolds Company





High-speed hammer drills mounted on wagons in a western Pennsylvania limestone quarry

QUARRYING VANPORT LIMESTONE

A résumé of blasting practices employed in western Pennsylvania operations

By C. H. COALE

PITTSBURGH, Pennsylvania, is best known as an industrial center because of the enormous tonnage of iron and steel which is produced there. Most of us think of this city and its environs as a panorama of great mills and furnaces where great trainloads of iron ore are converted into an endless variety of fabricated products. Indeed, the manufacture of iron and steel looms so large that other col-

lateral industries are at least partially eclipsed. Coal and coke are of major importance. Fuel always is—everywhere. And limestone, too, is an essential part of the picture, for without an abundance of fluxing materials the iron and steel industry would soon cease to function.

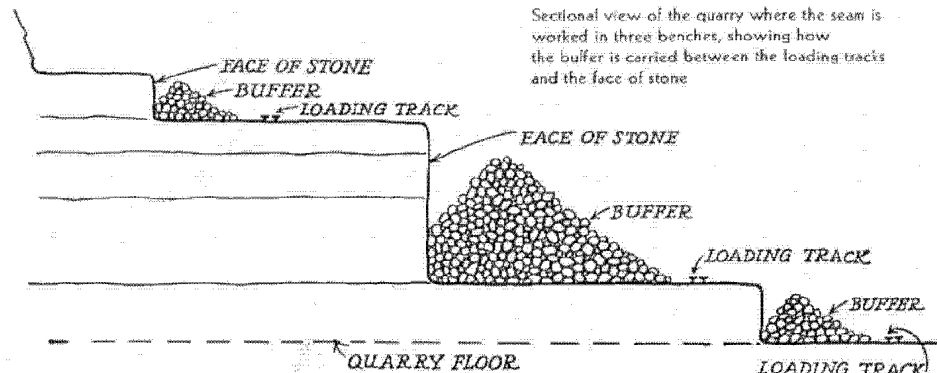
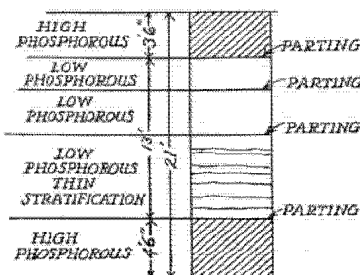
Nature set the stage for the present-day development of this region by providing ample supplies of these raw

materials. Enormous quantities of Vanport limestone are obtained from the workings in Lawrence, Armstrong and Butler counties in western Pennsylvania for use as a flux in the steel mills of that district, for road building and for the manufacture of portland cement. Much of this stone is mined underground, but where the overburden is not excessively deep, open-pit quarrying is also extensively practiced.

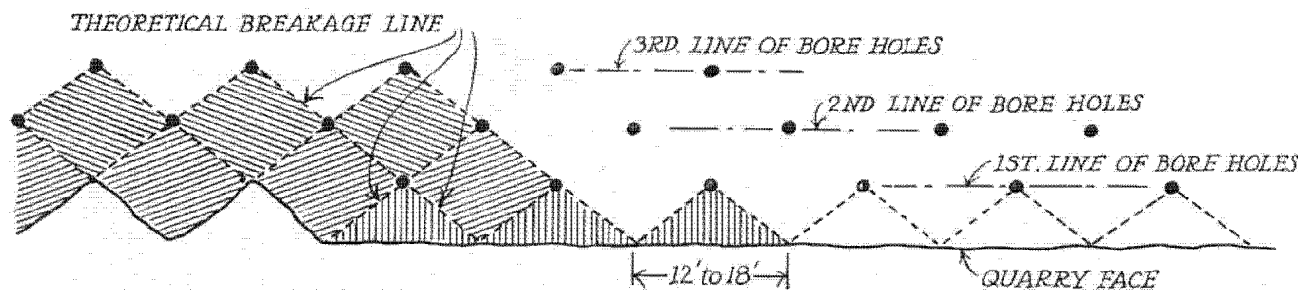
This limestone deposit does not exceed twenty-two feet in thickness at any point, but because it lies in ledges of quite different character, it is generally advisable to quarry it in two, or sometimes three, benches. Whether it is worked in benches or full face, a buffer is usually carried; that is, instead of cleaning up the material broken by each blast, the whole or a part of it is left in place until the next blast has been fired. This blanket or buffer of stone affords stronger resistance for the charges than could otherwise be secured in a properly balanced shot in a low face, and thus increases fragmentation. Furthermore, in quarries where the space between the loading track and face of stone is limited, the buffer acts as a protection for the track by preventing the rock from being thrown out so far.

The drilling in the Vanport seam is done by either well drills or high-speed hammer drills. The well drill has gradually lost in popularity, and the high-speed, self-rotating hammer drill is now more generally used. These are mounted on low wagons for convenience in handling, as one of the accompanying illustrations shows. Steel of 1¼-inch diameter is used to drill holes. A change of steel for every seven feet of bore hole is the usual practice, the bit being de-

Below—A representative cross section of the Vanport limestone seam



Sectional view of the quarry where the seam is worked in three benches, showing how the buffer is carried between the loading tracks and the face of stone



A plan view showing the quarry face where single holes are shot.

creased in diameter $\frac{1}{16}$ inch with each change. Bore holes start at $1\frac{3}{4}$ inches to 2 inches in diameter and finish about $1\frac{5}{8}$ inches, so that they will accommodate $1\frac{1}{2}$ -inch cartridges of dynamite. This type of drill is very fast. Many operators drill from 40 to 50 feet per hour.

On account of the frequent partings, bore holes are usually drilled only to the desired depth, not below grade. While small-diameter holes have to be spaced closer than well-drill holes, the greater speed and economy of operating hammer drills far offsets this seeming disadvantage. Moreover, the smaller holes can be loaded higher with explosives and this, with the closer spacing, results in better primary fragmentation.

Two methods of primary blasting are used: First, firing single or multiple rows of holes by means of electric blasting caps; and second, single-hole blasting by means of blasting caps and fuse.

In the first method holes are spaced from four to five feet apart, depending upon the height of the bench being worked. From thirty to four hundred holes may be fired in a blast. The common practice is to fire from electric power lines but blasting machines are also employed to some extent. When power current is used, caps are connected in parallel series, usually a maximum of twelve or thirteen caps to the series.

The graph on this page illustrates what is commonly referred to as the single-hole method of blasting. By this method the drill holes are placed along the face of the stone at 12- to 18-foot intervals and are shot with blasting caps and fuse, leaving an irregular saw-toothed face. Each successive row of bore holes is then located so as to work to the best

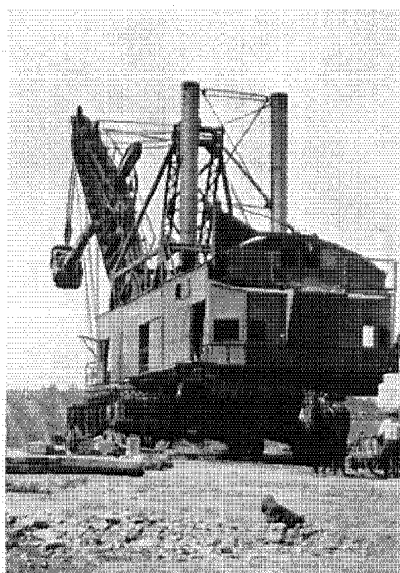
advantage in the points left by the previous blasts. Somewhat heavier charges are necessary on account of the increase in burden resulting from the wider spacing of holes, but this is offset by the decreased drilling cost. Of the two methods in use, the simultaneous firing of a whole row, or of a number of rows of holes, is the more general practice.

Several kinds of explosives are employed successfully in this buffer blasting. Formerly forty per cent quarry gelatin was the most extensively used. It gave the most satisfactory results both where the full ledge was blasted and also where the face was worked in benches. Particularly was this the case if the holes were wet and a large number of them were fired in one shot so that the charges loaded first had to be left standing for a considerable length of time.

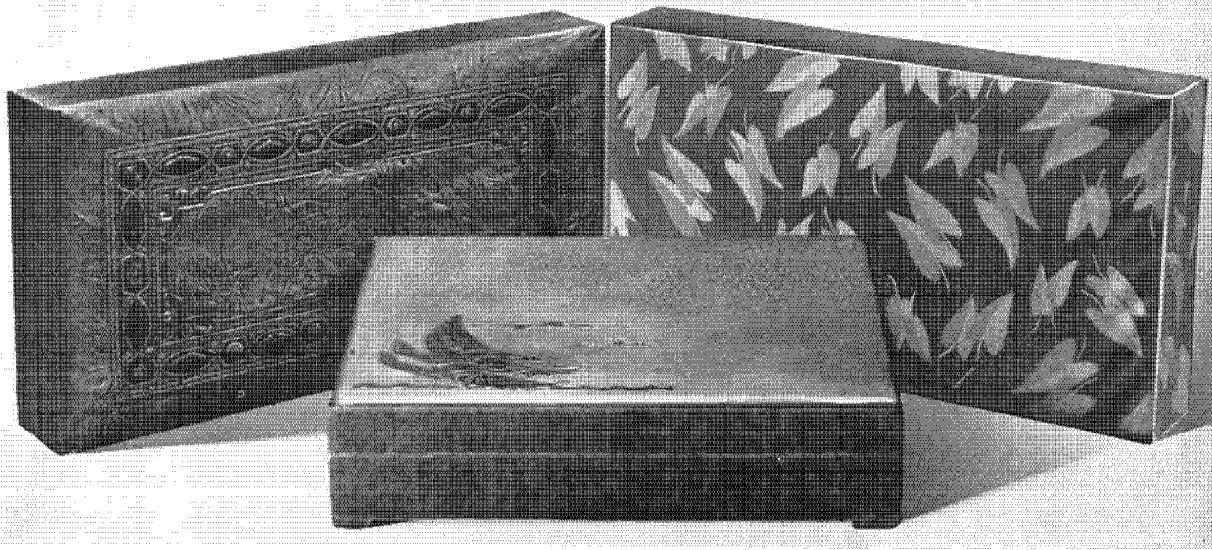
When the water resistance of a gelatin was not needed, forty per cent Red Cross Extra was found very satisfactory for bench blasting. When low-density ammonia dynamites were developed, they were substituted to some extent for the forty per cent ammonia explosives previously used. Du Pont Extra C is one of these bulky ammonia dynamites which has given good results in bench blasting. Recently semi-gelatin dynamites have been tried in comparison with both forty per cent quarry gelatin and the ammonia dynamites. Gelex No. 2, a representative of the semi-gelatin type, has given

very good execution in both the full face and the 13-foot bench. Where the Gelex can be substituted for gelatin on a cartridge basis it affords a substantial saving in explosives costs because it is considerably bulkier—87 cartridges, $1\frac{1}{2}$ by 8 inches, to the 50-pound case instead of 62. Some little 60 per cent gelatin is used where the holes are drilled with wider spacing and for this either Gelex No. 1 or Gelex A would be an economical substitute. For secondary blasting 30 or 35 per cent ammonia gelatin, in 1 by 8-inch cartridges, seems to be the most satisfactory explosive.

Carrying a buffer would neither be a practical nor desirable method of quarrying where the face is over fifty or sixty feet high, but in the Vanport limestone very satisfactory costs are secured—around six to seven cents per foot of bore hole for drilling with the high-speed hammer drills, and a breakage of approximately $2\frac{1}{2}$ to $3\frac{1}{3}$ tons of limestone per pound of explosive.



Shovels of this type are used to remove the overburden before the limestone can be blasted



THEY CAN BE USED AGAIN AND AGAIN

"A thing of beauty is a joy forever." For instance, the Fabrikoid-covered boxes illustrated here

By R. A. APPLEGATE

FOR many years packages, boxes and containers for various products have been designed from three stand-points—facility of production, convenience and attractiveness. Experience and research have convinced the manufacturer that housewives today are becoming more and more "sold" on the idea of visibility and cleanliness in the things they buy; hence the steadily-increasing use of Cellophane. And they are becoming more fastidious, which occasions the hundreds of dainty boxes, vials and containers, each with its individual shape and size. Many manufacturers have also learned that attractiveness in a package goes more than fifty per cent of the way toward clinching and speeding up sales, which accounts for so many beautiful colorings, textures and designs in boxes of today.

