

THE DU PONT MAGAZINE



Protect your car all year round with **ZERONE** REG. U. S. PAT. OFF. anti-rust anti-freeze



BESIDES giving low-cost anti-freeze protection in the coldest weather, "Zerone" has certain other features which make it good for your car even in the summer.

Remember *this* when warm weather comes: Your cooling system cannot do its job when it is clogged with rust and corrosion. A rusty cooling system causes overheating and loss of power. "Zerone" contains a highly efficient rust inhibitor which keeps the passages free of rust and permits your cooling system to

operate efficiently. *And that's not all!* Tests prove that "Zerone" also improves engine performance because a mixture of "Zerone" and water passes off engine heat even better than water alone.

So, use "Zerone" in your radiator all year round. It's made by du Pont and costs only 25c a quart—a small price to pay for an efficient, full-powered engine. Have your dealer flush out your cooling system this spring, and then let him put in a quart or two of "Zerone." That's the way to get more power from your car until it's time for cold-weather servicing in the Fall. E. I. du Pont de Nemours & Co., Inc., "Zerone" Sales, Wilmington, Delaware.



FREE!

For an interesting, free booklet, "A New Way To Get More Power From Your Car," write to Du Pont, Dept. 00, Wilmington, Delaware.



Only \$1⁰⁰ a gallon and it's made by du Pont

THE DUPONT MAGAZINE

VOLUME XXXI NOS. 1-2

FEBRUARY 1937

From VEGETABLE OILS...

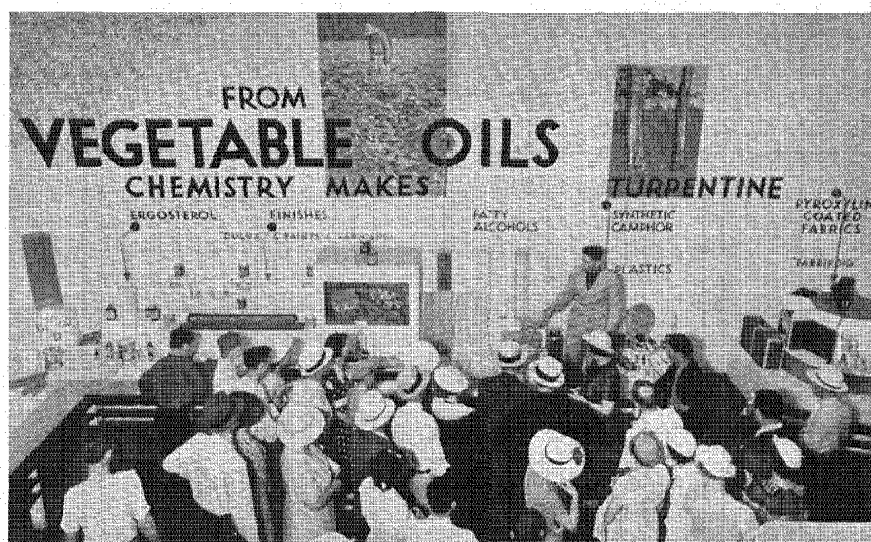
THE chemical industry uses large quantities of vegetable oils extracted from flaxseed, soya beans and tung nuts and from them develops many useful products. Du Pont alone consumes in one year twenty-three million pounds of oil—equivalent to the annual yield of 136 thousand acres of producing lands.

"All of us are familiar with Vitamin D, widely used in medicinal and food products for the prevention of rickets and the protection of child health. Ergosterol, manufactured by du Pont, is a styrol from a plant source, and when activated by ultra-violet rays it becomes a form of Vitamin D. This vitamin is mixed with vegetable oils to give oils somewhat similar in therapeutic effect to cod-liver oil.

"Turning to another commercial field, we learn that vegetable oils are employed in producing a new synthetic resin finish of great durability and beauty—Du Pont 'Dulux.' It is used throughout the world on steamships, such as the palatial *S. S. California*; on streamline trains such as those pictured in this exhibit of the Union Pacific Railroad; on airplanes, and in thousands of kitchens where it protects and beautifies refrigerators and other equipment."

The lecturer shows the visitors an exhibit of a panel on which "Dulux" marine finishes have been applied. Then he explains: "You can see from where you are standing that boiling water does not harm the finish, nor does the extreme cold of dry ice crack the surface."

In this final installment the lecturer in the Du Pont Exhibit, at the Texas Centennial Exposition, Dallas, explains how these materials are used in manufacturing certain well-known products



Almost nine thousand visitors to the Wonder World of Chemistry Exhibit have heard this story of how du Pont yearly converts twenty-three million pounds of vegetable oils into hundreds of useful products.

"In describing 'Dulux' one has to use a curious combination of examples because in feel and hardness it resembles more closely the qualities of ivory than does any other material. At the same time, the unusual flexibility of 'Dulux' makes it resistant to sharp, even hammer-like blows. Both its beauty and durability contribute to the wide use of this product in industry and in the home.

"The older types of finishes, paints, enamels and varnishes have a common bond with 'Dulux' through vegetable oils. They, too, are derived by chemistry from this group of raw materials.

"All du Pont finishes are pre-tested both in the laboratory and on paint farms, as we call our outdoor testing stations located at strategic points in different sections of the country. There the finishes are subjected to extreme



Turpentine is converted into synthetic camphor from which is produced pyroxylin plastics in such beautiful products as milady's attractive hand-mirror of "Pyralin."

THE DUPONT MAGAZINE

uses nearly half a billion pounds of turpentine in manufacturing camphor to use in producing pyroxylin plastics. Some of the varied uses of these plastics are for such things as combs and toilet articles, knitting needles, toothbrush handles, fountain pens and hundreds of other articles used daily. Another essential use of camphor is found in the making of du Pont photographic film. Du Pont is also producing today a refined grade of synthetic camphor for drug and medicinal use."

In the first article of this series, the lecturer told you about several du Pont products—how they are developed from raw materials and prepared for your use. You read books that are bound in "Fabrikoid" pyroxylin-coated fabric; your automobile and the furniture in your home are finished with Du Pont "Duco"; and the shades at your windows are made of a washable pyroxylin-coated material for which du Pont's trade-name is "Tontine." Vegetable oils are useful in manufacturing all of these products, as well as many others.

This story of vegetable oils concludes the series of talks given before visitors to the du Pont Company's exhibit, "The Wonder World of Chemistry," at the Texas Centennial Exposition, Dallas. In the preceding four numbers we have brought you other lectures, telling of du Pont's part in producing "Better Things for Better Living . . . Through Chemistry."

climatic conditions to make sure that they will retain their original appearance and afford protection through all kinds of weather. In a relatively short time chemists can determine the effect normal weather conditions will have on the finish on your home over a period of several years.

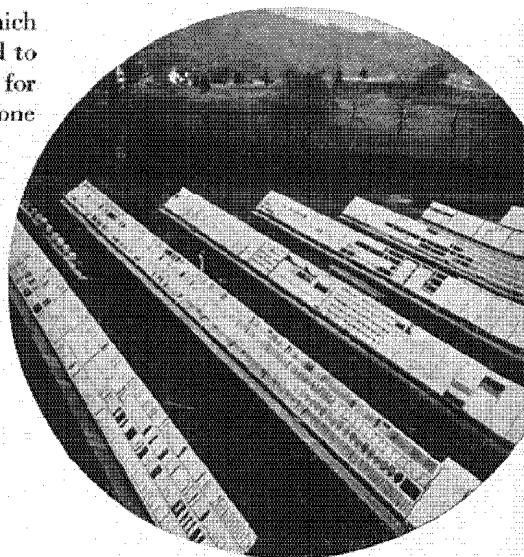
"From vegetable oils chemistry also makes another entirely different group of products known as fatty alcohols. Perhaps I should explain that these are not materials for putting on weight. Fatty alcohols are used in the textile industries in making softening and finishing agents and in the manufacture of soapless soaps that you know by the trade names, 'Dreft' and 'Drene.' These soaps are equally effective in hard and in soft water, and 'Dreft' may even be used in the home as a hard-water softener." The lecturer agitates a cylinder of water to show the sudsy property of the soap.

"Back in 1421, seventy years before Columbus discovered America, some Chinese visiting the island of Formosa were agreeably surprised to find forests of stately trees with a balmy odor that

could be detected for miles. They were camphor trees, and the Formosan natives made a pleasant-smelling product from them. The Chinese took some of the camphor home with them, and traders carried it throughout the Orient where it was already known and prized highly for medicinal purposes and for use in making amulets that would ward off evil. Your mothers, you'll remember, used it to prevent colds.

"The structure of camphor was discovered as long ago as 1813, and many attempts were made to produce it chemically. However, all efforts to make a high-grade product at a reasonable cost failed until a few years ago when du Pont chemists developed a process for making synthetic camphor from turpentine extracted from southern pine trees. This development is important to all of us, for du Pont now produces camphor at a price which makes it unnecessary to go abroad to buy it, thus opening a large market for American turpentine. Du Pont alone

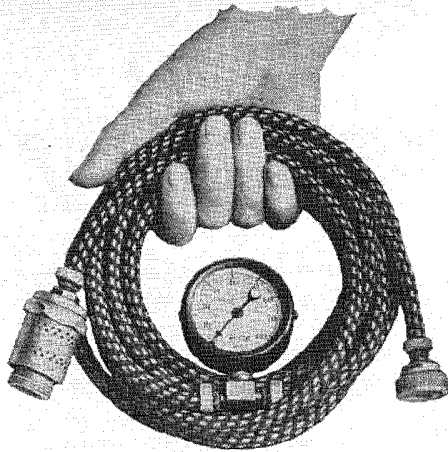
Exposure reactions of all du Pont finishes are carefully checked on strategically-located "paint farms" such as the one, right, which is located at Wilmington, Delaware.



FEBRUARY 1937

A Labor-Saving Hint for MOTORISTS

Enginair, a handy device for the inflation of automobile tires, saves time and worry for car owners



The entire operation of Enginair is based on a perforated, cadmium-plated, steel pumping element shown at left of illustration. Operation of the valve itself depends on two concealed flexible sealing strips made of Du Pont NEOPRENE polymerized chloroprene, formerly sold under the trade-mark "DuPrene."

HAve you ever been stranded along the roadside with a flat tire? Any motorist who has ever had this experience can appreciate the importance of having compressed air readily available in such a time of need. This is especially true if the spare tire has not been checked for some time. For what could be more aggravating than the sight of a spare tire going flat after the not-too-pleasant job of changing tires is completed? Even if the driver were lucky enough to have a hand-pump along, he would not particularly enjoy pumping the tire by hand.

Perhaps you have never had such an experience, but you may want to be prepared for a similar predicament. If so, you will be interested to know that G. H. Meiser & Company of Chicago has perfected an inexpensive little device that automatically pumps up a tire and enables the autoist to drive on after a few minutes. In the case of a slow leak, one merely reinflates the tire and then drives home or to a tire shop. This device is almost a necessity for farming people who cannot easily get to a service station when tires require air. And it will be of great service for trucks, tractors and other vehicles with pneumatic tires.

Enginair, the name of this handy aid for car owners, consists of a small valve and hose similar to that used at service stations and garages to furnish

air for tires. The essential difference is that air is provided by a cylinder of the automobile motor instead of by a special compressor. The driver inserts the valve end of the hose into the motor in the place of one of the spark-plugs, attaches the other end of the hose to the tire valve, and starts the motor. Enginair does the rest.

The entire operation of the device is based on a perforated, cadmium-plated, steel pumping element, as shown in the small illustration. This allows air to be drawn into the Enginair cylinder on the downward stroke of the piston and forced into the tire on the upward stroke. The operation of the valve itself depends on two flexible sealing strips which are held in place inside the perforated walls. It is interesting to note that only fresh air is furnished, because the design of the unit prevents carburetor gas mixtures from being drawn into the cylinder.

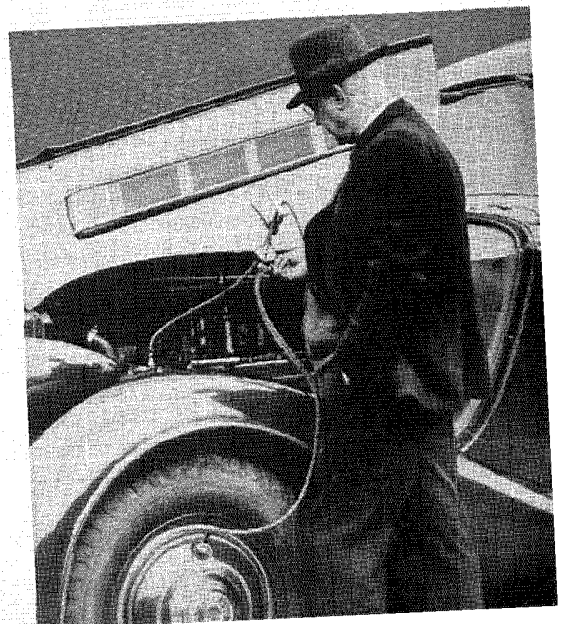
Although the device is simple in construction, it took years to perfect it and to find effective sealing strips which would give satisfactory service. Leather valves were used until recently, but these required oiling after the pumping operation to keep them soft and pliable, and if this was neglected, trouble resulted. To eliminate this need, it was necessary for the manufacturers of Enginair to find a material that would remain resilient without special treatment; and it had to be oil-resistant because some cus-

tomers might continue to oil the valves.

The problem was finally solved by using NEOPRENE, which is du Pont's chloroprene rubber, formerly sold under the trade-mark "DuPrene." This new rubber-like material was used because it had the necessary resilience and resistance to heat, oil and oxidation. The strips remain soft and pliable, functioning properly without attention, and if gasoline or oil accidentally come in contact with them, they will not deteriorate.

In addition to its use for the inflation of automobile, truck, tractor and other pneumatic tires, Enginair may also be used for the operation of spray guns, chisels, drills and the like. If a large volume of air is needed, two or more compressors may be used on a four-, six- or eight-cylinder motor. But if this handy device could do no more than aid stranded motorists, even then it would be of value to almost everyone.

HERMAN J. JORDAN

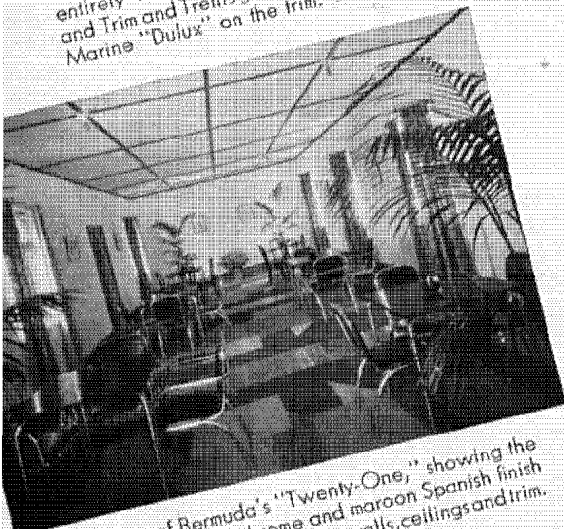


What motorist wouldn't welcome an Enginair when he is stranded along a sparsely-traveled roadside with a flat tire? The driver here shows how easily tires may be inflated with this handy device.

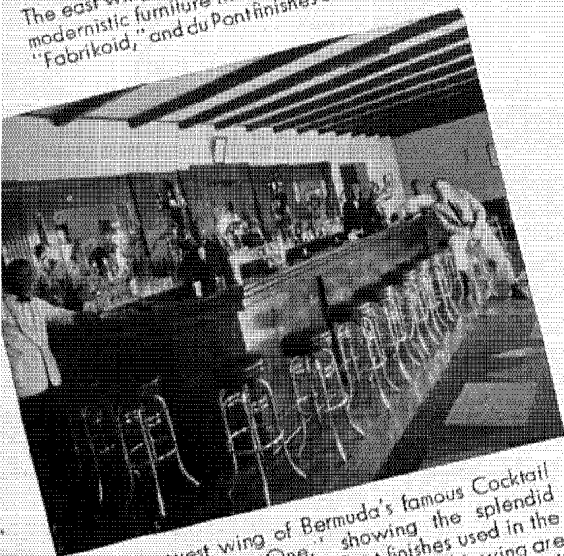
For pleasant Living



No. 1 shed, Hamilton, Bermuda, landing place of the Furness Liners, *Queen* and *Monarch*. It was finished entirely with du Pont paints—Seakrome Metal Primer, and Trim and Trellis Jade Green with Interior Cabin Ivory Marine "Dulux" on the trim.



The east wing of Bermuda's "Twenty-One," showing the modernistic furniture in chrome and maroon Spanish finish "Fabrikoid," and du Pont finishes on walls, ceilings and trim.



The west wing of Bermuda's famous Cocktail Bar, "Twenty-One," showing the splendid appearance of the du Pont finishes used in the interior decorations. The chairs in this wing are upholstered in blue Spanish finish "Fabrikoid."

"**H**ERE is everything advantageous to life . . . No kind of traffic would I admit . . . No occupation; all men idle, all." So speaks world-wise old Gonzalo in Shakespeare's play *The Tempest* as he surveys the idyllic beauty of the Bermudas and visions a commonwealth dedicated to the unusual task of pleasant living. Shakespeare, of course, never saw the Bermudas, but glowing accounts current at the time led him to set his romantic comedy in this earthly paradise.

Millions of words have since been written about the wind-built coral islands perched on an extinct volcano. The setting is an opalescent sea, delicate green over the white bottom near the shore; brownish over the reefs; and beyond, shading from the bright blue of sapphire to deep green. Its colors change rapidly with the play of wind and shadow on the surface, while in the transparent water gorgeous fish play in luxurious marine gardens.

Beaches of powder-fine, pink-tinged coral sand curl back the sea from the "Land of the Lily and Rose." From January until June, roses bloom; at Easter, acres of lilies fill the air with perfume. Twenty-foot hedges that bloom for nine months shelter white coral-stone houses. The oleander, hibiscus and many other showy flora stand out against the dark background of cedars. White coral roads cut from the solid rock wind back and forth between natural bowers and open stretches along the shore.

But Bermuda is so familiar that there is no need for an extended description. The beauty that must have been a sweet balm to early voyagers remains the same today. If anywhere on Earth is a land designed for serene, pleasant living—for the sheer enjoyment of life—that land is Bermuda.

We trust, however, that Bermudians will forgive us for remarking that Gonzalo's dream has never quite come

to be. Even as Adam had work to do in the Garden of Eden, so Bermudians have had to labor to sustain themselves. And they have done well with their twenty square miles of land, the oldest self-governing colony in the British Empire. They have farmed, built pirate ships, raked salt in the Bahamas, and followed the sea.

During the days of sailing vessels, the salvaging of wrecks was a lucrative occupation. Still recounted is a humorous story concerning a rector of St. Ann's at Southampton.

One stormy Sunday a man entered the church and whispered to several of his friends. When they started to leave, the rector asked the reason. On learning that a ship had foundered on the southwest breakers, he announced, "The congregation will remain seated until I take off my surplice, and then, boys, we'll all start fair."

Tides of world affairs have not left the islands untouched. They were caught up in the strife of the War for Independence, the War of 1812 and were active in blockade running during the Civil War. More recently, however, they have settled down to enjoy life, grow potatoes and lily bulbs for export and cater to the tourists.

One who has been fairly close to this later phase in their development is Captain W. V. Ross Winter, general agent for the du Pont Company in Bermuda. His view is somewhat more practical than that of the casual tourist. He has resided in Bermuda for many years, and has no misconceptions about its climate, for instance. He reports that, although the temperature rarely goes above 85 degrees in the shade, the sun shines with an intensity that many finishes cannot withstand. The salt air, too, may brace the human system, but it attacks some materials with the deadliness of an octopus on the barrier reef ensnaring its prey.

"Prior to the introduction of du Pont

Nature gave Bermuda great riches, to which man has humbly added

finishes," Captain Winter tells us, "the average length of a paint job on the outside woodwork of a house was between eighteen months and three years. Our finishes have a much longer life. I know of one job, for instance, where Du Pont Trim and Trellis Green was applied nearly eight years ago. It is still in perfect condition."

When one travels in Bermuda today, it is by the diminutive railway, picturesque carry-all, bicycle, boat or foot, except in going to fight one of the rare fires or to pick up a disturber of the peace. In short, the only motor vehicles are two police cars and four fire trucks. The trucks are finished in "Dulux" and the cars in "Duco."

Bermudians take a great deal of pride in their homes, many of which are built of the native coral stone. A definite effort is made to maintain a uniformity of architectural treatment. For this reason Du Pont Cement and Stucco Coating has recently become popular as an exterior finish.

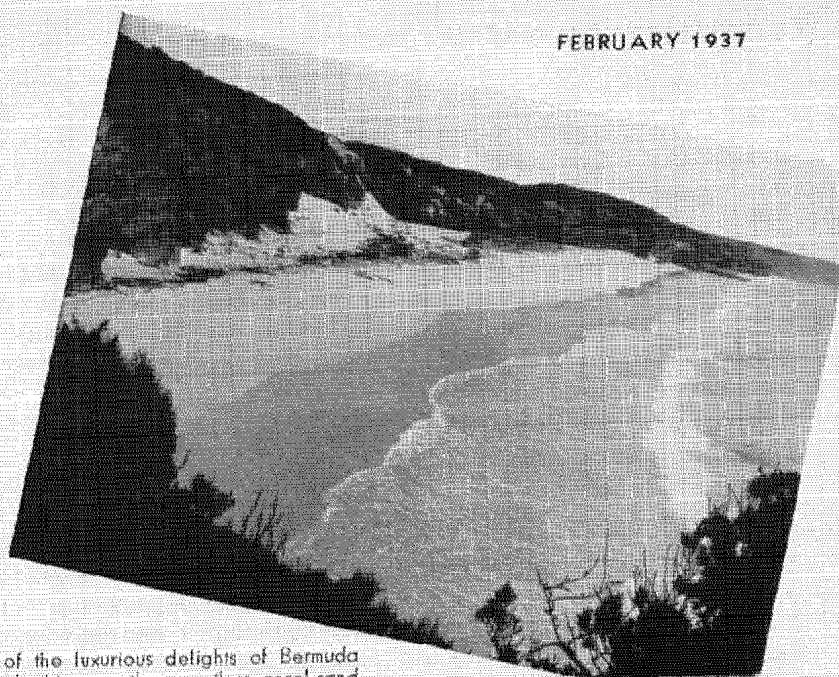
Insects, unfortunately, do not fit into the picture of an earthly paradise, but Captain Winter reports that there are some that play havoc with practically all commercial bindings and very quickly destroy certain types of window shades. According to the Captain, these pests use ordinary shades for pasture, considering them excellent forage. In contrast, he mentioned one of the many Du Pont "Tontine" pyroxylin-impregnated shades on the islands. It has been in constant use for over six years, and not even the most destitute insect has attacked it.

At certain seasons of the year, mildew forms rapidly and spoils many articles that are not carefully protected. Captain Winters states that for upholstery on both furniture and carriages, Du Pont "Fabrikoid" has

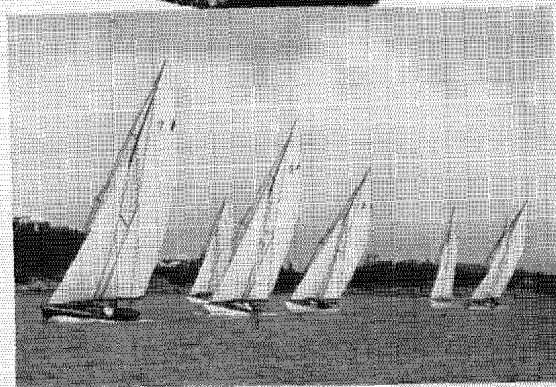
successfully withstood the combined ravages of insects and climate. "Book-binding 'Fabrikoid,'" says the Captain, "has met the need for an indestructible covering for valuable books and manuscripts."

There is, of course, some industrial activity in the Bermudas. In connection with "Velvetex," the rug underlay that cushions rugs and adds to their life, Captain Winter called attention to the Bailey Bay factory of Smith & Scott, creators of Lili Perfumes, who process the native Easter Lilies and other flowers for perfume bases. Over fifty thousand American visitors have tramped over the "Velvetex"-covered floors of this factory.

Bermuda had what it takes 'way back in 1609 when a storm tossed one of Somer's Virginia-bound ships on its shore and provided Shakespeare with a setting for *The Tempest*. Time has brought many changes, but Bermudians today follow the gentle and graceful life, to which their land is so conducive. They move slowly and leisurely. A somewhat exaggerated case is that of John Lusher, who has been building a boat for forty-one years, but will set no date for the launching. The Bermudians go their way undisturbed by the revelry of



One of the luxurious delights of Bermuda is sun bathing on the countless coral-sand beaches that skirt the islands.



Photos by Furness Bermuda Line

Bermuda offers the yachtsman many delights. In the background are the inevitable cedars and white-coral stone houses.

tourists in the famous "Twenty-One" and the New Windsor.

But much has been done for the visitors who come bristling with the implements of sport. With ferry-boat regularity steamers shuttle them back and forth between New York City and the islands. Fine hotels cater to their varied tastes. Golf courses and tennis courts checker the undulating hills and dales. Bicycles carry self-sufficient honeymooners to secluded retreats. In the evening, dances are held under the stars. The Americans ride, swim, sail and helmet-dive with an energy that would have dismayed old Gonzalo, the advocate of idleness.

E. A. SAMPSON

NEWS of a

CHEMICAL research serves our daily needs by constantly improving existing products and by creating entirely new ones. The du Pont Company summarizes its contributions in the phrase—"Better Things for Better Living . . . Through Chemistry."

Some of the developments that emerge from chemical laboratories are spectacular in nature and the public for a brief space of time becomes aware of them. Others, which also serve human needs, are absorbed in the great melting pot of industry and come into use so unobtrusively that the ultimate consumer is hardly aware of their existence. That is generally the way with new dyes and pigments.

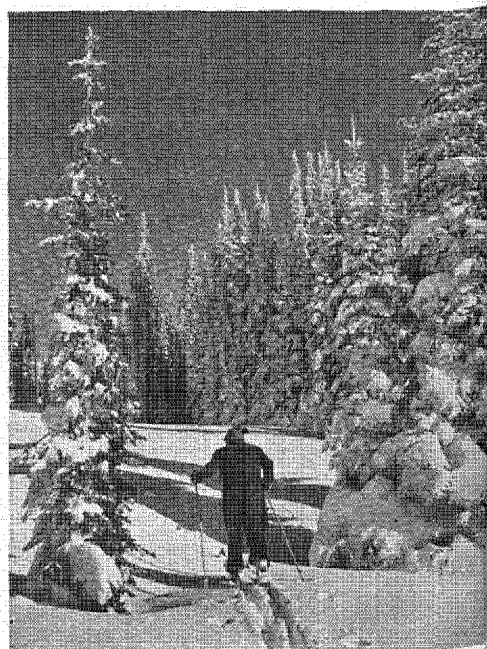
Color is a curious paradox. It is all about us—in our homes, in our clothing, in almost everything we use—and its presence is apparent because it strikes the eye. Yet we take color for granted, just as we do the rising and setting of the sun. We seldom pause to reflect upon what the world would be without color. Yet even if only the man-made colors were suddenly to be taken away, it would be almost as astonishing as awakening to a world devoid of light.