High style in a modern box or product container usually means to a woman purchaser that the contents are most desirable. In any event, if she is buying gift merchandise or

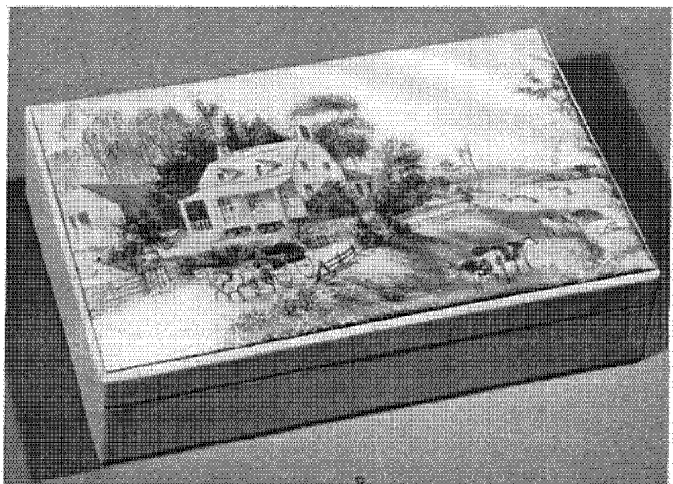
articles in the jewelry, toilet goods and candy class, she will aim to select the smartest package available.

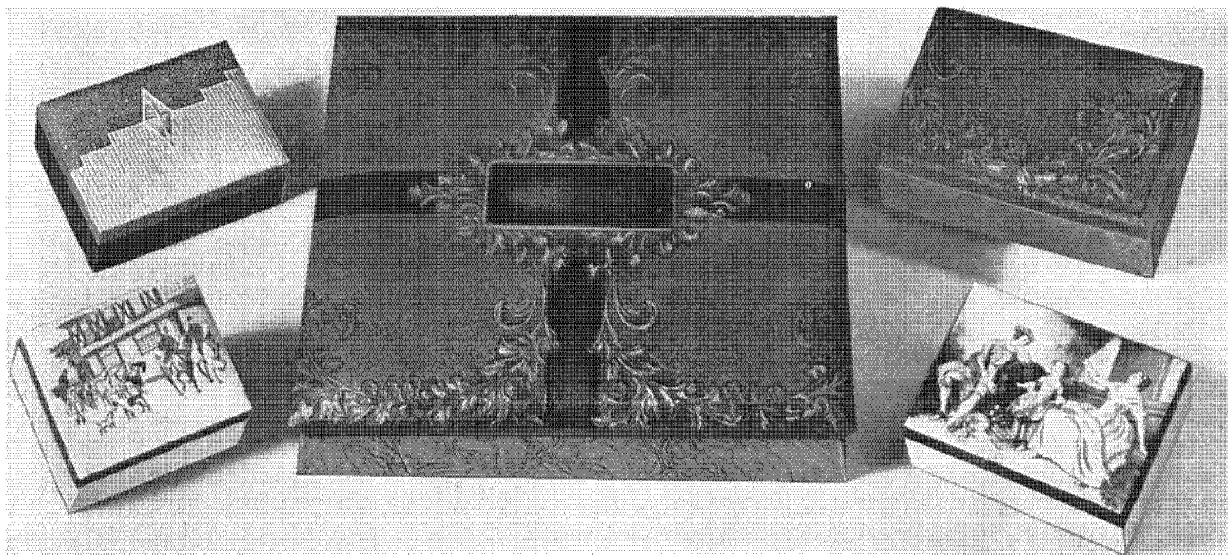
This twentieth century packaging, which might be termed both an art and a science, is now faced with a new and important development, the tendency on the part of the consumer to make further use of manufacturers'

Here are two different treatments of Fabrikoid-covered boxes. At the center and left are Italian two-toned effects, with embossings to simulate hand tooling. At the right is a printed design, graceful and colorful, meant to delight a woman's eye

original packages. This may be a natural form of evolution occasioned by the present period of fashionable thrift. Or it may be a "throwback" from the old practice of fifty years ago when our mothers used the much-cherished flour bags for straining jellies or making towels. Or perhaps it is due to the fact that packages of today are so attractive that they invite further use. In any case, the practice is becoming universal among consumers—so much so, in fact, that leading manufacturers are deliberately

A pictorial design on Fabrikoid. Lithography brings out those soft, lovely tones better than any other process, and shows to excellent advantage on this material





designing their boxes with a definite selling idea that they be re-used after the original contents have been removed. This, of course, is a "plus" value to the consumer and is directly in line with present-day economy. To the manufacturer it represents a lasting advertisement for his product and a good-will builder as well.

An article by Waldon Fawcett entitled "Life Extension of Packages" appearing in *Modern Packaging* cites a few examples that definitely indicate the trend in this direction. One manufacturer of soap chips is delivering his product in cotton bags, which are in turn passed on to consumers by the laundryman to be used as catchalls for soiled linen, dusting cloths or aprons. Another manufacturer sells his product in an artistic jar which

may be converted into a table lamp by the addition of an electric light bulb. Other products definitely designed with a re-use value include confectionery boxes in the form of a treasure chest to appear later as a cigarette, jewelry or sewing box.

Still other manufacturers are designing their product containers to hold ensembles that can be refilled and placed in the original package. This practice is followed principally by makers of manicure sets and toilet preparations. However, probably the most ingenious and practical extension of this re-use idea in packages is a new sheet and pillow-case box. The inside of this interesting and durable box is the regulation backgammon board—ready for use.

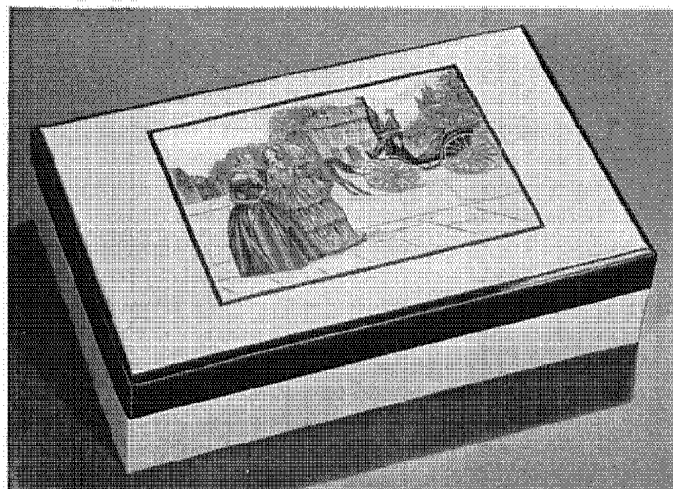
Such is the trend in modern product

The box, upper left, shows a metallic design and evidently is made for products with the 1931 flair for style. The one in the center must have been designed for something the manufacturer was very proud of. This box and the smaller one, upper right, are in Spanish effects, with embossing in the hand-tooled manner. The lithographing on Fabrikoid-covered boxes, lower left and right, is especially effective.

containers. And, along with it, manufacturers are striving for smart style, beauty and permanency in their boxes. Whether it be a toilet preparations container that is to be used later for sewing, or a candy box that is to grace milady's dressing table in the form of a jewelry or make-up box, it must be artistic in design, smart in appearance and serviceable.

In order to meet such requirements for box coverings, a number of manufacturers have turned to Fabrikoid, asking for the assistance of the Sales Promotion Bureau of the Fabrikoid Division. And they have found many interesting textures, colors and designs from which to select—some in printed effects, some lithographed in lovely old prints, some airbrushed, some in rich, satiny textures—and all containing those important requisites of style, durability and ease of cleaning.

Manufacturers who are interested in further developing boxes for greater re-use value to the consumer should write to the Sales Promotion Bureau of the du Pont Company's Fabrikoid Division at Newburgh, New York.



Still another lithographed design, meant for something very chaste, with a heritage of quality behind it. Boxes like those shown here are designed for permanent use.



The improved entrance to the du Pont Exhibit

AN EDUCATIONAL SERVICE

PRODUCTS of chemistry enter into the manufacture of thousands of articles, but their identity is not often recognized. Of course, some of them are wholly consumed in factory processes. Others are revealed in the finished merchandise to a greater or lesser degree, as the coloring in a rug or the finish on a fine piece of furniture. Still others are fabricated into useful and beautiful articles of a truly amazing variety. But the public does not think of them as essentially chemical products and does not know much, if anything, about their primary sources of supply. Manifestly, the reason is that in the industrial drama chemistry's part is played behind the scenes.

Fifteen years ago the du Pont Company saw an opportunity to render a service. Its products did fit into the picture of American industry—intimately. Manufacturers who purchased and used them knew about their properties and qualities and

The du Pont Exhibit is a popular Boardwalk institution at Atlantic City, New Jersey

were familiar with some specific applications, at least within the scope of their own businesses. But the public at large did not sense that du Pont products had any connection with articles commonly used in the home. So plans were made to visualize this, and the Boardwalk was selected as the place to put on the show.

Many considerations recommended this choice. Millions of people from coast to coast visit this shore resort each year. They represent more nearly a cross-section of the nation's population than is normally found outside of metropolitan centers. Moreover, scores of conventions are held there, and those who attend are usually in a receptive mood to enjoy the attrac-

tions of the place. At any rate, in April, 1916, a small store on the Boardwalk was leased and in it was assembled for display purposes a collection of finished merchandise, all of which was made wholly or in part of one or more du Pont products.

At that time almost everybody associated the name du Pont with two classes of products — commercial explosives and propellant powders, which was natural considering that the company had specialized in powder making for more than a century. That the company also produced Fabrikoid and Pyralin was not well known. Why should du Pont be interested in them?

The reason was obvious to chemists, but not to others. So the du Pont Exhibit offered a means of clarifying this and also of showing how representative manufacturers — customers of the company — were fabricating these materials into a great variety of salable merchandise. Interesting

displays were arranged and they attracted much favorable attention. Throngs of people visited the place daily and went away with an entirely new conception of what chemistry means to industry and to the home.

Following the World War further expansion of the company's activities resulted in many additions to the growing family of du Pont products. These, too, needed an introduction to the public, so merchandise displays featuring them were staged at Atlantic City. The increased number and variety of articles shown intensified interest in the exhibit, but it eventually became embarrassing to the management because there was not enough room to arrange effective displays.

That condition was corrected in 1920 when the du Pont Exhibit was removed to 1121-1123 Boardwalk in the Haddon Hall Block, the present location, which is near the Steel Pier and in the center of activities. Within a radius of three blocks are sixty-seven large hotels, not to mention many other small hotels and boarding houses. Twice as much floor space

was now available. With new and more commodious quarters and more window space the exhibit staff was able to arrange merchandise displays to better advantage than had been possible before. New accessions to the collection were made regularly, new attractions were developed and each year more people came to see this unique, educational exhibit.

During the past decade it has become one of the outstanding Boardwalk attractions. For example, in 1929, a representative year, more than 341,000 people from every state of the Union and many foreign countries made a personal inspection of the merchandise displayed there.

In the show windows of this exhibit there is always something new and interesting to see, and likewise inside. Changes are frequently made. Last year, for example, 115 distinct window displays were set up, and the number of interior displays reached a total of 533, includ-

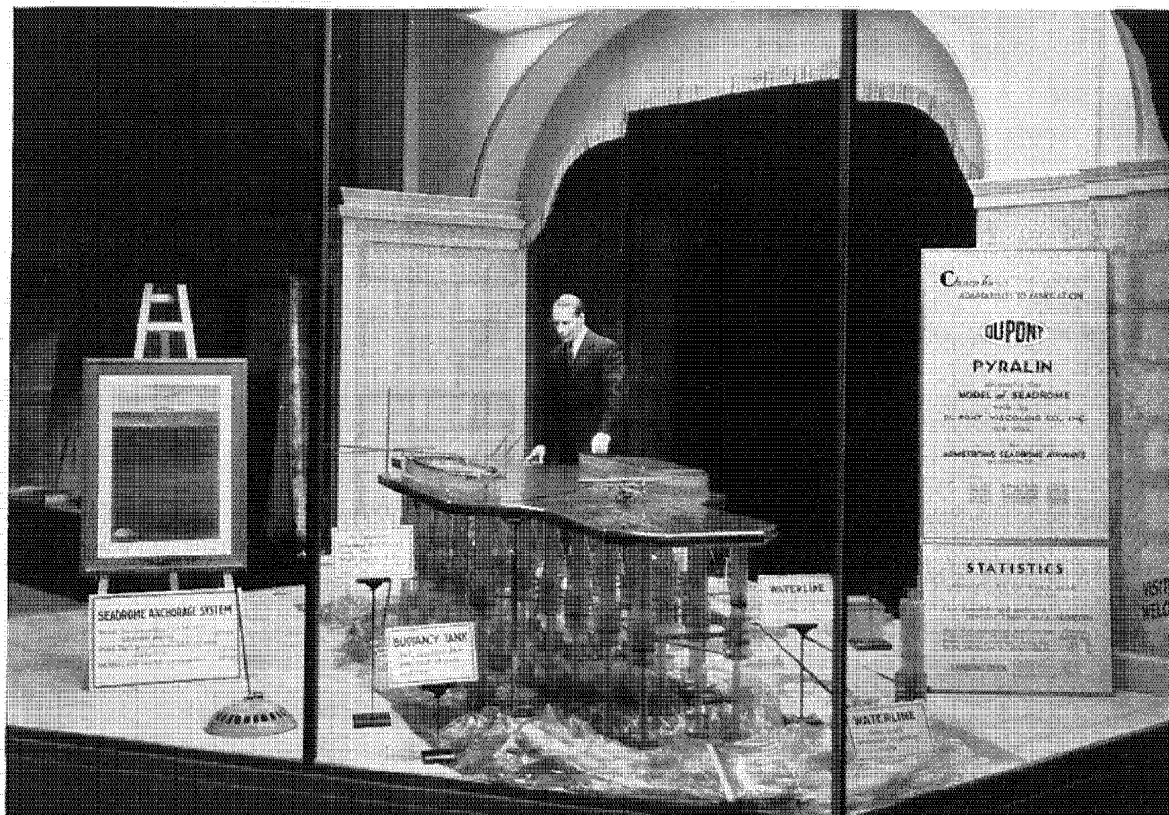
ing a feature showing of the French Provincial Bedroom Group described in the October, 1930, number of this magazine.

During the past decade and a half scores of new du Pont products have been introduced to the Boardwalk crowds at Atlantic City, among them Duco, paints and varnishes, rayon, Cellophane, rubber products, dyestuffs, seed disinfectants, motion picture film, washable Tontine shades, the No. 7 line of chemical specialties, and so many others that it would be futile to attempt to list them all. And by visualizing their practical applications the public has gained a much clearer idea of the service rendered by the du Pont organization.

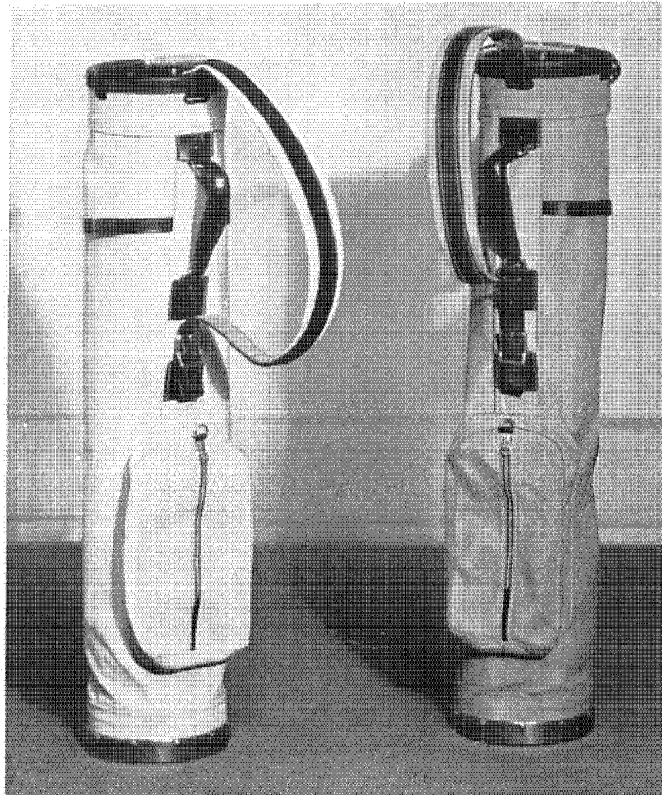
This month marks the fifteenth anniversary of the opening of the exhibit. The original objective still holds good—to keep the public informed about the broadening uses in industry for du Pont products.

The exhibit was well worth seeing in 1916; it is much more so today. Plan to inspect this du Pont "show place by the sea." You will find it both interesting and illuminating.

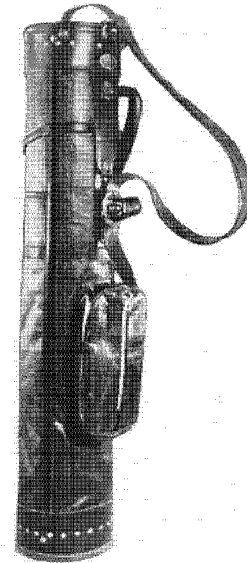
One of the window displays—E. R. Armstrong, inventor of the seadrome, with a model of it made entirely of du Pont Pyralin.



Here are the 1931 styles in golf bags. Guaranteed to add three strokes to your opponent's score—through envy, and to take three from yours—through pride. At the right are the "Standup" bags, which are equipped with a patented invisible support much appreciated by golfers who "hate their own." They are made by the Biltmore Manufacturing Company, 1755 Central Avenue, Cincinnati, Ohio.



This black bag, in an attractive grain, was made by the Fremont Manufacturing Company of Fremont, Ohio. Balls, tees or anything else you usually carry are perfectly safe in the pocket equipped with the Talon hookless fastener.



DO YOU NEED A NEW GOLF BAG?

If so, you will be interested to know more about some new styles made of genuine du Pont Fabrikoid

WE are not one of those statistical wizards who might attempt to show by figures that the average golfer, using a worn and soiled golf bag, makes more bad shots than the one who starts off with a new bag annually. On the contrary, we believe that a new bag may, in some cases, impose a mental hazard for the simple reason that its owner is likely to let his eye stray from the ball to see that the caddy isn't trying to cut his initials in the new bag. Sometimes, even the best of caddies do this.

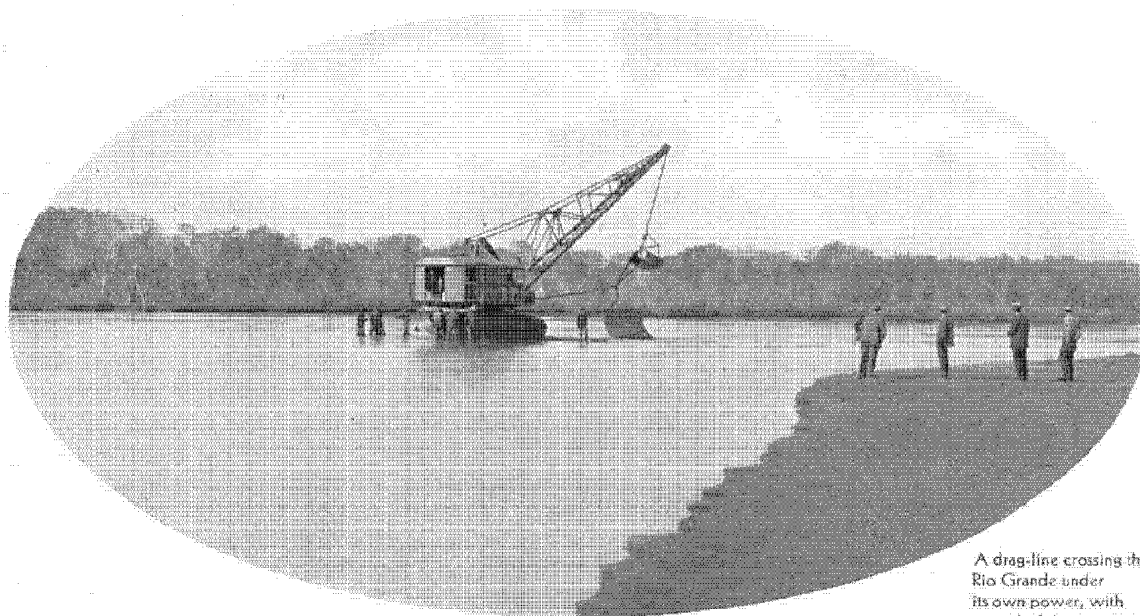
Nevertheless, there comes a time in the life of every golfer—either because his wife is ashamed of his equipment or because his handicap has been reduced—when pride demands that the old soiled bag, with its

repaired strap and its bent and battered frame, be discarded.

Among the replacements that will be made this year, including the new 1.55-1.68 golf ball, probably many patented tees and a divot replacer, there will be thousands of new golf bags. And they will not be the cumbersome, over-equipped affairs made of easy-scuffing or hard-to-clean materials. Rather, they will be smarter in appearance, lighter in weight, yet very durable and easy to clean. Such golf bags, embodying the final word

in smart appearance and style, long life and lightness in weight, are now being made of cleanable, waterproof du Pont Fabrikoid. If you need proof of the practicability and smartness of Fabrikoid for this purpose, you have only to look at the decks of today's leading motor cars, some of the finest outdoor furniture, airplane upholstery, motor-boat cushions and a hundred and one other outdoor applications in which Fabrikoid has long demonstrated its worth as a most satisfactory and long-wearing material.

So when you are buying that new golf bag from your "pro" or local sporting goods store, ask to see the 1931 models in du Pont Fabrikoid. You'll be surprised at their beauty, their light weight, their durability.



A drag-line crossing the Rio Grande under its own power, with the aid of short pontoons.

THE MIDDLE RIO GRANDE CONSERVANCY PROJECT

THE Twin Falls and Minidoka reclamation projects in Idaho, recently described in the pages of this magazine, are opening up for cultivation thousands of acres of arid or flooded land in the Northwest. Now another region has its turn, for with the completion of the Middle Rio Grande conservancy system of New Mexico, vast areas along the Rio Grande will be made available for farming. This ten million dollar flood control, drainage and irrigation project is the largest engineering job of its kind now under way in the Southwest. Four years' work will be required before it can be finished.

The district included in the project extends for one hundred and fifty miles along the Rio Grande about fifty miles north and one hundred miles south of Albuquerque, the state's metropolis. It embraces one-seventh of New Mexico's population and one-fifth of its wealth.

The land to be reclaimed is probably the oldest irrigated area in the United States. When the valley of the Rio Grande was discovered by

A ten million dollar job is now under way in the Southwest to reclaim thousands of acres of tillable land



By J. D. HOLMES
AND
W. A. SEYFFERT



J. L. Burkholder, chief engineer of the conservancy project

the Spaniards under Coronado in 1540, the Indians already had it under irrigation.

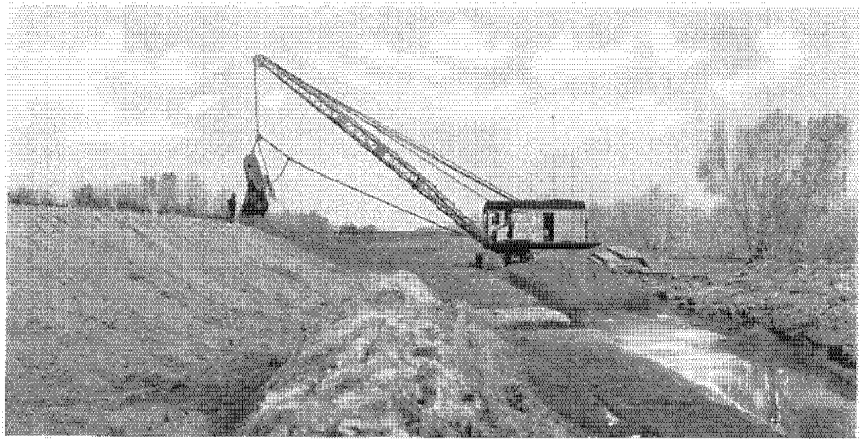
Organization was completed in 1925 and in April, 1926, Mr. J. L. Burkholder, who for many years was in charge of reclamation and irrigation work for the U. S. Bureau of Reclamation, was employed as chief engineer.