Until 1856 when a young English chemist, looking for a way to make synthetic quinine, stumbled upon a purple dye, man was dependent upon the vagaries of nature for his colors. Coloring substances were laboriously extracted from plants, tree bark or shell fish. These products seldom produced "fast" colors and they generally were unsuited to the uses to which they were put. However, they had to do, for they were the only ones available until research discovered the chemical rainbow hidden away in coal tar. Today, we have dozens of different types of dyes and pigments, yielding literally thousands of different shades and tints.

However, what is to be said of the blues? Everybody knows that one is likely to have more difficulty with bright blues than with almost any other shade. Mother Nature cannot claim much glory here, for there are no natural blue pigments that will really stand up under the various conditions of modern service. And it must be admitted that—up to now—even the chemist had failed to produce a product of this type that gives complete satisfaction. And this brings us to the real news. All that is now changed. Chemical research has developed a new blue pigment that will be hailed in industry and the home alike. It is a product that deserves to emerge from the laboratories with fanfare—not simply be taken for granted.

The new blue pigment is known technically as copper phthalocyanine and is being sold by the du Pont Company under the trade-mark "Monastral" Fast Blue BS. There is a marked similarity between its chemical structure and the structures of hæmoglobin and chlorophyll, the coloring matter of red corpuscles and green plants respectively. Yet "Monastral" Blue is far more stable than these two comparable products of nature. In fact, therein lies one of the fundamental reasons for its claim to fame.

The uses of "Monastral" Blue are wide and varied. It fills a definite need for a blue capable of meeting the stringent requirements of many color-consuming industries, both from the standpoint of application and fastness properties. As can be seen on the cover of this number, which is printed in ink colored with the new product, it yields strikingly brilliant shades of blue. "Monastral" Blue is extremely resistant to almost all of the severe color-destroying agencies. It is particularly fast to light and to acids, alkalis and lime.



We repeat here an illustration of the front cover of this issue just in order that we may have the opportunity to tell you that MONASTRAL Fast Blue BS was used in the printing of this picturesque winter scene. Now won't you turn to the cover and see how brilliant and deep the tone qualities are in that picture, and remember that it will look the same for time on end.

This new blue can advantageously be applied to almost every product using color. Printing inks, paints, varnishes, enamels, lacquers, synthetic resin finishes, carbon paper, wall paper, coated papers, "Fabrikoid" coated fabrics, linoleum and cements are only a few that might be mentioned.

One of the most interesting properties of "Monastral" Blue is its suitability as a trichromatic blue for printing inks. Manufacturers of print-

new Blue

FEBRUARY 1937

*Introducing a remarkable new fast pigment
for many coloring purposes*

colors of their products. Inks made with "Monastral" Blue more closely approach the desired shade than those made with any other pigment blue.

Although the matter of light fastness is usually not important in ordinary printing, it is of vital concern in window displays, cut-outs, counter pieces, window streamers or banners that must remain exposed to strong sunlight. Displays that fade look washed out and old, and any merchant who takes pride in his establishment will soon discard them. Thus, there is a definite loss of advertising value to both the manufacturer and merchant. The outstanding resistance of "Monastral" Blue to the sun's rays should prove a worth-while factor to the purchaser of lithographed and printed window or outdoor display material.

Those who keep up with the times in home decoration know that the use of artistic wall papers is increasing. Colonial, period and pictorial subjects are very popular and the range of attractive designs and colors is wide. The decorator need not curb his creative imagination, and the quality of these wall papers is better than ever. Manufacturers are using faster colors, a trend also evident in textiles for clothing, draperies and upholstery fabrics—and this is definitely benefiting the consumer. Nothing ruins the appearance of a beautifully-designed and furnished room more readily than faded fabrics and discolored wall paper. "Monastral" Blue, incorporated in papers, even in the palest pastel tint, assures the home decorator of color durability. No tell-tale marks are left

beneath pictures, the sun may pour in with impunity, and furniture may be moved to satisfy every whim without even thinking of faded wall paper. "Monastral" Blue also proves its merits in washable wall papers because of its fastness to acids and alkalis. And though the action of freshly-plastered walls often affects the shade of ordinary colored wall papers, paper dyed with "Monastral" Blue remains unaffected in shade.

Garage doors, shutters, trellises and other surfaces, when finished in paints compounded with "Monastral" Blue, retain their attractiveness through long periods of exposure to sun and weather. Linoleum and oilcloth colored with this new blue can be washed and scrubbed repeatedly with strong cleansing agents without suffering any perceptible loss of color or beauty. "Monastral" Fast Blue also is of interest as a color base for cement building materials and cement composition floorings that are to be used indoors. A broad range of distinctive blue shades possessing exceptional fastness to light, acids and alkalis may be obtained. "Monastral" Blue has been found equally effective as a coloring agent for various types of coated textile fabrics, such as Du Pont "Fabrikoid."

Space does not permit us to describe fully all of the known uses of this remarkable product. But the foregoing highlights should give the reader some idea of its artistic and commercial importance. "Monastral" Blue is being used today by many color-consuming industries. More complete information may be obtained by writing to the Du Pont Dyestuffs Division, Wilmington, Delaware, or to the Krebs Pigment and Color Corporation, also in Wilmington. The latter organization markets "Monastral" Blue under the name "Ramapo" Blue.

ANSCO C. BRUNIER, JR.

A New Star IN BLUES

DU PONT DYESTUFFS DIVISION
WILMINGTON, DELAWARE
KREBS PIGMENT AND COLOR CORPORATION
WILMINGTON, DELAWARE, U.S.A.

To see just how striking this advertisement is when printed in MONASTRAL Fast Blue BS, look at the back cover of this magazine. We particularly call your attention to the brilliancy of shade and the gradual gradation of tones ranging from delicate highlights to solid areas.

ing inks have made great strides in producing colored inks for specific requirements. Yet, while the majority of blue inks currently in use are suitable for some forms of three-color printing, they are entirely unsuited to others. This is especially true when fidelity of shade reproduction is important. Makers of fabrics and other goods who use color advertising are particularly eager that the printed reproduction should reflect the true

THERE'S NO MYSTERY ABOUT A

IF YOU are old enough, you can remember the backache-producing process of pumping air into an automobile tire by hand. You may recall grasping the barrel of the pump to replace it in the tool box, and dropping it with an expletive at least as strong as "ouch." You had learned from the pump that compression of air meant heat. If you inflated a truck tire to sixty pounds pressure, more heat was developed than your hand could bear.

Now, increase the pressure to 450 pounds and the heat increases until it reaches 1000 to 1100° F., which is hot by any man's thermometer. Lead melts at 622°; tin, at 449°; zinc, at 889°; water boils at 212°, and your kitchen oven, in baking, varies from 360 to 400° F.

So, if you wonder about the Diesel engine and its ability to ignite oil without the use of spark plugs or magnetos, just remember the effect upon the tire pump—multiplied.

The piston compresses air only. A thousand degrees of heat is produced. Into this inferno, through minute holes, is injected oil that forms a spray—almost gaseous. When that hot air and gaseous oil meet and mingle, a burning or explosion occurs, and the piston—the only movable object—gives way to the force by moving down and revolving the crankshaft to perform useful work. Repeat this 250 to 1200 times a minute. Multiply one cylinder by as many as eight in one engine and you have a steady output of power as a result.

Dr. Rudolph Diesel, inventor of the engine that bears his name, was born in France and educated in England and Germany. Just before the World War, while crossing the English Channel to keep an appointment with the British Admiralty, he disappeared from the boat. Backstairs gossip about his mysterious death would form a plot for an E. Phillips Oppenheim story.

There is perhaps good reason for calling the present time the beginning

of the Diesel Age. Other means of producing power have exemplified that "woeful waste" your mother used to mention when you did not eat the crust. The steam engine converted only six per cent of the possible energy of fuel into actual energy. The gasoline engine in your automobile bettered that by three times, reaching nineteen per cent of the possible energy in the fuel burned. Now the Diesel raises this to thirty-three per cent and, with super-charging, which in layman's parlance means using pressure to crowd more air into the cylinder, increases that thirty-three per cent thermal efficiency to a still higher level.

It was perhaps the spectacular application of this power to railroad trains that made America Diesel conscious. Here was news. A mile a minute from coast to coast. Great reduction in fuel costs. Lean years for the railroads might be turned to harvest years. New hopes arose. With not so much banner waving, the Diesel engine began to infiltrate into the trucking industry. Steam shovels became Diesel shovels. But back of all these news-worthy applications there had long existed a Diesel industry that had quietly chased the "bugs" from early designs, spent millions in development and installed thousands of horsepower in engines for every type of power plant.

Whether applied to the top-hat-and-tails yacht or the dungaree work-boat, Diesel engines have brought new safety and economy. Fishing boats out of Gloucester, San Pedro, Seattle and other ports have adopted them almost exclusively. Short- and long-run ferries find them ideal, for they start instantly and consume fuel only when operating; hence, no stand-by losses. At one time eighty per cent of the vessels building were to be Diesel equipped. They were early in, and have continued in, submarines. Dredges find new economy in them.

That is their record afloat. Ashore, the Diesel continues its forward march

and its ever-widening application. Flour mills reduce their cost per barrel of flour, ice plants their per ton of ice. Private lighting and power plants in many factories become extremely profitable installations. Small and medium-size cities install them in municipal power plants. Diesel switching engines will soon be as common as Diesel-powered tugs. Wherever power is used, there seems ample justification for investigating this newer, more efficient—hence more economical—means of producing power.

Du Pont serves the Diesel industry by supplying the paint and enamel that are used on its products. In 103 years one gains much experience with paint and finishes—and that is the age of The Cooper-Bessemer Corporation. In its two big plants, at Mount Vernon, Ohio, and Grove City, Pennsylvania, are built Diesel engines in wide variety, as well as other types of internal combustion engines and direct gas-engine-driven compressors.

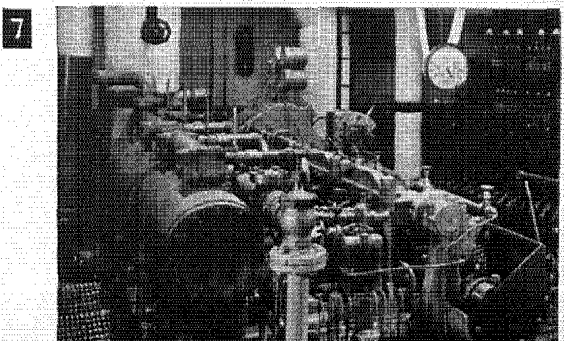
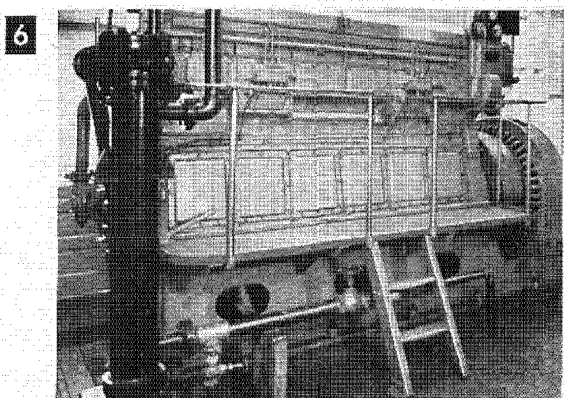
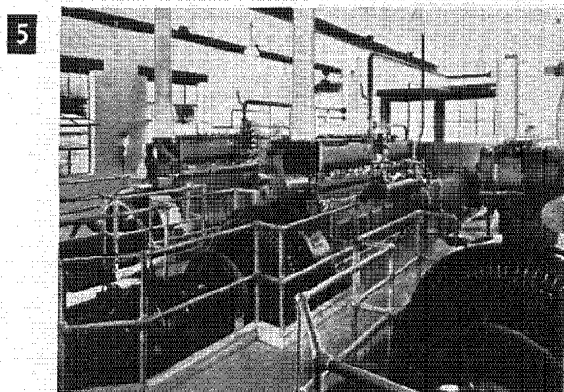
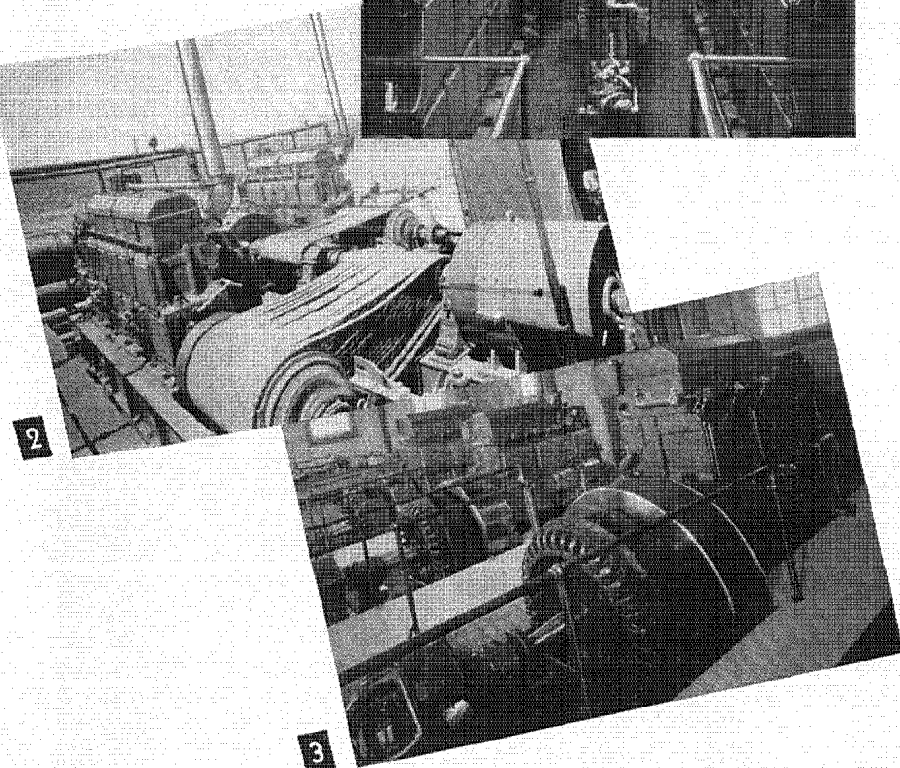
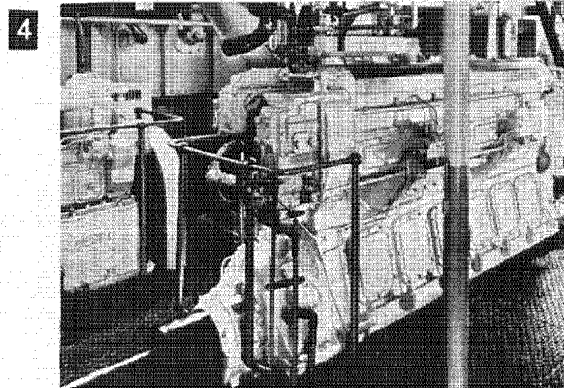
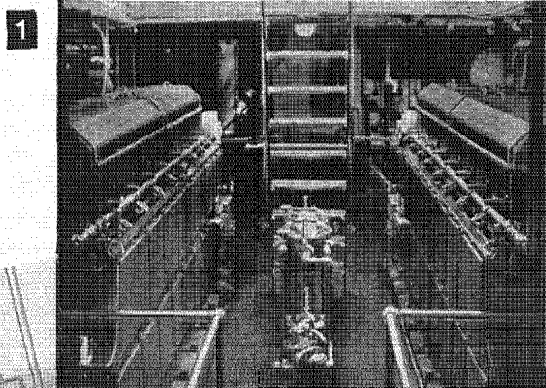
In the June, 1936, number of this magazine there was an advertisement for "Dulux" finishes entitled "Ahoy, Landlubbers!" Cooper-Bessemer engines, furnishing power both afloat and ashore, might be termed "Seagoing Landlubbers," for they are as much at home on the seven seas as on a Kansas prairie, and many of them wear coats of "Dulux" and "Flintflex." Painting these engines so that they will be equally impressive, whether they are used by natives in Borneo or as a demonstrator in a New England technical school, calls for a combination of finishes.

Prime and rub, prime and rub, put it on and sand it off is the formula Cooper-Bessemer uses to produce a smooth surface on which the finish is applied. Heat from the engines underneath the finish, perhaps salt air on the outside, tests the ability of any paint to "take it," but "Dulux" and "Flintflex" have solved that problem.

G. F. FITHIAN

DIESEL

If you mix hot air and oil, something is bound to happen . . . and it does



1 Two Cooper-Besemer Diesel Engines in the Ford Company's tugboat, *Dearborn*.

2 An installation of Rowan Drilling Diesel units installed at Monument, near Hobbs, New Mexico. Prominently shown in the foreground are the V-belt drives.

3 An installation of three Cooper-Besemer Starboard Full Diesel Oil Engines which are used in connection with electric generators operated by the Peoples Pulpit Association, Staten Island, New York.

4 Note the light-reflecting finish on this 110 h.p. unit, one of two installed in the lighthouse tender *Jasmine* for the Dravo Contracting Company.

5 The Atlantic Pipe Line Company's Mt. Enterprise Station in Texas contains three 340 h.p. Diesels shown in this picture.

6 A locomotive-type, 325 h.p. Diesel, installed in a dredge for the Kanawha Sand Company of Parkersburg, West Virginia.

7 This Cooper-Besemer Diesel, an eight-cylinder 765 h.p. engine, drives the *Grain-motor*, a canal cargo carrier owned by the Canada Steamship Lines.

THE EYES EAT FIRST

"Appetite appeal" plays a major rôle in modern food merchandising

HUNGER is one of the strongest instincts of the infant. Indeed, satisfying the appetite is a vital part of man's routine from the day he is born to the day he passes to the great beyond.

Two sensations, sight and taste, play the most important part in our eating habits. Of the two, sight is perhaps the more important, because if something doesn't look good we never get to the point of tasting it.

Scientists claim that 86 per cent of all impulses are received through the sense of sight. Confucius brought this out in a very homely way many years ago when he said, "One picture is worth ten thousand words."

Retailers have applied these facts in a practical way. They know the more the consumer sees the more he buys, so they take great care to display the maximum amount of merchandise.

It has been estimated that 85 per cent of all buying is done through the eyes. In the food field this means the "eyes eat first."

Retail grocers are extremely conscious of this fact. Even the old-timer, with his open cracker barrel, recognized the value of showing the crackers themselves. When you are in a market some time, notice how the retailer has carefully removed the tissue paper from the top layer of oranges; how he removes the husk from several ears of corn to show the juicy kernels; how he slices a watermelon in half to show the open face. He does these things to set up a psychological reaction technically called appetite appeal. This appeal, which is communicated to the motor centers through the sense of sight, is a tremendous force in modern food merchandising.

Practically everyone has stopped at one time or another before a window of delicious cakes or fruits and said,

"My, that makes my mouth water."

As a matter of fact, that is just what happens; your mouth does water, because at the sight of food the saliva is induced to flow faster.

A large Eastern university recently conducted some experiments to determine just what caused the saliva to flow and to what extent it could be increased. Apparatus to measure the flow of saliva in a human being was set up, a volunteer selected and the following procedure gone through.

First of all, the word "cake" was spoken to the subject. The saliva meter showed a slight increase in flow. Next, a black and white picture of a cake was shown. The saliva flowed a little faster. Then a colored picture of the cake was shown. A little greater flow of saliva was registered. Finally,

the cake itself was shown. The meter registered a tremendous gain in flow.

In other words, in this scientific measure of appetite appeal, the product itself was found to exert the greatest influence.

With "Cellophane" cellulose film, manufacturers are able to capitalize on these scientific findings. This modern wrapping material makes possible the practical application of these facts by food manufacturers in a wide diversity of fields. Baked goods, bacon and sausage, noodles, dried fruit and hundreds of other items now give full play to appetite appeal when packaged—fully visible, yet protected.

The next time you see a display of packaged foods, make a little test of your own. See which looks most tempting, which ones you are most likely to buy, which ones make your mouth water; in short, which have the most appetite appeal. Our guess is that the high scoring will be done by those packages that let you see what you buy—those displayed and protected in "Cellophane!"

M. C. POLLOCK

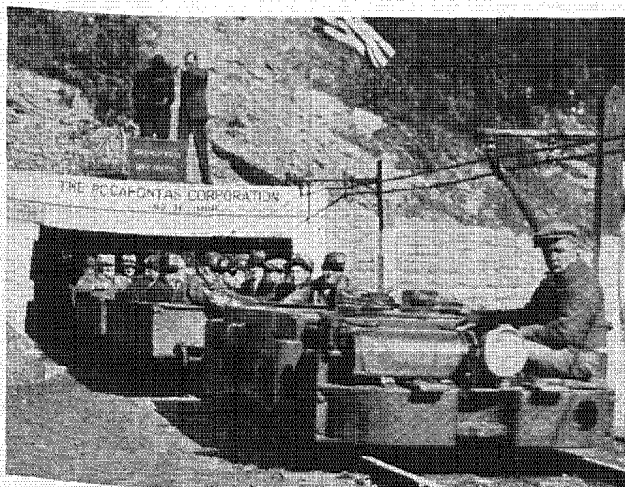


"The eyes eat first"—even the homely pea and dried bean can be made to look appetizing when packaged and protected with the modern wrapping material, Du Pont "Cellophane."

FEBRUARY 1937

NINETEEN MILES THROUGH COAL

The Pocahontas Fuel Company, Incorporated, recently completed the world's longest mine drainage tunnel



The last day's work on the drainage tunnel had been completed when this picture was snapped at the haul-way end.

ABOUT three months ago the Pocahontas Fuel Company, of Pocahontas, Virginia, celebrated one of the most noteworthy accomplishments in the history of coal mining in this country. It was the completion of the world's longest mine-drainage tunnel. It is 18.6 miles in length and drains 12,000 acres, or 190,000,000 tons of coal, which is nearly one-half of 400,000,000 tons of unmined reserves. As shown by the map, the tunnel passes through Pocahontas, Boissevain, Bishop and Amonate, in Virginia; and also takes in Jenkinjones, West Virginia.

In charge during the greater part of the operations was a former du Pont man, Mr. W. J. German. After serving two years as a captain of Engineers with the U. S. Army in France, he engineered the construction of a hazardous tunnel under Lake Erie at Cleveland, Ohio. Mr. German was with the du Pont Company for fifteen years before taking his present position.

As one travels westward up Laurel Creek from Bluestone Junction, the famous Pocahontas No. 3 coal seam

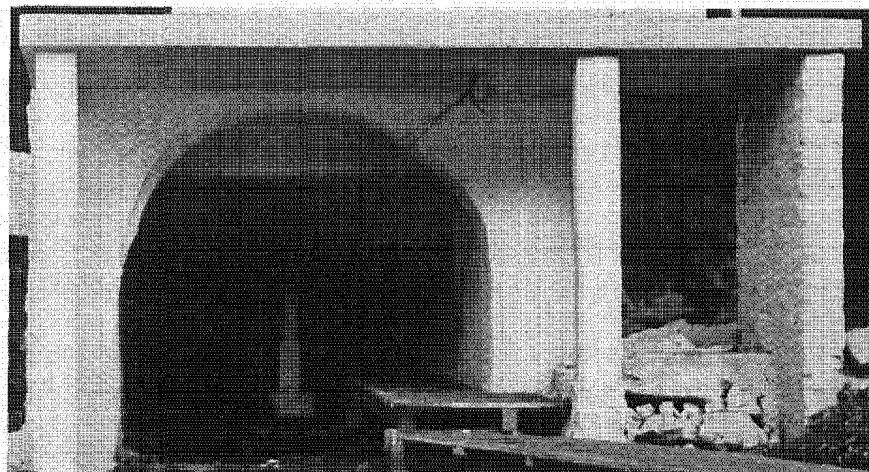
appears at its best on the right, or north side. The sandstone, shales and coal seams are lying as originally formed. To the south, a geological disturbance, known locally as the Abb's Valley Fault, has thrust the formation high into the air. The coal is some 17,000 feet up; the shale beds are upheaved; and on top are great masses of limestone that were once far below the coal measures.

The Pocahontas coal seam may be visualized as a saucer, cut through the middle, with the long cut lying along the fault line, and the center at Poca-

hontas. The thickest coal is found at Pocahontas and along the fault line, gradually thinning out toward the east, west and north. The seam also pitches to the west and south and goes deeper under cover in these directions.

In a sense the Pocahontas drainage system was actually started in 1881 with the opening of West mine by the Southwest Virginia Improvement Company. All entry driving in the several properties since that time has extended the drainage line. With the acquisition of new property, this company was reorganized several times, finally ending up with the name of the Pocahontas Fuel Company, Incorporated. In 1907, it had eleven active mines and 22,000 acres of coal land. The last major extension of the company's holdings came in 1923, when a tract of some 30,000 acres adjoining the Jenkinjones lease was purchased.

From extensive core drillings on this new property, it was discovered that a two per cent westward dip continued the full length of the property, and that another pitch, from north to south, of as much as twelve per cent might be expected. With suitable passages, any water entering the mines would thus find its way to the southern boundary, and then flow westward down the two per cent grade along the fault line to the western boundary of the lands.



Water drained from the mines emerges from this gravity outlet at Amonate, Virginia, 18.6 miles from the beginning of the tunnel in Pocahontas.

would thus be divided into two triangular tracts with 1,590 acres tributary to the drainage tunnel from the north, and 3,139 acres to the south, where pumping would be easy.

Work was started in 1931 on Jacobs Fork, about two miles east of the final outlet, at an opening to be known as No. 37 mine. For some distance the work was under or very close to the creek, with cover between forty-five and sixty-five feet. Before the work had progressed very far, a rock fault about 200 feet long was encountered. However, water troubles were not too bad, with the average flow about 300 gallons per minute. The water drained naturally to the foot of the slope and was then pumped to the surface. After the fault was passed, the work was pushed continuously to its completion.

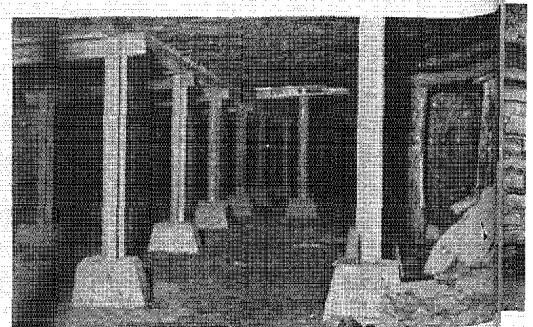
Every known method of coal seam prospecting was used to establish the direction of entries. They were driven on sights, in accordance with the figures of the Engineering Department. Very few deflections of entries had to be made, so closely did they follow the contour of the coal.