After four years of preliminary surveys, actual construction work was started in March, 1930, and, as this is written, sixteen per cent of it has been completed.

The primary object of the project is flood control, but irrigation and drainage are so closely correlated with it that one without the other would throw an added cost on any one operation.

That floods should occur in such a "land of little rain" seems a paradox, but they do—and frequently. Often, after a summer shower in the hills, an innocent dry wash or "arroyo" becomes a raging torrent of brown, dirty, rushing water. Such arroyo floods leave vast quantities of silt and

A drag-line at work building a flood protection levee with material taken from a drainage ditch



sand in the Rio Grande and tend to raise the level of its bed.

This accumulation in the river bed was becoming serious. Cities, towns, railroads and farm lands were damaged. Albuquerque, with 27,000 inhabitants, was menaced annually. It was realized that if the vast amount of property within the area was to be protected, and if the agricultural lands were to be drained, some action had to be taken. For such a condition creates a definite flood menace, and it also waterlogs the lands of the rich valley so that they are unfit for cultivation.

Each year the farming area has gradually become smaller, until today less than 40,000 acres of the 125,000 once subject to irrigation and cultivation are tillable. But this water-burdened land is not the result of

the floods alone. Seepage is depleting the amount of irrigation water for the few acres that remain under cultivation.

Work now under way consists of excavating drainage ditches and building riverside levees. These levees are ten feet high, ten feet across the top and fifty feet at the base. When earth is piled up for them, a drainage ditch eight feet deep, sixteen feet wide at the bottom and forty feet wide at the

top is made. Thus both operations are done at the expense of one.

Sixteen drag-line excavators are used in this work, and nearly one million cubic yards of earth is moved each month. More than five million cubic yards of earth has already been moved, and twenty million more will be banked up before the job is finished.

The flood control and drainage system will consist of approximately four hundred miles of drainage ditches



Site of the dam at El Vado, New Mexico, on the Rio Chama. This mountain stream is full of trout, and the dam will make fishing even better



Areas such as this were not uncommon in the Rio Grande district around Albuquerque before drainage was started

and riverside levees. About ninety-eight miles of ditch and levee have already been constructed.

The irrigation system will have five hundred and ten miles of canals and laterals, and when finished will be capable of carrying water to within a half mile of every piece of agricultural land in the district.

South of Albuquerque the river is usually dry for a period of about forty days during the summer months when irrigation water is most needed. This results in partial and sometimes total crop failures.

In order to insure a plentiful supply throughout this period and to care for flood waters during the spring, a dam will be constructed on the Rio Chama, one of the principal tributaries of the Rio Grande. Known as El Vado, this dam will be built in a narrow canyon of the river and in the mountainous section of Rio Arriba County. It will be 1,400 feet long, 175 feet high, and 600 feet wide at the base. When completed, it will impound 200,000 acre feet of water.

More than 2,000,000 pounds of steel and 170,000 sacks of cement will be

used in its construction. The cost will be approximately \$1,600,000.

Four diversion dams will be built across the Rio Grande at about equal distances apart so as to divert water into the main irrigation canals.

Included in the district are six Indian pueblos with a population of 5,000 and a land ownership of 23,000 acres, 8,000 of which are irrigated. As the Indians are wards of the Government and are not subject to taxation, it was necessary for Congress to appropriate funds to take care of the work on their lands. So \$1,593,311 was set aside and the Secretary of the Interior entered into a contract with the conservancy district.

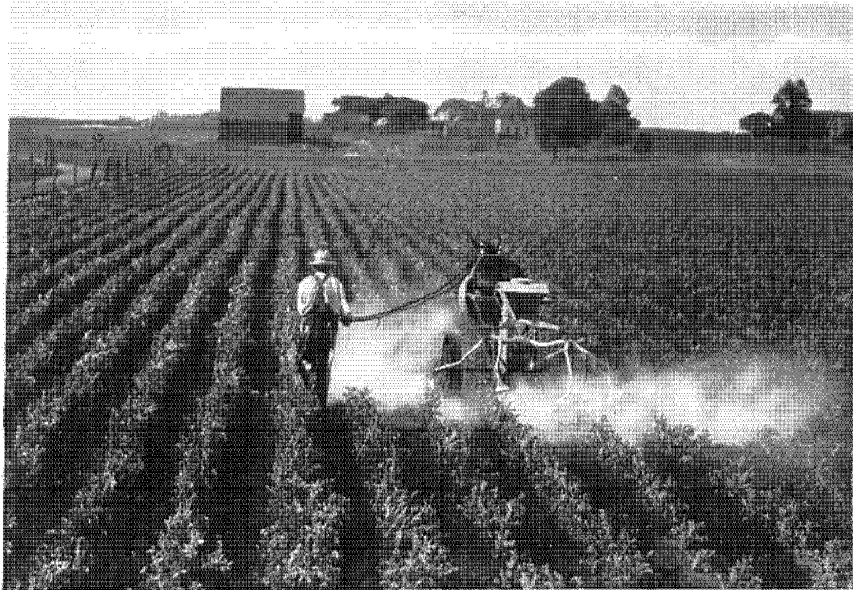
The remainder of the cost of the project is met through taxation on property within the district. A conservancy tax is assessed against property in proportion to the amount of benefit derived. Bonds are issued and retired through it. These bonds run for a period of forty-five years, which gives the taxpayers easy terms, and with \$67,000,000 of taxable property within the district, the bondholders have the utmost security. There are 35,000 landowners in the valley at present. Their holdings have been decreasing in value, naturally, but with drainage, irrigation and flood control established, the land will be worth much more.

When the project is completed, one of the richest valleys in the Southwest will have been reclaimed and protected against floods, and 125,000 acres of land will be available for irrigation.

Du Pont explosives are playing an important part in this work—clearing stumps and trees from ditch right of ways, blasting across concrete highways or blowing out rock where the ditch line touches the point of a rocky hill.



The same place, a few months later. Flooded land has been converted into a fertile field, ready for cultivation. Note the bank of the ditch in the background



A good way to fight off an insect raid on your potato field is to dust the plants with Dutox

INTRODUCING DUTOX

A new non-arsenical insecticide of exceptional value has been developed by The Grasselli Chemical Company

By E. B. ALVORD
DIRECTOR, NEW PRODUCTS DEPARTMENT

CIVILIZATION has always been concerned with the problem of insects and their control. As more and more of the virgin timber and plant life of the universe was removed by man for commercial purposes, as trade contacts between nations became closer and closer, old insect pests sought new plants for food and new insects unavoidably entered this country from foreign lands. Many of these newcomers were not serious pests in their homelands but became very much so in their new habitat.

We, in this modern age, are constantly confronted with insects which influence our lives and habits to a greater degree than is realized.

Let us consider the average individual and his taste for fruits and vegetables. Medical men insist on ripe fruits and plenty of green vegetables as a major portion of one's diet. Modern advertising and merchandising methods have made the average buyer very selective in his

purchases of these products. Little does he realize, however, when he selects fruits or vegetables, that a tremendous battle has been waged year after year, day in and day out, against insects and other pests by the producer, not only to place perfect fruits and vegetables on the market but actually to save his orchards and field crops from destruction.

Long ago, when men took up farming on a commercial scale, our government realized that experts would be required to study all phases of crop production and crop protection. The United States Department of Agriculture, for many years, has had an extensive staff of agricultural specialists directing experiments in every part of this country and its

colonial possessions. These specialists seek new and better means of controlling the hosts of enemies to crops and plant life in general. Every state in the Union has its highly organized agricultural experimental station working on crop pests found within its borders. All these groups of workers are seeking to educate the grower and farmer in the science of crop management and pest control. This work is only part of the battle being waged against insects and fungous diseases detrimental to crops.

Man, in his efforts to control damaging insects, sought to develop preventive measures. He found that the first and most necessary thing to know, before control could be accomplished, was the life history and habits of each insect pest. This was a most difficult and painstaking assignment. He found that insects in general could be classified in two groups; namely, chewing insects and sucking insects. Different types of control measures had to be designed for each group. The chewing insects required stomach poisons. The sucking insects required contact poisons. The poisons or contact solutions, in the case of some pests, had to be applied at a certain stage in their life history, if control was to be achieved; others required a season's schedule of sprays



Dusting with Dutox in a tobacco field effectively curbs the appetites of leaf-eating worms

Bean growers will appreciate best the significance of this picture, which carries its own legends

to control the several broods that followed in succession.

In this article, we are more concerned with the chewing insects and the stomach poisons developed for their control. It is this class for which Dutox (Grasselli barium fluosilicate) has been perfected.

First efforts to check these minute invaders were at best crude and unorganized. Early growers, realizing that something had to be done to save a crop from the ravages of an insect, had no precedent to follow. However, as the work of government and state specialists began to accumulate, life histories of insects and their controls, natural and chemical, became better known. A group of stomach poisons, known as arsenicals, began to assume outstanding importance.

Of these, lead arsenate is the most important. It was developed by the Federal Bureau of Entomology in connection with work done in Massachusetts in 1892 to control the gypsy moth. Today, the tonnage of this product used for insecticidal purposes in this country is tremendous.

Calcium arsenate, next in importance, is more likely to cause injury to plants than arsenate of lead; however, because of its cheapness, calcium arsenate is used on cotton to control



the boll weevil and on some other crops where its low cost justifies the risk of injury.

When arsenicals are used continuously on field crops, residues accumulate in the soil in serious proportions. This is probably of more concern to the vegetable grower than to the fruit grower. Muck soils are especially damaged by arsenical residues. Often they become so toxic that crops cannot be successfully grown in them.

The experiments of Morris and Swingle of the Montana Agricultural Experiment Station on injury to growing crops caused by the application of arsenical compounds to the soil are conclusive. Both agreed that soluble and insoluble forms of arsenic were toxic to plants in general; that incorporating them in the soil was a dangerous practice under some conditions and caused considerable injury

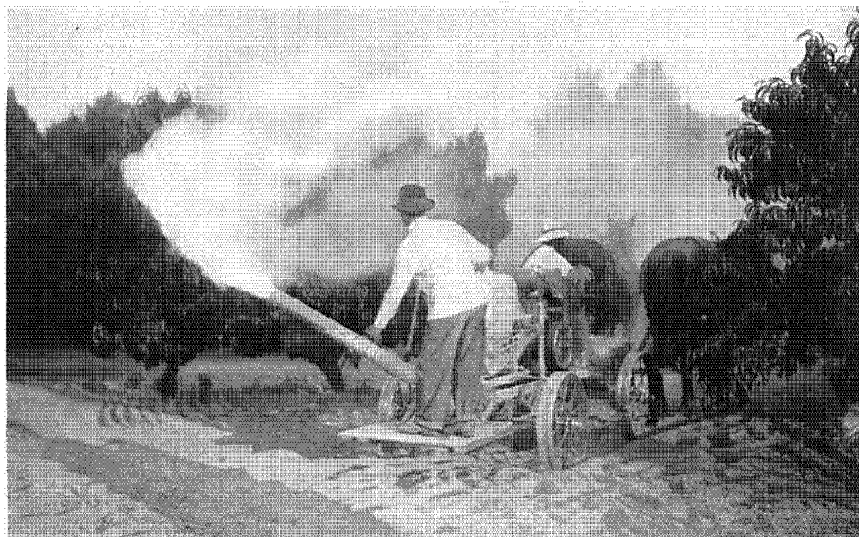
as the concentration of arsenic continued; that in general, beans and cucumbers were very susceptible to arsenic but cereals and grasses were more resistant.

The Grasselli Chemical Company manufactures insecticides, and its research workers have kept in touch with this situation over a period of years. They realized that while arsenicals were the best to be had at one time, they were not entirely satisfactory. Accordingly, some years ago they began experimenting with fluorine compounds and, after trying out a great many different ones, they decided barium fluosilicate offered the best possibilities of becoming a general insecticide and concentrated their efforts on that material.

The successful outcome of preliminary experiments with barium fluosilicate in the South encouraged the company to project the experiments into other sections of the country, and the work was extended to cover a number of insects and crops.