The usual methods of mining were followed in the No. 3 seam. Track cutting machines were used, and blasting varied with conditions. All loading was done by hand on a tonnage basis. The total distance driven in No. 35 was 3.8 miles; the total length of entries 24.2 miles; total coal removed, 314,272 tons; and the average daily advance, 15.0 feet.

The Jenkinjones entries were started westward toward those of the No. 35 mines in June, 1932. Since the start-

ing point was 2.7 miles underground, possible large volumes of water were anticipated. However, little was encountered. Here the total distance driven was 4.1 miles; the total length of entries, 45.1 miles; total coal removed, 724,640 tons; average daily advance, 15.0 feet.

In order to collect water coming from Pocahontas, the eastern portion of Boissevain and Jenkinjones 6-1, 6-4 and 6-8 mines, a 5,500-foot connection from Boissevain Basin Mains to Jen-



This section of the drainway is made permanent with 85-pound steel rail on concrete footings.

However, such a drainage system would have involved pumping the water from a depth of 800 feet at the western extremity.

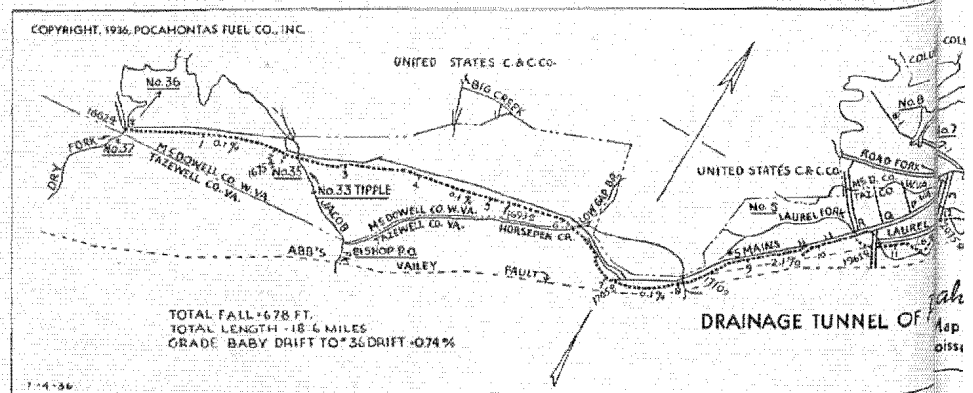
A more practicable plan was to drain the tonnage to be mined during the next twenty years. There was doubt that some coal in the Boissevain mine and all the coal in Jenkinjones No. 7 could be mined at a profit without natural drainage. It was known that water from Pocahontas, Boissevain and Jenkinjones mines could be made to flow to the southwestern boundary of the Jenkinjones lease.

An elevation was finally located on the outcrop of No. 3 seam on Dry Fork, at Amonate, Virginia, which would permit about one-tenth per cent favorable grade for an eight-mile drainway, if conditions were fairly uniform underground.

The plan was to follow a diagonal course running northwest from the Jenkinjones headings, leading to the gravity outlet on Dry Fork. The area

kinjones No. 5 was necessary. This required 6.5 miles of entry driving, with a daily advance of 18.6 feet, and produced 112,000 tons of coal.

In September, 1934, actual mining was started on the headwaters of Dry Fork in an opening to be known as No. 36. This was to be the outlet for the entire drainage system, 18.6 miles from the starting point in the West mine, at Pocahontas, and 2.2 miles from No. 35. The pitch of the seam at the starting point was about twelve per cent to the south, and this condi-



tion varied only slightly. The coal was about 4 feet in height and carried the usual No. 3 bone streak, with rash and impure coal at the bottom. The coal seam gradually grew thicker toward the east, finally reaching more than 5 feet. The roof was sandstone throughout and required scarcely any timbering. To make this final connection, 9.07 miles of entries were driven, from which 105,000 tons of coal were taken. The daily advance was 20.0 feet. For about two-thirds of the distance suffi-

throughout. In the light rock work, Gelobel LF, $1\frac{1}{8} \times 8$ inches, was used; and in the heavy rock work, Special Gelatin forty per cent and sixty per cent strength, $1\frac{1}{4} \times 8$ inches. The coal was all shot with Monobel C— $1\frac{1}{2} \times 8$ inches, permissible.

The amount of gas encountered in driving through so many miles of virgin coal with cover from 500 to 1,600 feet can well be imagined. Blowers and Du Pont "Ventube" were used in many sections where the miners were crowded for air; and many thousands of rolls of Du Pont Brattice Cloth were used for line canvas from the last break-through to the working faces.

In approximately sixty per cent of the distance driven, much care and attention had to be spent on the top rock in entries, drainways and air courses. The accompanying illustrations will help in visualizing the vast extent of roof control necessary. Almost throughout the main haulage-way, concrete, rock and steel supports were required for the roof. Rock was used to fill in large concrete columns of various sizes, which were also reinforced with 85-pound steel. Across these columns were placed steel headers generally made with two 85-pound rails, with the balls of the rails against each other.

The lagging between these headers was made of creosoted timbers, 6 x 8 inches, or larger. The general appearance of the haulway with all its steel and concrete walls reminds one of sections of a New York subway.

Along with the 13.6 miles of drainage tunnel, there were 84.45 miles of entries and break-throughs, which yielded 1,321,000 tons of marketable coal. One remarkable achievement was, that with the enormous quantity of explosives necessary for driving all these miles of haulways, air courses and drainway, not even a single minor injury was caused by explosives.

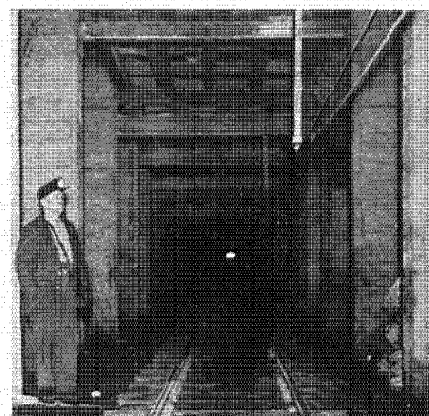
As well as having provided drainage for the new property and for large acreages of the older mines, this great undertaking has developed and proved a very large area of coal land. The



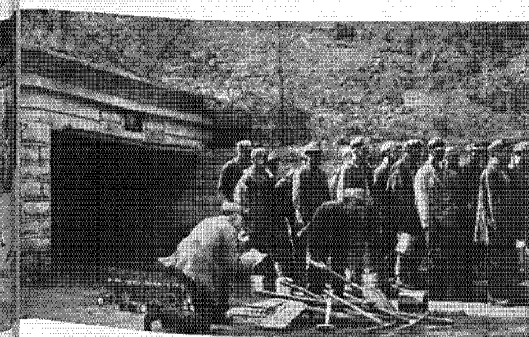
W. J. GERMAN, who directed the construction work described in this article. From an anthracite miner to a captaincy in the Engineers overseas, to the general management of one of the largest American coal companies—that is his record.

owners can now figure with reasonable exactness their mining operations for the next eighty years at the present rate of mining.

A. L. MILLIGAN
TECHNICAL REPRESENTATIVE



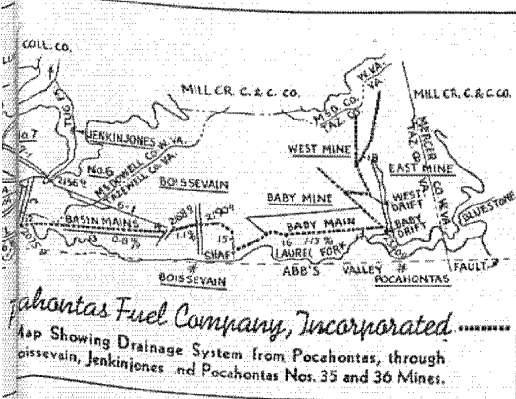
Permanent haulway parallel to the drainway. At this point the coal seam was about seven feet thick; and the strata above, soft and dangerous. Notice the rock, concrete and steel work required.



Tools being checked at Jenkinjones No. 5 after completion of the tunnel.

cient bottom was taken to allow ample height for a permanent haulway.

Three shifts per day, six days per week, were generally employed on this drainage development. Where conditions permitted, the coal was cut horizontally and sheared vertically. This speeded up loading and driving, and gave the men at the face a chance to mine coal of high-grade preparation. This vertical cut also reduced the charges of explosives to a minimum, which in turn cut down the cost of the work. Du Pont explosives were used



Garments of DU PONT RAYON

PREDICTIONS of a record resort season go hand in hand with a fashion forecast of daytime clothes for the South, in which new and varied fabrics with rough surface are taking a leading part. Beach and sportswear, spectator and afternoon ensembles are said to achieve new smartness in materials of Du Pont Rayon Thick and Thin yarn with interesting, uneven surface.

Representing a new development in yarn, and in the texture of resultant

weaves by their colorings—tropical white, delicate pastels, vivid flag colors and subtle off-shades such as strawberry pink, coral and cactus green.

Linen-Like Weaves for Sportswear

COLOR, dash and feminine detail are keys to new fashions for play and sportswear, which take to linen-like weaves of this novelty rayon yarn—some finely woven, and soft as handkerchief linen; others crisp, with emphatic, uneven tracings to vary their surface. Also favored are alpaca

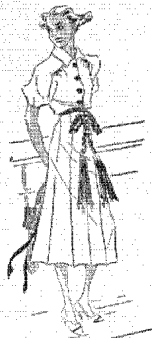
fled in the wake of such details as low, square necklines, fitted or bolero jackets, short sleeves with puffs at the shoulders, contrasting hands in several lively colors or bright rickrack at hemline or yoke, rows of stitching and colored plastic slide fasteners accenting pockets, necks and the slim lines of new frocks.

Fox-Trimmed Crepes for Afternoon

SOFT beige, sunshine yellow, delicate blues, greens and pinks vie with white in dressier daytime clothes of spongy



Sports dress of Thistleruff, a heathery cross-dye crepe with rough surface of Du Pont Rayon Thick and Thin rayon and "Acele." Material made by Susquehanna Silk Mills.



Colorspun, a delicate two-tone dull crepe of Thick and Thin Du Pont viscose yarn and "Acele" acetate yarn. This fabric, by Cheney Bros., makes a smart frock with "umbrella skirt" and raffia sash.



One-piece dress with peplum back jacket of Ahoy, a crisp, cool, linen-like fabric of Du Pont Rayon Thick and Thin and rayon. Material made by Susquehanna Silk Mills.

fabrics. Thick and Thin rayon yarn is made uneven during the process of its manufacture, contrary to other yarns which depend upon twisting or spinning for a nubby or slub surface. This novelty yarn with inherent uneven quality, when applied to a variety of fabric types, has evolved completely new materials which are said to be distinctive in touch, drape and surface interest. Fabrics woven from this rayon yarn appear to have a "third dimension," because there is not only an uneven surface pattern, but also a certain depth of texture, caused by variations in the yarn itself.

Sponsored in taffetas, crepes and satins for fall and winter, in black and rich accent colors, Thick and Thin now appears in new fabrics which span the daytime resort wardrobe, and predict the coming summer mode. New character is added to these unusual

weaves with rough texture, and dull crepes with occasional uneven surface threads. Especially versatile in these fabrics is the low-backed tennis dress with divided or slim circular skirt, and a pert jacket to don on occasion.

Fabrics of Thick and Thin rayon yarn again play a leading rôle in spectator fashions. The classic tailleur takes to the new linen-like weaves of this novelty yarn, with cut emphasizing short jackets to top of hips, and slight accent of shoulders to minimize waistlines. Sponsored for simple daytime clothes are a crepe with indefinite check motif outlined in Thick and Thin, sheers with pebbly surface caused by this yarn, and heathery, rough-surface fabrics with lovely cross-dye effects.

Tailored fashions in these fabrics are borrowing feminine appeal. The shirtwaist formula of past seasons has

surface crepes and sheers made of novelty Thick and Thin rayon yarn. For afternoons on ship or shore are slim, one-piece dresses with draped bodices or high, young necklines, complemented by hip-length jackets—some fitted, with peplum backs; others circular with broad sleeve bands of white, eggshell or grey fox marking sleeves above or below the elbow. Prophetic of spring is the full-length redingote with princess cut, made of one of these uneven novelty crepes, in deep-accent color, and worn with gayly-printed frock. The growing vogue for black and white finds many dresses in either shade, mated with boleros or sash-tied jackets of bold black and white print. Pastel jacket and dress ensembles are smartly accented by two-tone polka-dot prints, or small floral patterns which form borders for neckline, pockets and hem.

FEBRUARY 1937

THICK *and* THIN lead north-south fashion parade

*With daytime frocks
that are setting a new
gay tempo in resort wear*

New Thick and Thins Are Varied

SIGNIFICANT in every phase of fashions for resort wear and summer, 1937, these new Thick and Thins are sponsored by prominent American weavers. Stünzi Sons Silk Company show seven fabrics of this novelty yarn, including Matca, which for more than a year has proved a versatile medium with New York dress designers. A new pebble sheer of Du Pont Rayon Thick and Thin, introduced by Wahnetah Silk Company, is headed for an important rôle in advance spring fashions. Crepe Martineau, brought out recently by Foreman Silks Company, is proving the inspiration for high fashion spectator clothes. William Skinner & Sons have launched Dawntildare, a subtle, indefinite check weave with slightly rough surface, yet fine hand. Tic Tac is the expressive name of another Thick and Thin weave made by American Silk Mills and now being shown in collections of smart spectator sports fashions. Poncho, a linen-like fabric made by Cohn-Hall-Marx Company, promises to be a new classic in tropical suiting.