The work of Professor Marcovitch, of the University of Tennessee, who is one of the most progressive of entomologists and has probably done more than any one man to develop the usefulness of fluorine compounds for general insecticidal purposes, indicated that these compounds could be used effectively to control a number of insects. Professor Marcovitch

(Continued on page 24)



Peach orchards, too, need protection from insects, and so a dust barrage of Dutox is laid down

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TOWERS OF INDUSTRY

THERE are ancient towers and modern towers. The great structures reared in the Middle Ages are still surrounded with a halo of romance, but those portrayed on the front cover of this number are impressive if not particularly romantic or architecturally beautiful. No knights in coated mail guard them, nor would they serve well to house captive princesses. These are towers of industry at the du Pont Company's dynamite plant at Repauno, New Jersey. In them synthetic ammonia from Belle, West Virginia, is oxidized and absorbed in order to produce nitric acid, an essential material in the manufacture of high explosives.

Once nitrate of soda from Chile was used to make this acid. Now nitrogen is obtained from the air and fixed in the form of ammonia which is converted into nitric acid in these towers. They are made of a non-corrosive metal that many a knight of the olden days would have been glad to know about.

ANOTHER CELLOPHANE HOUSEHOLD UNIT

THE constantly-increasing number of new products being wrapped in Cellophane today has suggested to the housewife many ways of using it in her home. To meet this growing demand, the Dennison Manufacturing Company has just put on the market a new 25 cent unit, making this material available in smaller quantities than heretofore. These convenient

rolls of plain or colored Cellophane—red, green, gold or violet—can be used to wrap foods, glorify gifts, protect silver, and also for all kinds of craft work. They are obtainable at stationery or department stores handling Dennison's goods.

THE WORLD'S LARGEST BEACON

A POWERFUL beacon, having a revolving beam of two billion candle power, has been installed atop the Palmolive Building in Chicago. It is mounted on a steel tower, enclosed in aluminum, which rises sixty feet above the penthouse of the building, making it a total of 551 feet, 6 inches high. The Lindbergh Beacon, as it is called, is of service to aviators 150 miles distant from Chicago in any direction. Fifty miles away, a flier may read a map, or a passenger his newspaper, by its light.

In the increasing use of the airways, the beacons have been a very important factor in safety and speed. The Lindbergh Beacon is the gift of Elmer A. Sperry to the city of Chicago, while the erection cost of the tower and the expense of maintenance are borne by Colgate-Palmolive-Peet Company as its contribution to aerial safety and convenience.

A NEW RADIO FEATURE

THE du Pont Speed-Blenders have entered the radio entertainment field with a series of tuneful and novel programs which are being broadcast weekly through thirty stations from coast to coast. This series is sponsored by the Chemical Specialties Division of the du Pont Company with the object of acquainting the public quickly with Speed Blend, the new fast-working No. 7 Duco Polish.

In the programs arranged for this month Allyn Jocelyn, as host, will introduce a number of guest artists and entertainers, all favorites with radio audiences. Among these are Annette Hanshaw, contralto, whose "blues" songs are so well known; Willard Robison, from the great open spaces of the Southwest, whose ap-

The DU PONT Magazine

pealing melodies are mostly of his own composition; Gordon Graham, Dave Grant and Bunny Coughlin, a versatile trio of singing artists, and Roy Smeck, a Victor recording artist, whose selections on the banjo and guitar are much appreciated by radio fans everywhere.

Musical numbers by the seven-piece Speed-Blenders Orchestra are regular features each week, with Don Voorhees conducting. Those who have heard Mr. Voorhees' work in other outstanding broadcasts will at once appreciate the high quality of music to be expected from any organization he directs. Following is a list of the stations from which these programs will be heard on each—

MONDAY

P. M.	KILOCYCLES
6:45 CST Omaha.....	WOW - 590
7:15 EST Philadelphia.....	WCAU - 1170
7:45 EST Pittsburgh.....	KDKA - 980
9:00 CST St. Paul- Minneapolis.....	KSTP - 1460
9:30 CST Atlanta.....	WSB - 740
10:15 CST San Antonio.....	WOAI - 1190

TUESDAY

P. M.	KILOCYCLES
7:15 EST Cleveland.....	WHK - 1390
7:45 EST New York.....	WOR - 710
9:00 PST Seattle.....	KJR - 970
9:15 CST Indianapolis.....	WFBM - 1230
9:30 PST San Francisco.....	KFRC - 610
9:45 CST Dallas.....	WFAA - 800

WEDNESDAY

P. M.	KILOCYCLES
7:15 CST Louisville.....	WHAS - 820
7:15 EST Schenectady.....	WGY - 790
7:15 EST Richmond.....	WRVA - 1310
7:45 EST Detroit.....	WJR - 750
7:45 CST Memphis.....	WMC - 780
8:15 EST Boston.....	WBZ - 990
8:15 EST Springfield.....	WBZA - 990
10:15 CST Chicago.....	WENR - 870

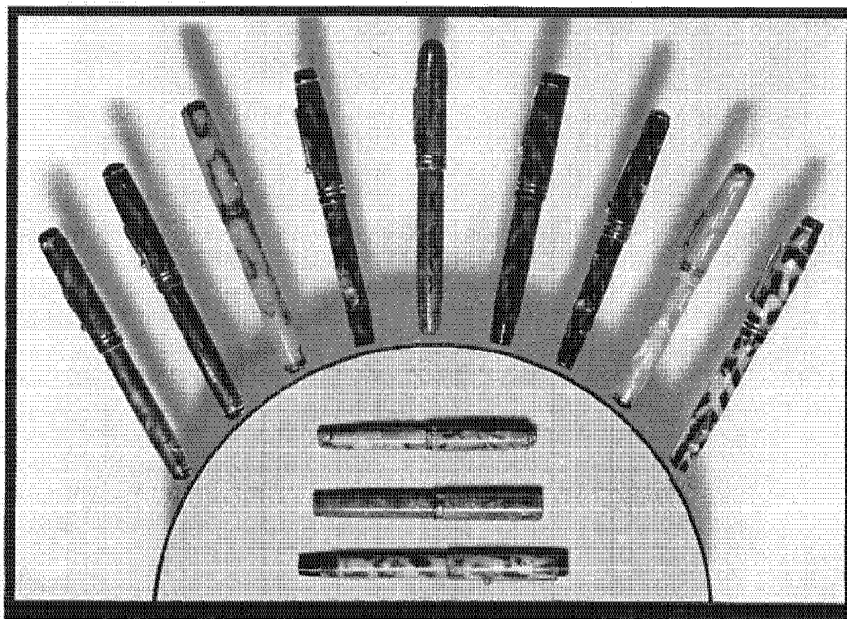
THURSDAY

P. M.	KILOCYCLES
6:45 CST Houston.....	KPRC - 920
7:15 EST Baltimore.....	WCAO - 600
7:45 EST Cincinnati.....	WSAI - 1330
9:30 CST Kansas City.....	KMBC - 950
10:15 CST Milwaukee.....	WTMJ - 620

FRIDAY

P. M.	KILOCYCLES
7:00 MST Denver.....	KLZ - 560
8:00 EST Columbus.....	WAU - 640
9:00 PST Los Angeles.....	KNX - 1050
9:30 CST St. Louis.....	KMOX - 1090
10:15 CST Oklahoma City.....	WKY - 900

Tune in on the du Pont Speed-Blenders' programs and enjoy a treat.



Writing is a pleasure when you use one of these beautiful new pens in a color to suit your own taste

NEW COLORS IN FOUNTAIN PENS

You never knew a fountain pen could be so beautiful? Neither did anyone else until manufacturers began to use du Pont Pyralin. Now they have literally taken the rainbow apart to get colorful effects in writing instruments.

Back in the days of the stone stylus, no claims to beauty were made for it. The iron stylus, the Chinese brush, the parchment reed and medieval quill showed little improvement from an appearance standpoint. The straight steel-pointed pen and finally the fountain pen were still just utilitarian without attempting to be decorative.

Then color came into the picture. "Why should not writing instruments be colorful?" a questioning public said. "Why can't they be more distinctive?" And fountain pen man-

Striking combinations are used in the latest Pyralin pens to give them distinction and beauty

By R. T. ELLIS

ufacturers answered by using du Pont Pyralin, which can be produced in an infinite variety of colors and color combinations. Style, grace and beauty have at last been added to a very useful article. The fountain pen has blossomed forth into a beautiful instrument of many colorful and unique effects.

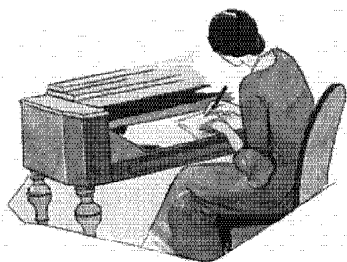
These new Pyralin pens are available in pearl, in genuine fish essence pearl effects, as well as in translucent and opaque colors. Pearl effects are noticed in red, black, silver, blue-green, pink and blue, and green and black. Bronze color combinations in black and gold, black and green, red, green and blue make especially attractive pens. Translucent mottles of red and blue, blue and blue, and brown

and onyx were listed among the innovations of the past year.

Contrasting vein effects may be had in single or two-tone colors, with the beauty of the veins accentuated by another color along the edges.

Pyralin fountain pens are unbreakable as well as good-looking. A fall to the floor or a chance dropping of something on them does no damage. Furthermore, they are easily cleaned. Spots of ink, dust or grime can be removed in a jiffy with a damp cloth.

You can see these pens on display in leading retail stores everywhere. And manufacturers will supply interested readers with descriptive folders upon request. Send your letter to the Du Pont Viscoloid Company, Inc., 330 Fifth Avenue, New York City.



This Cord de Rae
bedspread, ideal for a
man's or a boy's room,
is displayed by
Lord & Taylor
in New York



RAYON FOR PERIOD BEDROOMS

A WELL-KNOWN magazine that sells to its readers a series of service booklets on interior decoration recently found that the one featuring bedroom decoration outsold the others three to one. This is significant considering that only a short time ago comparatively few people were greatly interested in the appearance of bedrooms. The living room used to get the lion's share of attention. The others didn't matter. Something has altered the home owner's viewpoint. After all, why should not sleeping quarters be made attractive?

Largely responsible for this change have been the variety and charm of

*No matter what decorations
are used, bedspreads made
of Du Pont rayon textures add a
touch of charm and beauty*

By E. C. HARRINGTON

the rayon textures recently developed. Their freshness and color have contributed tremendously to the altogether delightful atmosphere of the modern bedroom.

In the old "hand-made" days before machine work achieved its present

excellence, bedspreads were constructed to last. They were intended to serve for grandmother, mother and daughter with equal satisfaction from all points of view. Practically they often did, but æsthetically they avoided being tiresome by being largely negative. In fact, they were often dull.

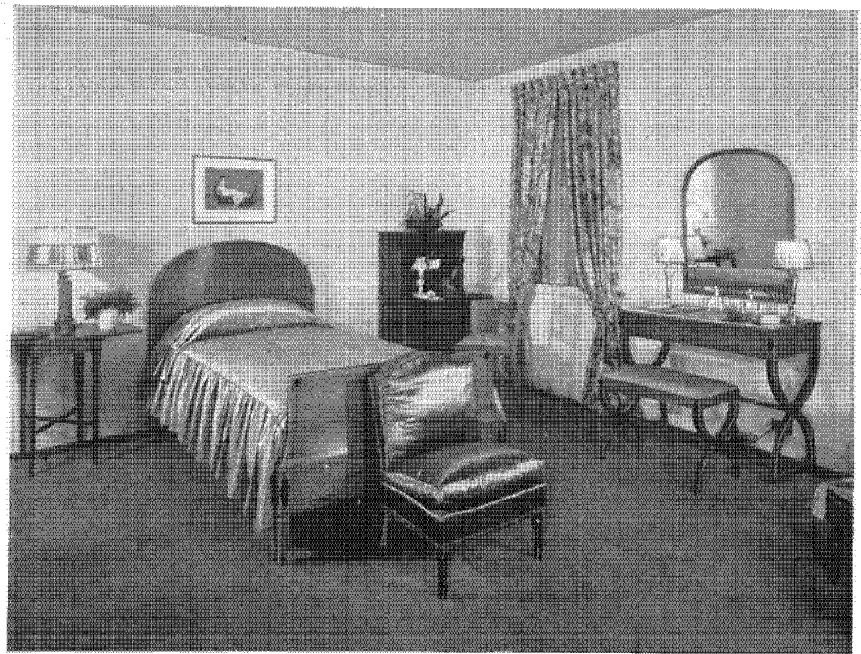
Now at comparatively little cost every housewife can have a variety of spreads, choosing from a whole gamut of types running from the most formal French taffeta to informal gay spreads suited to colonial or provincial bedrooms. Change and variety—that is the keynote of our day. We

A Gros de Rae bedspread from F. Schumacher & Company made by Good Housekeeping Studio and shown in a room of early nineteenth century inspiration.

have textures for every style, and colors for every mood.