MARIAN SAUNDERS



ON TOP: Dress and jacket ensemble made of Tic Tac, uneven sheer of Du Pont Rayon Thick and Thin, in soft beige with matching fox collar.

ABOVE: Smart evening costume of Tic Tac, a sheer with uneven surface beauty, of Du Pont Rayon Thick and Thin. Contrasting with the white skirt and jacket are gay-printed bodice and waistline corsage.

LEFT: Tailored spectator ensemble of white Ahoy, a crisp, cool, linen-like fabric of Du Pont Rayon Thick and Thin. The one-piece dress is trimmed with blue grosgrain ribbon, matched by the blue belt on the jacket, and blue trimming on hat and shoes.

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E. R. MANCHESTER, EDITOR

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VOL. XXXI · February 1937 · NOS. 1-2

THREE MINUTES OF DU PONT BACKGROUND

IN a recent radio broadcast of the "Cavalcade of America," a high-spot review of the early history and development of the Company and its business was given as follows:

MANY of our friends have suggested that since the 'Cavalcade of America' presents significant episodes in this country's history, it would be appropriate briefly to outline in these stories of chemistry the history of such a national institution as the du Pont Company, for the growth of the organization has closely paralleled the progress of the nation.

"In 1802—one hundred and thirty-four years ago—a young Frenchman named E. I. du Pont de Nemours, encouraged by his friend, President Thomas Jefferson, built a small powder mill on the banks of Brandywine Creek near Wilmington, Delaware.

"Black powder was a vital necessity to the pioneers; they used it as gunpowder to obtain food and protect themselves. As frontiers were pushed back, they used it as a blasting agent for clearing fields, mining coal and metals, building roads, canals, railroads and many other projects that make for progress. Later, black powder was replaced for many blasting purposes by dynamite and other improved commercial explosives. Old-fashioned gunpowder gave way to the smokeless variety, which primarily was

made for sporting uses, but when the safety of the country demanded, for aiding the national defense.

"At the turn of the century the world entered a 'chemical era' and du Pont kept the pace. Utilizing its knowledge of cellulose chemistry, du Pont produced coated fabrics such as 'Fabrikoid,' plastics such as 'Pyralin,' finishes such as 'Duco,' photographic film, rayon, and the transparent wrapping material for which du Pont's name is 'Cellophane.' From the Company's experience in coal-tar chemistry have come dyestuffs, perfume bases, ingredients for medicines to help cure sickness and relieve pain, photographic chemicals and products to improve rubber, oil and gasoline.

"These new offsprings of chemical research so far overshadow the original du Pont products that powder now amounts to less than one per cent of du Pont's annual business. So it can be seen that as the nation has grown, so has the du Pont Company, for it supplies products that serve basic human needs.

"Developments of this kind mean that America now has a chemical industry which serves everyday needs, helping to make life safer and more complete for every member of your family. And in research laboratories such as those maintained by du Pont, scientists are delving into nature's secrets in a constant effort to improve existing products and develop entirely new ones. Such a research program gives assurance that du Pont will continue to supply 'Better Things for Better Living . . . Through Chemistry'."

WINTER—THE FUN SEASON

NO SIR, the winters are not what they used to be." Most folks no longer huddle around the stove and wait for spring . . . They're outdoors skating, skiing, tobogganing and having the time of their lives.

Skiing, we are told, was started centuries ago by an enterprising youth with a bright idea. Said he, "Walking

in deep snow is no fun. Perhaps, if I tied some long flat pieces of wood to my shoes, I wouldn't sink down so."

He tried that plan, and it worked.

The story may be apocryphal or not, but at any rate here is one sport that can be adjusted to one's temperament or physical abilities. If you are full of derring-do, you can follow the champions down hill, rising in the air and landing about a city block from the take-off point. But there's no rule compelling you to do that. As can be seen from the cover illustration of this number, the young lady is enjoying a leisurely jaunt through the snow.

If you are a lover of speed then we suggest tobogganing or sitting behind an expert pilot and racing down the long, curving ice shoot on a bobsled.

Those who engage in these winter sports are indebted in part to research chemistry for some of their fun, for chemists have contributed many things to make these sports better. They have given us water-repellents, used on ski suits and other outdoor wear. And the brilliant colors of outdoor apparel, with their long-lasting and non-fading properties, come from chemically-produced dyestuffs. Even the sleds and skis have special finishes to protect them from the ravages of Old Man Winter.

NOTE THE NEW NAME

AS of December 15th the name NEOPRENE has been adopted to describe our chloroprene rubber formerly sold under the trade-mark "DuPrene." This implies no change in the product itself.

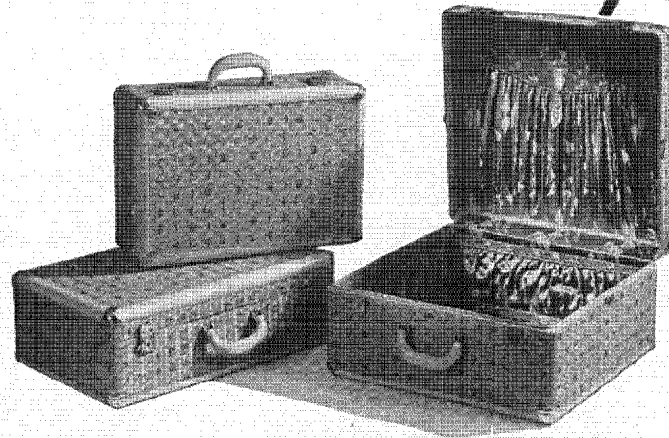
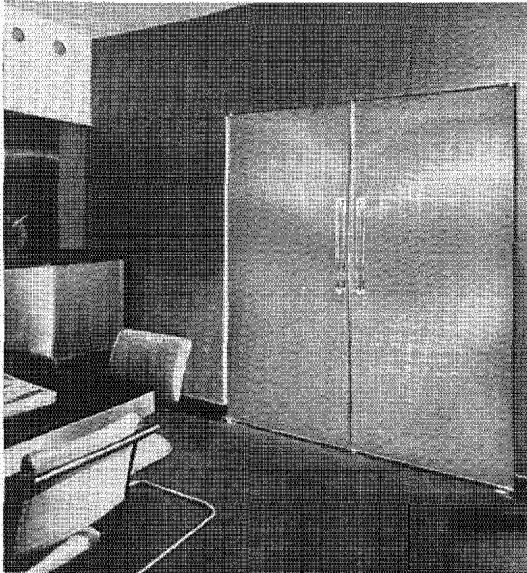
In addition to providing a short generic name for polymerized chloroprene, NEOPRENE will serve to describe the many products made from this new engineering material which display its distinctive characteristics. NEOPRENE compositions combine rubber-like resilience, strength, and abrasion resistance with remarkable resistance to heat, oils, gasoline, sunlight and other enemies of rubber.

FEBRUARY 1937

SIMPLICITY, DURABILITY *and Beauty*

"Fabrikoid," pyroxylin-coated fabric, provides all these features to meet the demands of modern design

THE OFFICE OF GILBERT ROHDE

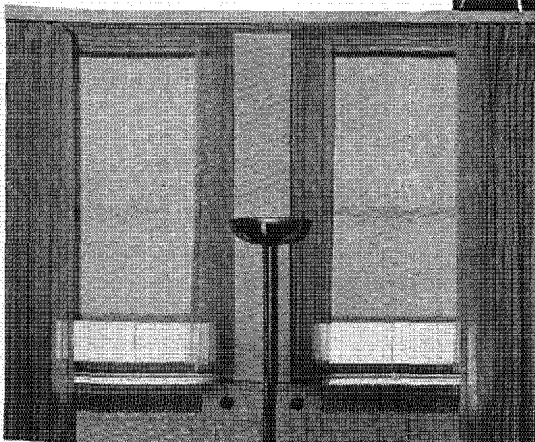


These pieces of Wheary light luggage show an interesting use of a decorative design suggesting travel. Currently meeting with favor from travel-wise buyers, they combine lightness with strength. The outer covering is "Fabrikoid," washable, waterproof and scuff-resisting.

Gilbert Rohde, as one of America's leading industrial designers, needs no introduction to the readers of this magazine. Currently, though, he has made time, despite a press of work, to redesign his offices.

The entrance hall and client's room were designed to demonstrate the use of materials that are distinctly the product of modern technology. Functionally, it was planned to meet the special requirements of his office.

The photograph shows a corner in one of Rohde's offices. The chairs are upholstered with Du Pont 6200 Armor Quality "Fabrikoid," and the whole of one wall and part of another are finished with the same material.



ABOVE: With the death of Prohibition, American public places have gone earnestly into face-lifting. In a radical departure from the heaviness and shadow of the speak-easy, they have called upon convivial colors and light, airy design to carry out the atmosphere the public place should have.

Here is the Marine Grill, of Chester, Pa., completely equipped with McKay furniture, all upholstered in Du Pont 6200 Armor Quality "Fabrikoid." Interesting is the use of the new unit furniture, seen to good advantage in the far corner. Sanitary, washable and liquid-proof as well as tough and durable, "Fabrikoid" has become standard for such use throughout the United States.

LEFT: Simplicity and faultless taste in window treatments. The windows of a suite in the Waldorf-Astoria, New York City, equipped with Du Pont "Tontine" washable window shades.

ALL DRESSED UP FOR BUSINESS

Delivery trucks must make a good appearance . . . a gleaming, new coat of Du Pont Automotive "Dulux" does the trick

JUST imagine that you are driving leisurely along a well-paved highway, enjoying a Sunday ride. Your car is running smoothly; the weather is perfect; the rolling fields and woods are beautiful—then, "Sis" or "Bud" says, "Let's eat!" And you, too, think that it might be a good idea. You begin looking for an inn or roadside restaurant and drive by a dozen places that don't quite suit you. Then you see just ahead an attractive, neat and well-painted tavern. You're sure that you can find good food well-served there. And it's a safe bet that you will.

But what has this to do with delivery trucks! Just this: two things caused you to select that neat little tavern as your eating place—appearance and impression. These same things are important factors in deciding the exterior finish and design of modern delivery trucks. For, today, prospective buyers are largely influenced in their purchases by the impressions they gain from the appearance of these trucks. Consumers look upon them as moving advertisements—the company's representative on wheels.

For this reason, oil companies and owners of department stores, bakeries, dairies and other types of businesses are giving more thought to the appear-

ance of their delivery trucks. For, not only do they want a finish that is durable and long lasting, but they also desire a neat-appearing truck which will reflect the spirit and policy of their business.

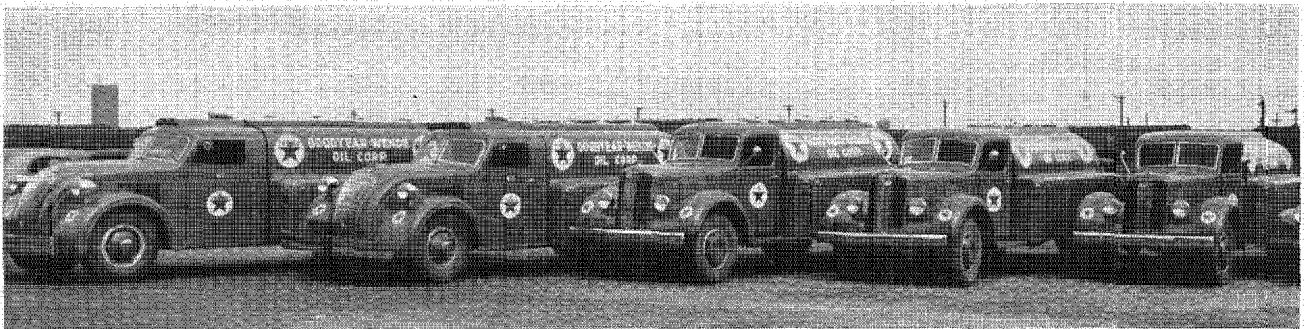
Besides the name of the business and its location, many companies use descriptive words and phrases on trucks. Such words as "pure," "fresh," "quality" all create appealing impressions for the goods which are described. Grade "A" vividly gives the impression of supremacy to a product. But if Grade "A" appears on the side of a delivery truck with fenders bent and chipped and with the paint scratched and streaked with grease, the appearance immediately contradicts the mental impression of the written words. The ultimate involuntary decision reached by those who see the message is that the product is no better than the exterior of the delivery truck that transports it.

The value of smart-appearing trucks with spick and span, gleaming finishes over ones with a dull, shabby appearance is recognized by owners of every type of business. The owners of groceries, bakeries, dairies, department stores and moving companies realize that neat-appearing trucks appeal to those who buy, as well as reflect the progressiveness of their company. Constant handsome appearance on city

streets and on rural byways makes the delivery truck a valuable advertisement for the owner. These companies are aware of the fact that when they please the public eye, they add to one of the most intangible and one of the most important items of their business—Good-will.

Modern merchants everywhere are solving the problem of finishes for their trucks by using Du Pont Automotive "Dulux" finish because this gives full and long-lasting protection to both wood and metal surfaces of commercial vehicles. It possesses unusually fine adhesion and is remarkably flexible. It is hard and smooth and is exceptionally resistant to the harmful effects of moisture, gasoline, oil and alcohol. In short, destructive enemies of a beautiful truck appearance are combated as completely as possible with "Dulux."