Gros de Rae, as *Good Housekeeping* has used it in a room of early nineteenth century inspiration, is an excellent example of a formal spread. The material has a wide moiré in keeping with the style of the period, and a lovely crunch that suggests quality and luxury. It is fairly crisp with a refined, dull luster. The texture itself is so lovely that Gros de Rae bedspreads can be very simply made. F. Schumacher & Company, 60 West 40th Street, New York City, offer it in lovely high-fashion shades.

Dupré taffeta from Lehman-Connor, 58 West 40th Street, New York City, is another formal fabric, but more frivolous. It is suitable for eighteenth century furniture of the light and gay French type, Louis XV or Queen Anne; for a ruffled treatment for the young girl's room in one of the fresh and spring-like colors in which it is shown; or, slightly more restrained and sophisticated in treatment, for milady's boudoir. It is entirely practical and may be laundered.



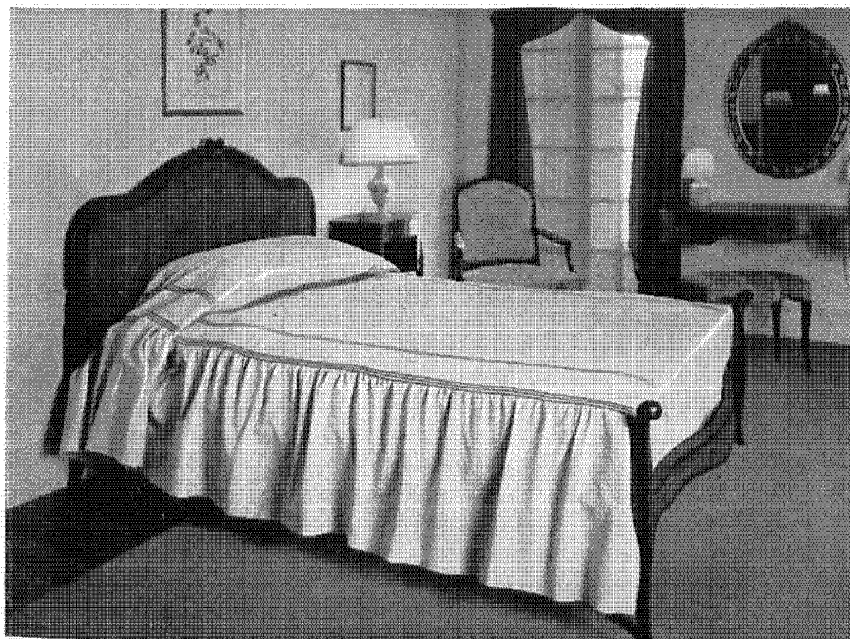
Wherever there is oak, there may be Cord de Rae. It is perfect for rooms of the more masculine periods—Tudor English, Jacobean, early Italian Renaissance, or Spanish. Cord de Rae is a ribbed texture of rich, full hand. It is made of rayon and cotton in a weave that tailors beautifully and suggests by its restraint the perfect spread for the man's bedroom or the boy's room.

Cord de Rae printed has been com-

bined with matching plain sides in an effective treatment by Madam Katrine, 148 West 23d Street, New York City. In this combination it may also be had with draperies of the same material.

The ensemble theme has been stressed by Charles Bloom, 15 East 26th Street, New York City, who has made bedspreads, curtains, lamps, boxes and dressing-table valances of one fabric—Point de Rae. This is the gayest fabric of the group. It is of medium weight and has a cotton ground entirely covered with tiny raised rayon figures. It appears to be embroidered but isn't; it has an informal note but may be used almost anywhere, and is entirely washable and practical. Point de Rae is especially desirable for colonial bedrooms.

These materials, developed by the Du Pont Rayon Company in coöperation with various manufacturers, are the latest contribution toward better style, better fabrics and better color in bedroom decoration.



Charles Bloom, in stressing the ensemble idea, uses Point de Rae, especially adapted for colonial bedrooms



Entrance to the old wooden bridge, looking east

CROSSING THE JUNIATA RIVER

*A modern concrete bridge will soon span this Pennsylvania waterway
which travelers forded two hundred years ago*

By REEVES HILL

FAST cars, good roads and a desire to get away from familiar haunts have all combined to make the American public travel-minded. "Hop in the car and let's go" seems to be the controlling thought of millions of people who are far more disposed to speed along the highways, in keeping with the modern tempo, than to enjoy the delights of motoring in a more leisurely manner.

How many of us, skimming over the nation's broad highways, give more than a passing thought to the engineering difficulties surmounted in building them? We seldom think of the time, money and effort expended in laying down these ribbons of concrete. We cross rivers and streams, thanks to the modern bridge builder,

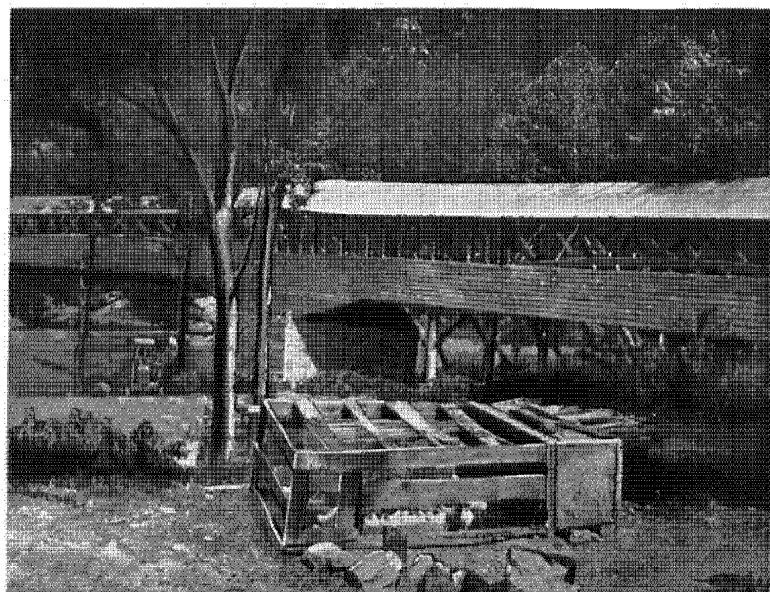
and if the environment is especially attractive and the bridge pleasing in design, we may even comment on its picturesque setting. True, bridges are made to carry traffic, but some of them deserve more than passing

mention. We have one specifically in mind.

On the Lincoln Highway near Everett, Pennsylvania, in Bedford County, a magnificent reinforced concrete bridge is nearing completion. The place is known locally as Juniata Crossings, and it is well named, too, for during the past two hundred years unnumbered thousands of people have crossed the Juniata at this point by one means or another.

The first crossing, according to John J. Blackwelder in the *Bedford Inquirer*, was a ford used by the Indians prior to 1730. It was located about one mile down the river from the present structure and was on the route of an old Indian trail that traversed the entire state of Pennsylvania from east to west, and opened the way to Ohio and points beyond. The Lincoln Highway today follows this route almost exactly.

The second crossing of the Juniata—a ferry—was the result of the ingenuity of the white man. How long it was in operation is not definitely known, but it was evidently in use until about 1763, when it gave way to a chain bridge.



Side view of the bridge which served for more than a hundred years as a crossing over the Juniata

A steam shovel at work
on one of the curves cut away in building
the road to the river



This third crossing was somewhat of a novelty. The bridge was suspended by huge chains which were fastened to large stone abutments on each side of the river. In the middle, a wooden trestle helped to support the weight. One of these abutments is still standing and is in a fairly good state of preservation. The approach to the pier is on a steep embankment, and here may be seen grooves in the rock six inches deep, worn by the passage of the early settlers' wagons.

In the year 1818 these crude means of conquering the river were being replaced by more modern ones. A turnpike company had completed a stone road in this section of the state, and during that year a wooden covered bridge was built which is still in use. It is 368 feet long and was originally double track, separated by a partition of wooden beams. Some years later the eastern abutment was weakened by an ice gorge, and when this half was rebuilt, it was made single track. There are only two spans to the bridge—one, 185 feet, 8 inches long; the other, 185 feet, 4 inches, supported by a single pier sev-

en and one-half feet wide at the top.

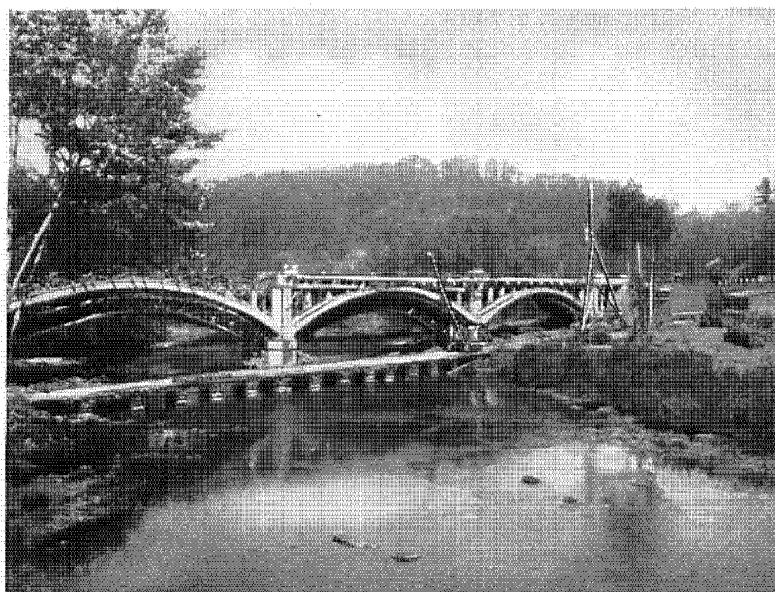
"This bridge might be considered an uninteresting relic of the crude past, but to the people who were living at the time of its erection it must have been a marvel in architecture. To them it must have seemed the final chapter in the even then long history of chain bridge, ferry and ford. To them, at last secure from Indian warfare, for the first time experiencing the internal improvements and expansion of the new nation, this bridge must have seemed a symbol of permanency and safety, a kind of guarantee of the nation's future greatness.

And a symbol of permanency it has

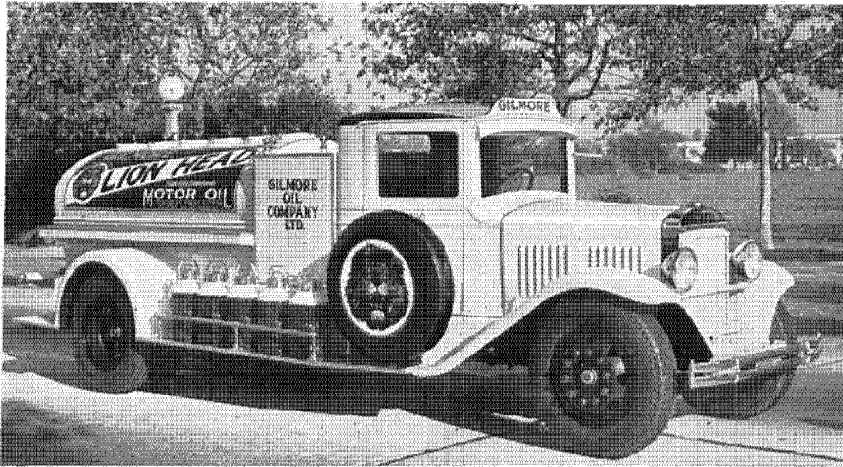
remained. For one hundred and twelve years it has withstood the travel of the "front street of America" from the era of the horse and wagon to the present day of speeding automobiles and thundering trucks weighing tons. Truly it was an achievement to build a wooden bridge of this great length that would defy the elements of nature and the ravages of travel for more than a century.