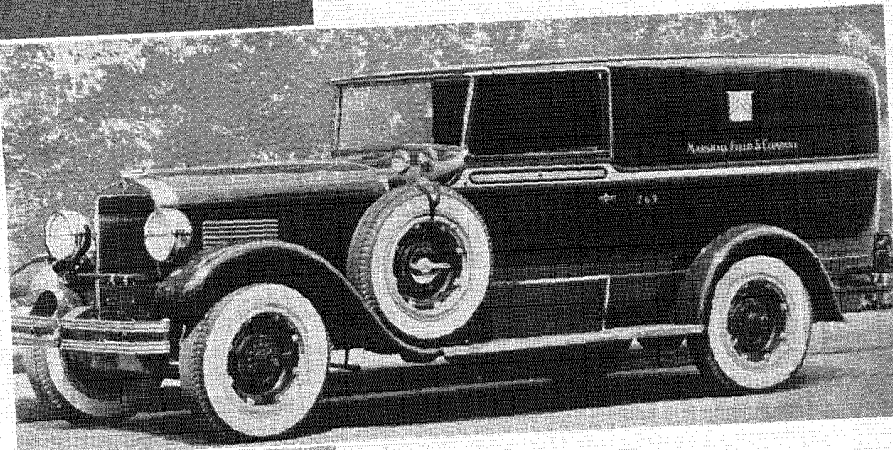
In order to be sure of these qualities, the same rigid tests that are applied to all du Pont products are applied to "Dulux" before it is sold to the manufacturer or merchant. Tests in the laboratory prove the fastness and standardization of color as well as resistance to marring and scratching. In addition, panels coated with "Dulux" are given the outdoor exposure tests on paint farms located at various points throughout the country. Here the panels, erected at a 45° angle facing south, must withstand tests against the ele-



FEBRUARY 1937

This unusually handsome job is a horse van finished in "Dulux." It belongs to the Sagamore Farm, Glyndon, Maryland.

Among the leading department stores of the country that have found du Pont finishes both practical and economical for keeping their fleet of delivery trucks attractive and up to date is Marshall Field & Company.



LEFT: One of the eighty streamlined trucks on which "Dulux" is used. Mr. H. J. Olson, manager of Olson Transportation Company, has added his enthusiastic approval to that of other well-known fleet owners who use this finish.

BELOW: Modern trucks use the newest transportation finishes. This Hillman Pure Food Company truck is finished entirely in Du Pont "Dulux."

ments, such as rain, wind, sun and snow. But the greatest tests of all are on trucks in actual service owned by the many leading companies in this country. And in every case, "Dulux" has proved its worth.

Whether a company owns one truck or a fleet, du Pont distributors and Authorized "Duco-Dulux" Refinishers from coast to coast will aid in providing a finish for trucks that will impart better impression because of finer appearance.

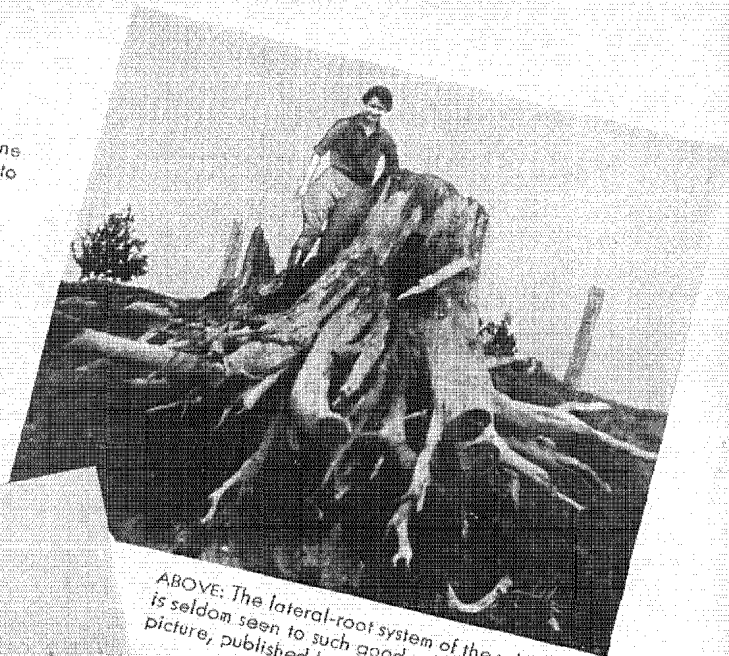
EDWARD J. PECHIN



BELOW: Characteristic of the Southern yellow pine stump is its long tap-root which may extend down into the earth as far as ten feet.



ABOVE: The lateral-root system of the white pine tree is seldom seen to such good advantage as it is in this picture, published here for the first time.



RIGHT: A close-up view of a semi-tap-rooted oak stump that was situated in a fortunate position for the photographer to make this revealing shot.



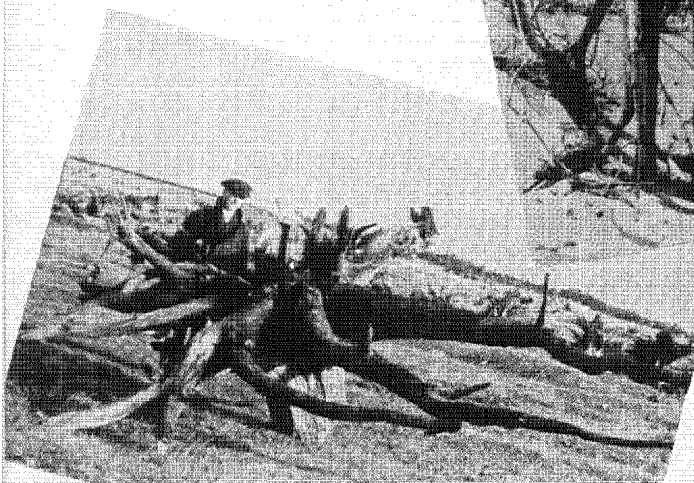
IT WAS the old settler's boast that, during his lifetime, he had cleared forty acres of farm land. He had a right to boast. By chopping, grubbing, prying and pulling he had cleared the stumps from his land.

And he was just one among the many hardy, energetic people who, with axe, grub-hoe and oxen, prepared millions of acres of land for cultivation, roads and homes. Lacking labor-saving devices, they willingly lent their brawn to the task. Fortunately for us, however, some of them also used their heads at the same time. So it is today one can clear forty acres in one season with less labor than the early settler put in during his whole lifetime.

It is believed that Thomas Jefferson was the first man to use du Pont powder for a land-clearing job. Since then, explosives and their uses have undergone many changes. Yet there are people who still mistakenly believe that there is but one kind of dynamite, and that any type packed in a round, brown cartridge will serve as well as any of the others.

Even the lowly stump-blasting dynamites vary as greatly as do the

LEFT: What does a cedar root system look like? Well, here's a glimpse of one revealing the flat lateral roots reaching out in all directions.



RIGHT: This is reminiscent of pioneering days, but land clearing is still important business in many regions and ox-teams have work to do hauling away the stumpwood.



ALL STUMPS ARE NOT ALIKE

kinds of stumps. In case you have the idea that all stumps conform to the same pattern, here is an outline of a few of the more common varieties and the methods for removing them.

Southern yellow pine trees—and most of the other pines, too—have tap roots that extend down into the earth sometimes as far as ten feet. The job of cutting, in this case, requires a comparatively fast dynamite. One of these is Du Pont Southern Stumping Dynamite, which is designed especially for that job.

The opposite condition is found in the flat, lateral-rooted cedar which requires a splitting charge placed close under the bole of the stump. A better explosive for this purpose is the dynamite trade-marked "Agritol."

Still another is the semi-lateral root system of the white pine of the Lake States, where millions of pounds of dynamite have been used to clear what is now beautiful dairy land. This type of stump requires deep loading with "Agritol" No. 2 Dynamite.

In the Pacific Northwest, where trees are trees and a dozen children can hide behind one of them, the removal of the Douglas fir stump presents a difficult problem. This stump, also, belongs to the semi-lateral type,

That's why du Pont makes several types of dynamite for blasting them



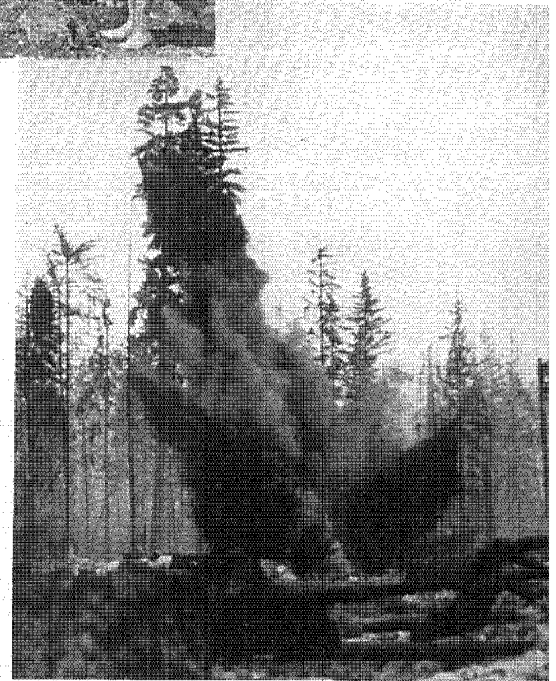
A Douglas fir stump which is certainly large enough to command a blaster's respect.

but because of its huge size, a special du Pont dynamite called Logger's Powder is required.

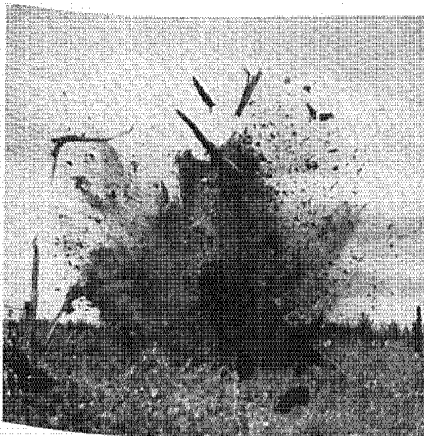
Finally, there are many stumps of the semi-tap-rooted type, and one who attempts to cope with them usually finds it necessary to employ several different kinds of stumping dynamite.

Many factors besides the type of stump, its size and age must be considered by the blaster. The kind of soil and its moisture content are important. If the soil is wet, one-third of the normal charge may suffice for the work. Likewise, a stump with its roots embedded in heavy soil requires much less dynamite than would be required in light soil.

From this brief article it can be seen that there are many variable factors in the removal of stumps. And they must all be taken into consideration by the blaster who is looking for maximum efficiency and minimum cost for explosives. To assist in the problem of stump removal, the Agricultural Extension Section of the du Pont Company's Explosive Department has prepared several booklets that give directions for the efficient use of explo-



A Douglas fir stump in the Pacific Northwest leaves its ancient home. A special dynamite is required for this semi-lateral type.



A well-placed charge of du Pont dynamite makes short work of removing a deeply-embedded stump in a farmer's field.

sives in this work. Free copies may be obtained by writing to this Section, at Wilmington, Delaware. In addition, a corps of practical agricultural engineers is maintained to help in the solution of stumping and related problems.

W. P. ALFORD
TECHNICAL REPRESENTATIVE

PERFUME IN THE HOME



Pleasant scents emanate through the walls of this modernistic fragrancier when perfume oil is placed in it. The oil permeates the porous material and evaporates into the air. Besides emitting soothing aromas, the modernistic fragrancier shown above enhances the appearance of the room.

STRANGELY enough, this modern age neglects the wonderful sense of smell. We cater to the sense of sight with works of art, with color and form in our interior decorations. We create music to appeal to the sense of hearing. Today, we hardly consider a home complete without a radio or piano. We appeal to the sense of taste with fine cooking, and famous chefs the world over delight the public with their offerings. But we are doing little to take advantage of the sense of smell and to enjoy the delightful "symphonies of odor" which it can convey to us.

This neglect is the more strange because of all our senses it is perhaps the most sensitive. It can differentiate the finest nuances and the most delicate odor tones. Probably it is this very delicacy of the olfactory nerve that causes us to overlook it as a source of pleasure in our everyday lives, as it quickly becomes paralyzed if too strongly stimulated. We find, however, that if perfumes are delicately and carefully used, they will be pleasing for long periods and that we can actually enjoy the sense of smell to a far greater

degree than merely by employing perfumes for personal use.

The cost of perfume materials is another factor that has, in the past, limited our use of them. Until quite recently, we depended on Nature for our sources of perfumes, and often, these came only from the far corners of the earth and at great expense. Today, however, the chemist works with the perfumer. The laboratory and the ever-beneficent coal-tar supply us with a wealth of materials to supplement and complement Nature's own at a substantially lowered cost.

We decorate our homes and buildings with infinite care. The colors of the walls and ceilings, the design and form of every piece of furniture, each carpet, lamp and accessory — all are carefully chosen to blend into an harmonious ensemble, to delight the eye. How many of us ever think that this same harmony may be conveyed to the sense of smell, that the home may be appropriately scented to add a new pleasure for the owner and his guests?

The art of perfumery is among the most ancient of all our arts. It probably had its beginning with the Atlantians, who lived at a period believed to antedate the Christian Era by 23,000 years, although some place its origin more recently, in Mesopotamia and Arabia. Wherever it started, however, we know that one of the first things man did with his newly discovered art was to use it in his religion. The word perfume (*per*, meaning "through" and *fumum*, "smoke") indicates that early perfumes were made by burning aromatic woods and resins, probably upon altars for religious worship.

The Egyptians were the first people to use "interior perfuming" in conjunc-

tion with "interior decorating." At their banquets saffron and lotus flowers were scattered on the floors and tables and encircled about the wine cups while aromatic substances were kept burning in large urns.

The Jews, who borrowed many of their customs from the Egyptians, placed aromatics in their clothing and evidently also perfumed their rooms and furnishings, as were read in Proverbs vii, 17: "I have perfumed my bed with myrrh, aloes, and cinnamon."