But the old covered bridge has served its day. Soon it will be standing only as a memorial to an early crossing of the Juniata River, for the concrete structure now under way will shortly be completed. Present-day traveling has necessitated the building of this modern bridge that will take care of traffic for years to come.

Thomas Sheahan, of Hagerstown, Maryland, was awarded the contract for the construction of this concrete bridge, following specifications of the Pennsylvania Highway Department. The new location, selected to eliminate several sharp curves, required considerable grading. This was done by Bester-Long Company, also of Hagerstown. Du Pont explosives were used in the excavating and grading work.



The new concrete bridge
under construction.
When it is finished, hundreds of cars
will cross it every day.



Colorful in its rich cream and red finish, a Gilmore tank truck attracts attention anywhere.

GILMORE USES COLOR TO BUILD BUSINESS

COLOR has played an important part in the success of the Gilmore Oil Company of Los Angeles, California. What follows will illuminate that statement.

From 1904 to 1928 this company experienced all the ups and downs to which the oil industry has been subjected. Then, like a tree with the tap-root drawing new life from deep-down moist, fertile soil, came a transformation—buds, foliage, gay blossoms. An amazing expansion took place.

What started it? Color.

In March, 1928, the company's gasoline sales approximated 1,000,000 gallons, of which 80,000 were patented Gilmore Blu-Green gasoline, then an experiment. The sale of white gasoline was practically abandoned and the company concentrated almost its entire effort on the new product, supporting it with an aggressive sales and advertising drive.

In August, 1930, Blu-Green gasoline sales had increased to 8,250,000 gallons. It was a first choice among

nearly 300,000 Pacific Coast motorists.

Of course, something more than color contributed to the result, for a patented ingredient was added to soften and remove carbon accumulations. But, at any rate, public acceptance of this gasoline was instantaneous. A printed guarantee won credence; actual use proved the claims.

Color plays another rôle in this drama of modern business success. The pumps from which Gilmore gas is dispensed are in 2,800 independent service stations scattered from Mexico to Canada. To make them attractive

and easily identified, a pleasing color scheme—a rich cream and vividly contrasting red—has been adopted. The same combination is used for signs, with a reproduction of the Gilmore lion head in six colors. On "A" boards, also, suitable posters done in four colors are framed in easels of vivid red.

The company's rolling stock, too—giant tank trucks, fast delivery cars and the like—are all finished in Duco of a rich cream and red, offset by burnished gold lettering and ornamental metal trim done in chromium plate. These vehicles command attention on the highways just as the record-breaking speed plane, the "Gilmore Lion," is easily and pleasingly identified in the air. It, too, is Duco finished in the company colors—a dazzling, shining airplane with surfaces so glass-like that aeronautical engineers claim an extra speed of ten miles an hour because of reduced "skin drag."

And now the company is introducing a new lubricating oil for automobile motors in which color is to play a large part.

Gilmore experience indicates that color has an important function in business building.



The glass-like Duco finish on the plane, "Gilmore Lion," increases air speed ten miles per hour, according to the engineers.

WASH DRESSES TO THE FORE

*The International Association of Garment Manufacturers sponsors
National Wash Dress Week to emphasize the style
possibilities of these cheerful, everyday frocks*

By PAUL H. COLLINS

THERE was a time when a yard was measured from a clerk's chin to the end of his outstretched arm. There was a time when the wash dress was a "lowly" garment. Useful? Certainly. But stylish? Rarely.

But times change rapidly, for today wash dresses are being made from well-styled materials and designed with the sure touch of genius. Even the grand couturiers of Paris do not consider it beneath their dignity to produce such creations. For as cotton materials have felt the effect of styling, Parisian designers have been quick to use them, with all their crisp freshness and charm of color.

Another important factor which has contributed to the popularity of the wash dress is the permanence of its colors. In our mother's day there were no such standards of color fastness as exist today. Then dresses, when washed, faded — some more rapidly than others; but all shared this common weakness, and with each washing lost a part of their color and brightness. Often they became nearly white long before the fabric showed any signs of wear.

Today, a wide range of charming, well-styled wash fabrics is available in colors that will stand repeated washing without losing a fraction of their original beauty and color. Since all that is needed to restore their bright freshness is to have them laundered, they provide a unique opportunity for the modern woman to acquire an extensive summer wardrobe without burdening her clothing budget.

A new fashion event looms on the horizon. It is called National Wash Dress Week. From coast to coast, from Canada to the Gulf, representative American stores will demonstrate how far the American woman's cloth-

ing dollars will stretch when invested in these smart, economical frocks. During this week, April 20-25, there will be a nation-wide showing of the newest wash fabrics and the newest types of dresses especially styled for these colorful materials. Many fabrics will receive their first public presentation on this occasion.

Today, truly, cotton is on the "front page of the latest fashion news!" More than ever before, couturiers of Paris have emphasized cotton and other wash fabrics in their latest creations. Winter resorts saw more and smarter wash frocks than even in the banner cotton season of 1930. The great designers in America's fashion centers have made these fabrics the basis of their new styles for summer.



A wash dress in the 1931 style—attractive, practical, and made of fast-dyed cotton fabric



The poster

Special models have been created for National Wash Dress Week, proving that wash dresses can be just as inexpensive as they are smart.

Twenty million American women now confidently demand fabrics that will not fade—fabrics that start life with style and beauty and color—and keep them through repeated wear and washing. These women are backing the fast-dye movement with purchases and repeated purchases. They demand freedom from the nuisance of fading, not money back for a faded fabric.

Profits are going to those manufacturers and merchants who meet this demand.

In order to help the stores of the country to identify themselves with National Wash Dress Week, special advertising material has been prepared. The poster here reproduced is an example. There are also window displays, streamers, pennants, folders for general distribution to the public and mats for newspaper advertising. Any store that has not received this advertising material should write to the International Association of Garment Manufacturers, 395 Broadway, New York City.

Wash fabrics are usually dyed or printed with vat dyes, the fastest group or type of colors known. The du Pont Company is the pioneer vat dye manufacturer in the United States.

INTRODUCING DUTOX

(Continued from page 15)

experimented with barium fluosilicate on the Mexican bean beetle and other insects. The results were so encouraging that in 1929 a bulletin was published recommending this product as a definite control for the Mexican bean beetle, and giving results which indicated that it would control quite a number of other insects.

Other investigators in different parts of this country were also obtaining encouraging results. As the experimental work on barium fluosilicate was extended to the Pacific Coast and the Pacific Northwest, this material gave more and more promise of becoming a general substitute for arsenicals. Each experimenter found new and different uses for it.

In California, where thousands of acres of peppers are grown, R. E. Campbell, government entomologist, and his assistant, J. C. Elmore, experimented with Dutox last year. They found it superior to anything they had ever used to control the pepper weevil. Japanese growers, watching the experiments, became enthusiastic

enough to order several thousand pounds of Dutox. They expect to use large quantities of it this year to control the pepper weevil.

Preliminary experiments on walnut trees at the Citrus Experiment Station of the University of California, by H. J. Quayle and his assistant, A. M. Boyce, indicate that Dutox will control the walnut husk fly which has been exceedingly troublesome to entomologists and growers alike.

In the Pacific Northwest, E. J. Newcomer, government entomologist at Yakima, Washington, after several years of research work, has reached the point where he feels safe in recommending the use of barium fluosilicate on apples for sprays applied after July 1. Special mention is due Mr. Newcomer for his work on fluorine compounds, as he displayed the true spirit of research in trying to improve the materials with which he was working rather than discarding them as a result of unsuccessful experiments. He persisted in spite of early discouragements and to him now goes the credit of being the first one anywhere to recommend fluorine compounds for use on apples.

Dutox has proved to be unusually effective in controlling members of the beetle family, some of which are very destructive and very hard to control. The members of this group which experimental work indicates Dutox will control are: Mexican bean beetle; Japanese beetle; Colorado potato beetle; potato flea beetle; striped cucumber beetle; asparagus beetle; horseradish beetle; strawberry beetle; pepper beetle; eggplant beetle; blister beetle; apple flea beetle; walnut husk fly; tobacco flea beetle; tobacco horn worm; tomato worm; cabbage worm and cut worms.

These pests, many of them comparatively recent arrivals from foreign countries, are today causing widespread damage and losses throughout this country. Many of them attack field crops, orchard and vineyard crops. Others attack the turf of golf courses or, in fact, any turf, whether it be in a pasture or a home lawn. Still others attack flowers and shrubbery on estates or in greenhouses. Dutox, when it becomes better known, will play an important part in the control of this continually-spreading army of pests.



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

General Executive Offices, WILMINGTON, DELAWARE

All Inquiries Regarding du Pont Products Should Be Addressed to the Nearest Office

ACIDS, HEAVY CHEMICALS, AQUA AMMONIA, DRY COLORS, ZINC OXIDE AND OTHER PIGMENTS

Grasselli Chemical Company, Inc.

Chemicals for leather, textile, paper, paint, rubber, battery, glass, sheet, tin plate, steel and petroleum manufacturers. Lithopone, dry colors, pigments. Chemically pure acids, electrolyte, filler alum, spray products for fruit trees, vegetables and flowers, silicate of soda, soldering fluxes, zinc, zinc chloride.

Birmingham, Ala., 2000 First Avenue, North
Boston, Mass., 80 Federal Street
Brooklyn, N. Y., 152 Morgan Avenue
Charlotte, N. C., 930 W. Morehead Street
Chicago, Ill., 2101 Canalport Avenue
Cincinnati, Ohio, 305 Walnut Street
Cleveland, Ohio, 629 Euclid Avenue
Detroit, Mich., 1530 E. Hancock Avenue
Los Angeles, Calif.
Dry Colors & Pigments, 2034 Bay Street
Chemicals, 363 New High Street
Milwaukee, Wis., 1503 West Canal Street

Newark, N. J., 256 Vanderpool Street
New Haven, Conn., 46 River Street
New Orleans, La., 1140 So. Robertson Avenue
New York, N. Y.
District Sales Office, 347 Madison Avenue
Export Office, 347 Madison Avenue
Paterson, N. J., 6 Waite Street
Philadelphia, Pa., 3500 Gray's Ferry Road
Pittsburgh, Pa., 307 Fifth Avenue
Rensselaer, N. Y., 34 Riverside Avenue
San Francisco, Calif.
Dry Colors & Pigments, 274 Brannon Street
Chemicals, 576 Mission Street
St. Louis, Mo., 408 Pine Street
St. Paul, Minn., 2303 Hampden Avenue

LITHOPONE

Grasselli Chemical Company, Inc.
(See offices listed above)
Krebs Pigment & Chemical Co., Inc.
Newport, Del.
Cleveland, Ohio, 424 Hickox Building
New York, N. Y., 217 Broadway

ANHYDROUS AMMONIA, ANTI-FREEZE METHANOL AND METHANOL

Du Pont Ammonia Corporation

Methanol and anhydrous ammonia in tank cars.
Anti-Freeze Methanol in tank cars and drums.
Wilmington, Del., Du Pont Building

AQUA AND ANHYDROUS AMMONIA

National Ammonia Company, Inc.

Anhydrous ammonia in cylinders.
Aqua ammonia in drums and tank cars.
Chicago, Ill., 332 So. Michigan Boulevard
Los Angeles, Calif., 316 Commercial Street
New York, N. Y., 11 Park Place
Philadelphia, Pa., Frankford P. O.
San Francisco, Calif., 77 Minna Street
Seattle, Wash., 2224 Northlake Avenue
St. Louis, Mo., 3600 N. Broadway

SPECIAL CHEMICALS

The Roessler & Hasslacher Chemical Company, Inc.

Manufacturers of sodium, cyanides, peroxides, chlorine, heat-treating salts, formaldehyde, hexamethylenetetramine, gold, silver and platinum preparations, colors, oxides and opacifiers for the ceramic industry (pottery, glass and enameling), refrigerants, non-inflammable solvents, rubber accelerators and other chemicals for all industries.