The Persians in ancient days were particularly appreciative of perfumes. Aromatics were kept burning constantly in the palaces of monarchs and people of rank. When Alexander conquered Darius, he held great contempt for that king's extravagant use of aromatics. Afterwards, however, he must have changed his views, for he even had the floors of his dwelling sprinkled with exquisite perfumes.

More than any other ancient people, the Greeks applied the art of "interior perfuming," devising at times most novel ways of dispensing fragrant substances. We find in a certain account how one ingenious host saturated the wings of several doves with different scents and then allowed them to fly about over the heads of his guests.

The Romans likewise adopted perfumes for many purposes. Their custom of using them in the *triclinium* or dining-room became so fashionable that no banquet was considered complete without aromatic substances.

We see, therefore, that the art of interior perfuming is really quite ancient. To use it successfully today, we must consider several phases. First, we must not overdo it—good taste dictates that the odor must not be over-

The chemist, through the discovery of synthetic aromatics which can be produced at reasonable costs, has given us new uses for perfume that heretofore would have been out of the question.

of perfumes, we must take into consideration the ingredients used in them.

These ingredients may be likened to the individual notes used in composing a piece of music or the pigments employed for painting a picture. They fall into three groups: the natural animal substances; the natural floral oils or "essential oils," and the synthetic products which not only duplicate many of the substances found in the first two groups, but also include a number of aromatic products not found in nature.

Of the natural products the most important are musk, ambergris and civet. Musk is obtained from the male musk deer found in the wilds of Tibet. Ambergris originates from a morbid condition in the sperm whale and is found floating on the sea or cast upon the beach in the region of India and Ceylon. Civet comes from the civet cat, found principally in Abyssinia. The odor of civet is rank and repulsive but, in minute quantities, it is valuable as a "fixative," a substance which blends and holds together the different odor components of a perfume composition and confers permanence to the odor of the blend. Musk and ambergris likewise are important as fixatives, though in their case, the odor is decidedly pleasant.

The essential oils are made from odor-bearing parts of flowers. Their manufacture constitutes a large industry, principally in Grasse, in Southern France, and Bulgaria where the best Otto of Rose is produced.

Before science entered perfumery, twenty-five tons of violets were needed to make one ounce of natural violet oil, a ton of roses was required to produce ten ounces of natural rose oil. Not only has chemistry developed these odors and many others synthetically, but it has also broken down each odor, or each essential oil, into its perfume notes—pure individual chemical bodies. Where two hundred perfume notes existed before, in the form of natural products, there are now available over a thousand different scents.

The chemist's greatest achievement

along these lines is the development of synthetic musk, because musk is the most important single material used in perfumery. Recently a synthetic musk, similar in chemical structure to natural musk, was discovered and is now being manufactured in the du Pont laboratories at a cost far less than that of the natural musk. The du Pont trade-mark for this product is "Astrotone."

After considering the make-up and appropriateness of a perfume intended for interior use, the next problem is to dispense the scent we have chosen. In theaters and some places of business—large department stores, beauty shops, and others—where a ventilating or air-conditioning system is available, the perfume can be vaporized and released through these outlets.

In homes and smaller places of business, the problem may be solved in various ways. One very effective method is the use of solid perfume pellets on a perfume lamp or a small electrical heating plate, designed for the purpose. The odor diffused in this way will last for several hours. Sprays of perfume dissolved in water and dispensed through a large atomizer may also be used. Another good procedure is to use a porous clay disseminator which is shown in one of the accompanying illustrations. In this case, the perfume oil is poured into a groove and allowed to permeate throughout the porous material from which it slowly evaporates into the air. It is necessary to refill this with perfume only once or twice a month.

The use of interior perfuming in entertaining is also often quite successful. Theatrical producers, too, are finding many uses for synthetic odors to produce a desired effect and to give reality to a scene depicted on the stage.

Thus, in many ways it is possible to enjoy the impressions which the olfactory sense is able to convey to us. If we employ the art of interior perfumery as carefully and as tastefully as we apply the other arts to our surroundings, we are sure to discover a number of unexpected pleasures.

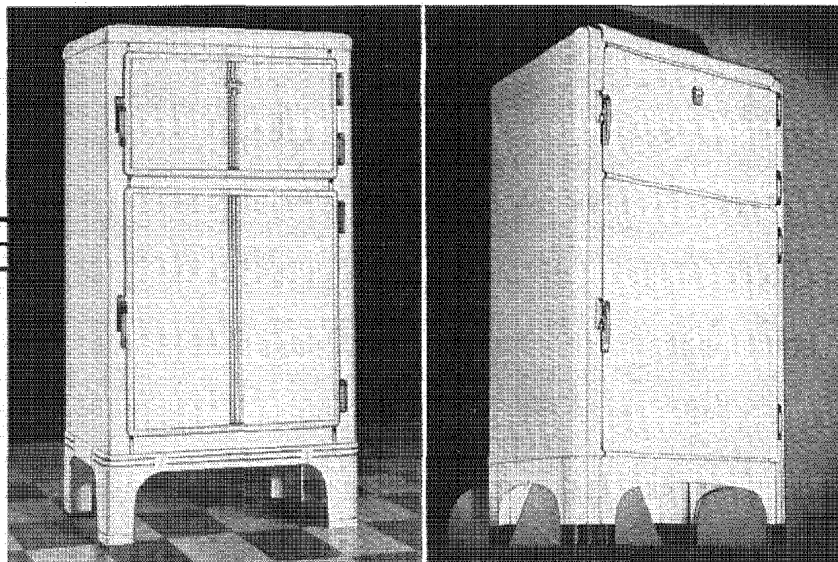
JOSEPHINE ST. MARY



A solid perfume pellet placed on top of this specially-designed perfume lamp is slowly dissolved by heat of the electric bulb, thus diffusing a sweet essence throughout the room.

powering. Then we must choose a perfume that will harmonize with our surroundings so that the result is the creation of an atmosphere befitting the decorative scheme. Just any incense and perfume will not do. It is necessary to consider the psychological associations of different aromatics with different places. The very name "Lavender" suggests the English countryside; "Sandalwood," India and the Orient. From the perfumer's point of view, the use of a perfume with a predominant Sandalwood base in a simple English type setting would be as incongruous as the use of two colors which clash and are displeasing when placed together. So, for a proper choice

THE DU PONT MAGAZINE



Two refrigerators finished in "Dulux" are added to the long list of those shown in the September number of THE DU PONT MAGAZINE. The ones pictured above are made by the Sanitary Refrigerator Company of Fond du Lac, Wisconsin, and the C. Hoffberger Company of Baltimore, Maryland.



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 AND SPRAY PRODUCTS

GRASSELLI CHEMICALS DEPARTMENT

General Offices, Cleveland, Ohio

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

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Boston, Mass., 140 Federal Street
Brooklyn, N. Y., 152 Morgan Avenue
Charlotte, N. C., 414 So. Church Street
Chicago, Ill., 21st and S. Peoria Sts.
Cincinnati, Ohio, 305 Walnut Street
Cleveland, Ohio, 629 Euclid Avenue
Detroit, Michigan, 1530 E. Hancock Ave.
Los Angeles, Calif., 2260 E. Fifteenth St.
Milwaukee, Wis., 1503 W. Canal Street
New Haven, Conn., 46 River Street
New Orleans, La., 2431 Clio Street
New York, N. Y., 350 Fifth Ave.
Paterson, N. J., 6 Waite Street
Philadelphia, Pa., 3500 Gray's Ferry Road
Pittsburgh, Pa., 107 Sixth Street
Rensselaer, N. Y., 34 Riverside Ave.
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ORGANIC CHEMICALS DEPARTMENT

General Offices, Wilmington, Del.

Alcohol Division

All completely and specially denatured alcohol formulas, Du Pont Anti-Rust Anti-Freeze Alcohol, Du Pont "Five-Star" Anti-Freeze and "Ponsolve," an industrial solvent.

Wilmington, Del., Nemours Building

Dyestuffs Division

Dyestuffs, dyestuff intermediates, organic chemicals, chemicals and dyes for the petroleum industry, sulfur dioxide and nitrated filter cloths.

Boston, Mass., 140 Federal Street
Charlotte, N. C., 414 So. Church Street
Chicago, Ill., 7 So. Dearborn Street
New York, N. Y., 61 Thomas Street
Philadelphia, Pa., 1616 Walnut Street
Providence, R. I., 709 Hospital Trust Bldg.
San Francisco, Calif., 601 Third Street
Wilmington, Del., Du Pont Building

Fine Chemicals Division

Detergents, wetting-out agents and textile assistants (Refer to offices listed under Dyestuffs Division).

Aromatics, perfumes, photographic and pharmaceutical chemicals.

Chicago, Ill., 7 So. Dearborn Street
New York, N. Y., 61 Thomas Street
Wilmington, Del., Nemours Building
"Cel-O-Glass," "Vin-Ray" Window Fabric,
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Wilmington, Del., Nemours Building

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Antioxidants, vulcanization accelerators, rubber colors, NEOPRENE "S. D. O." corrosion-resistant coating and special chemicals.

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Motion picture, portrait and X-Ray film.

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LITHOPONE, TITANIUM DIOXIDE, EXTENDED TITANIUM PIGMENTS, ALUMINUM HYDRATE AND DRY COLORS

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TEXTILE FIBERS—"Cellophane"

RAYON DEPARTMENT

Comprising Acetate Division, "Cellophane" Division, Rayon Division.

General Offices, New York, N. Y.

Acetate Division and Rayon Division

Charlotte, N. C., 412 So. Church Street
New York, N. Y., Empire State Building
Philadelphia, Pa., 1616 Walnut Street
Providence, R. I., 15 Westminster Street
San Francisco, Calif., 601 Third Street

"Cellophane" Division

"Cellophane" cellulose film, plain transparent, moistureproof, and colored in sheets and rolls for wrapping uses; "Cellophane" slit cellulose film for textile uses, also "Cel-O-Seal" bottle closures and bands, transparent seamless tubing, and cellulose sponges.

Boston, Mass., 140 Federal Street
Chicago, Ill., 111 W. Washington Street
New York, N. Y., Empire State Bldg.
Philadelphia, Pa., 1616 Walnut Street
San Francisco, Calif., 351 California Street

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Ammonia and allied products; methanol, higher alcohols, urea, "Zerone" anti-freeze and hydrogenated products.

AMMONIA DEPARTMENT

General Offices, Wilmington, Del.

National Ammonia Division

Anhydrous ammonia in cylinders; aqua ammonia in drums and tank cars. Ammonium carbonates and methanol.

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Los Angeles, Calif., 316 Commercial St.
New York, N. Y., Empire State Building
Philadelphia, Pa., Delaware Ave. & Van
Kirk Street, Frankford P. O.
San Francisco, Calif., 601 Third Street
Seattle, Wash., 1218-6th Avenue, South
St. Louis, Mo., 3600 N. Broadway

FABRICS—FINISHES

FABRICS AND FINISHES DEPARTMENT

General Offices, Wilmington, Del.

"Fabrikoid" Division

"Fabrikoid" coated fabrics, for auto and furniture upholstery, bookbinding, luggage, novelties, lacquered fabric table-cloths, etc. "Rug Anchor" and "Velvetex" to keep rugs from slipping; "Pontine" washable window-shade cloth; "Ventube" for mine ventilation; "Pontop" for auto-tops; "Pontine" for heavy-duty chair upholstery and other specialties.

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Detroit, Mich., General Motors Building
Newburgh, N. Y., Du Pont Avenue
New York, N. Y., 350 Fifth Avenue
San Francisco, Calif., 601 Third Street

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Detroit, Mich., General Motors Building
"Duco," "Dulux," nitrocellulose, solvents, leather emulsions, pyroxylin solutions, paints, varnishes, synthetic-resin enamels, bronze powder, and special finishes for automobile refinishing and all industrial purposes; paints, varnishes, enamels, "Duco" Household Cement for home use; "Duco" Polish, Wax, Top Dressing, and other No. 7 Line Specialties.

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Everett, Mass., Water & Valley Streets
Chicago, Ill., 2100 Elston Avenue
Dallas, Tex., 309-15 Preston Street
New York, N. Y., Empire State Building
Philadelphia, Pa., 1616 Walnut Street
San Francisco, Calif., 601 Third Street

PLASTICS

"Pyralin" pyroxylin plastic, "Plustacele" acetate plastic and "Phendia" cast phenol formaldehyde resin in the form of sheets, rods and tubes. Also manufacturers of tooth brushes, "Lucite" and "Pyralin" toiletries, combs, hair ornaments, toys and novelties, fabricated from "Pyralin" and "Plustacele," and "Pyraheel," a scuffless shoe heel covering material.

PLASTICS DEPARTMENT

Executive Offices, Wilmington, Del.

General Offices:

Industrial Dept., Arlington, N. J.

Products Dept.

Empire State Bldg., New York City
Chicago, Ill., 36 So. State Street
Leominster, Mass.

New York, N. Y., Empire State Building

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THE R. & H. CHEMICALS DEPARTMENT

General Offices, Wilmington, Del.

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Cleveland, Ohio, 1235 Guardian Building
El Monte, Calif., P. O. Box 70
Kansas City, Mo., 2018 Guinotte Avenue
Newark, N. J., 1060 Broad Street
New Orleans, La., 1140 S. Robertson Street
New York, N. Y., Empire State Building
Philadelphia, Pa., 1616 Walnut Street
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Canadian Industries Ltd., 1135 Beaver Hall Hill, Montreal, Quebec
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To prevent and control many seed-borne plant diseases and to improve crop yields.

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