Baltimore, Md., 301 O. T. National Bank Building
Boston, Mass., 40 Central Street
Chicago, Ill., 230 E. Ohio Street
Cleveland, Ohio, 607 Hanna Building
East Liverpool, Ohio, 314 Smith Street
Kansas City, Mo., 2018 Guinotte Avenue
Newark, N. J., 1060 Broad Street
New Orleans, La., 813 Louisiana Building
New York, N. Y., 10 East 40th Street
Philadelphia, Pa., 860 Drexel Building
Pittsburgh, Pa., 935 Fulton Building
San Francisco, Calif., 625 Market Street
Toronto, Canada, 62 Richmond Street, West
Mexico, D-F., Cia. Mexicana de Productos Químicos Roessler & Hasslacher, Cinco de Mayo No. 10, Apartado 2115

CELLOPHANE

Du Pont Cellophane Company, Inc.

Cellophane—Sheets and rolls. Cellulose caps and bands (formerly Capes-Viscose, Inc.). Visking Cello-Tubing (Visking Casings).

New York, N. Y.
Executive and General Sales Offices
2 Park Avenue
District Sales Office, 145 Hudson Street
Boston, Mass., Little Building
80 Boylston Street
Chicago, Ill., Conway Building
111 West Washington Street
Philadelphia, Pa., Liberty Trust Building
Broad and Arch Streets
San Francisco, Calif., 351 California Street

DYESTUFFS

Dyestuffs and dyestuff intermediates. Rubber chemicals.

Boston, Mass., 140 Federal Street
Charlotte, N. C., 232 W. First Street
Chicago, Ill., 7 So. Dearborn Street
New York, N. Y., 8 Thomas Street
Philadelphia, Pa., 126 S. Front Street
Providence, R. I., 709 Hospital Trust Bldg.
San Francisco, Calif., 351 California Street

EXPLOSIVES

Explosives for all industrial, agricultural and sporting uses.

Birmingham, Ala., 601 Brown-Marx Bldg.
Bluefield, W. Va., 607 Commercial Bank Bldg.
Boston, Mass., 140 Federal Street
Chicago, Ill., 1814 McCormick Building
Cleveland, Ohio, 766 Union Trust Building
Denver, Colo., Midland Savings Building
17th and Glenarm Streets
Duluth, Minn., Hartley Building
742 E. Superior Street
Huntington, W. Va., Suite 1004 Union Bank Building
Joplin, Mo., 816 Joplin Nat'l Bank Building
Juneau, Alaska, Room 503 Goldstein Building
Kansas City, Mo., 902 Midland Building
Miami, Florida, 120 N. E. First Street
New York, N. Y., Graybar Building
420 Lexington Avenue
Pittsburgh, Pa., Clark Building
Seventh Street and Liberty Avenue
Portland, Ore., American Bank Building
Pottsville, Pa., 516 Schuylkill Trust Company Building
St. Louis, Mo., 1182 Arcade Building

San Francisco, Calif., 351 California Street
Seattle, Wash., Hoge Building
2d Avenue and Cherry Street
Scranton, Pa., 701 First Nat'l Bank Bldg.
207 Wyoming Avenue
Spokane, Wash., 721-22 Old Nat'l Bank Bldg.
Riverside Avenue and Stevens Street
Springfield, Ill., 716 Reich Building
Wilkes-Barre, Pa., Brooks Building

FABRIKOID

Fabrikoid for auto and furniture upholstery; auto topping, bookbinding, luggage, novelties, etc. Tontine Washable Window Shade Cloth.

Chicago, Ill.
Fabrikoid Office, 2100 Elston Avenue
Montana Street Station
Tontine Office, 1411 So. Michigan Avenue
Detroit, Mich., 5-236 General Motors Bldg.
Newburgh, N. Y.
New York, N. Y., 21 East 40th Street
San Francisco, Calif., 351 California Street

RUBBER PRODUCTS

Pontop for auto tops and curtains. Raincoat fabrics, Rug Anchor, Ventube for mine ventilation. All kinds of rubberproofing.

Chicago, Ill., 2100 Elston Avenue
Montana Street Station
Detroit, Mich., 5-236 General Motors Bldg.
Fairfield, Conn.
New York, N. Y., 21 East 40th Street
San Francisco, Calif., 351 California Street

AUTOMOTIVE FINISHES

Duco and a complete line of finishing materials for all automotive purposes.

No. 7 Duco Polish, No. 7 Auto Top Finish,
No. 7 Nickel Polish, No. 7 Touch-Up Black,
No. 7 Super-Lustre Cream, No. 7 Radiator Cleaner.
Chicago, Ill., 2100 Elston Avenue
Detroit, Mich., General Motors Building
Flint, Mich.
Parlin, N. J.
San Francisco, Calif., 351 California Street

INDUSTRIAL FINISHES

Duco, Duco Household Cement, bronze powders, collodion, leather belting cements, leather finishes, nitrocellulose and cellulose acetate and their solutions, Dulux synthetic resins, pyroxylin preparations and solvents and a complete line of finishing materials for all industrial purposes.

Boston, Mass., Everett Station 49
Chicago, Ill., 2100 Elston Avenue
New York, N. Y., 21 East 40th Street
Parlin, N. J.
San Francisco, Calif., 351 California Street

MILITARY AND SPORTING POWDERS

A complete line of military and sporting smokeless powders; also military explosives and black sporting powders

Wilmington, Del., Du Pont Building

NITRATE OF SODA

E. I. du Pont de Nemours & Co., Inc.
Nitrate Division

Importers and distributors of Chilean nitrate of soda.

Wilmington, Del., Du Pont Building
New York, N. Y., Graybar Building
420 Lexington Avenue
San Francisco, Calif., 351 California Street
Wilmington, N. C., 906 Murchison National Bank Building

SEED DISINFECTANTS

Bayer-Semesan Company, Inc.
New York, N. Y., 105 Hudson Street

MOTION PICTURE FILM

Positive and Negative.

Du Pont-Pathé Film Manufacturing Corp.

New York City, 35 West 45th Street
Hollywood, Calif., 6656 Santa Monica Blvd.

PAINTS, VARNISHES, DUCO (FOR HOME USE)

A complete line of paint and varnish products for all home and industrial uses.

Boston, Mass., Everett Station 49
Brooklyn, N. Y.
Building No. 26, Bush Terminal
Chicago, Ill., 2100 Elston Avenue
Cleveland, Ohio, 791 Union Trust Bldg.
New York, N. Y., 21 E. 40th Street
Philadelphia, Pa., 1616 Walnut Street
San Francisco, Calif., 351 California Street

PYRALIN, LUCITE AND VISCOLOID

Lucite, Pyralin and Arlton Boudoir Accessories. Toys, rattles, combs, gift articles, infants' sets, manicure sets, hair ornaments. Novelty and iridescent sheeting, rods, tubes and beading. Also cleanable collars.

Factories at Arlington, N. J., and Leominster, Mass.

Du Pont Viscoid Company, Inc.
New York, N. Y., 330 Fifth Avenue
Boston, Mass., Room 404 Charles Chauncy Building, 38 Chauncy Street
Chicago, Ill., North American Building
San Francisco, Calif., 745 Mission Street

RAYON

Du Pont Rayon Company, Inc.

Viscose Process Department

New York, N. Y., 2 Park Avenue
Charlotte, N. C., 611 Johnston Building
Chattanooga, Tenn., 609-611 Provident Bldg.
Philadelphia, Pa., 1503 Land Title Building
Providence, R. I., 941 Hospital Trust Bldg.
San Francisco, Calif., 351 California Street
Acele Department
New York, N. Y., 2 Park Avenue
40 Worth Street
Waynesboro, Va.

FOREIGN OFFICES

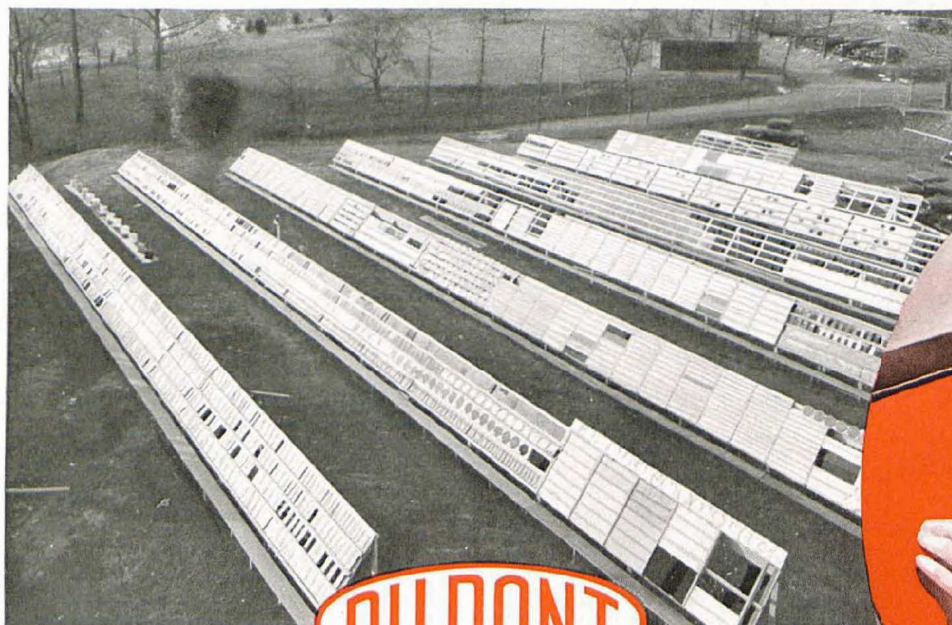
(To which inquiries about Du Pont products may be addressed)

Bombay, India, Jacob Sassoon Building
Rampart Row, P. O. Box No. 1010
Buenos Aires, Argentine Republic
Foreign Trade Development Office
Av. Roque Sáenz Peña 616 (Casilla 490)
Hankow, China, No. 23 Tung Ting Road
Havana, Cuba, 548 Edificio Manzana de Gomez
Kobe, Japan, No. 83 Kyomachi
(P. O. Box No. 384)
London, W. C. 2, England, Bush House,
Aldwych
Mexico City, Mexico, Edificio Cidosa
Avenida Uruguay 55 (Office of
Du Pont Rayon Company of Mexico, S. A.)
Paris, France, Paris Development Office,
6 Rue Christophe-Colomb
Shanghai, China, Robert Dollar Building
3 Canton Road (P. O. Box No. 393)
Tientsin, China, 52 Taku Road
Valparaiso, Chile, Casilla 56-V
(Du Pont Nitrate Co.)

I. F. C. LINES

International Freighting Corporation, Inc.
New York, N. Y., 17 Battery Place
Buenos Aires, Argentine Republic, Avenida
Roque Sáenz Peña 616
Valparaiso, Chile, Edificio Banco Nacional
Calle Prat

When you are in Atlantic City, New Jersey, visit the du Pont Products Exhibit at 1121 Boardwalk



At left is a typical Paint Farm

Thousands of painted or varnished panels are exposed to sun, rain and fumes. Periodic inspections are carefully made. Many of these panels have been there for years and will stay until the paint fails. Paint which has made good on du Pont Paint Farms will make good anywhere



Paints and Varnishes *must stand these severe tests* BEFORE YOU CAN BUY THEM

YOU may have noticed that when a dealer is selling du Pont Paint, he does not hesitate to promise that you will be more than satisfied. That is because he is genuinely confident that before du Pont Paint is offered for sale, it is tested as paint was never tested before. Tested for color permanence, elasticity, hardness, resistance to sun, rain, fumes and every other condition which could harm paint.

The "Paint Farm" is the final test which proves beyond all question that du Pont Paints and Varnishes will endure.

A "Paint Farm" is a proving ground where paint can be exposed to severe conditions for months or years.



Du Pont scientists don't guess—they *know* how long a paint or varnish will last. Paint Farms are located in different parts of the

country where conditions are hardest on paint.

When a master painter or dealer recommends du Pont Paints and Varnishes he is simply trying to merit and hold your confidence by giving you your money's worth in satisfaction and enduring beauty.

Our free book, "Modern Color Schemes for the Home," offers a wealth of color suggestions from famous architects and decorators. The du Pont Home Decoration Service will be also glad to assist you in any decorating problem, just as it has helped thousands of others. E. I. du Pont de Nemours & Co., Inc., 1616 Walnut Street, Philadelphia, Pa.

DU PONT PAINTS . . VARNISHES . . ENAMELS . . DUCO