

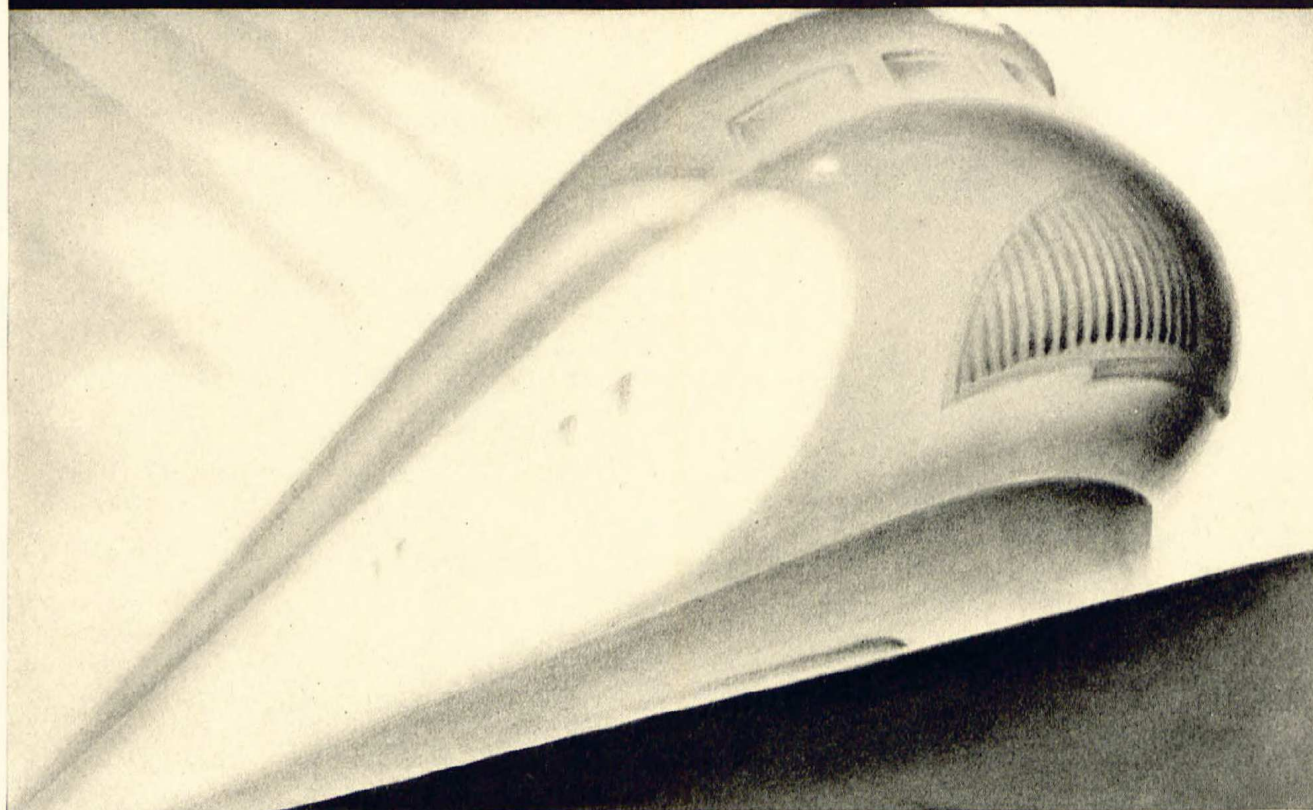
THE DUPONT MAGAZINE



Listen, you fellows...

LET A "FAST-ROLLING" INDUSTRY TELL YOU ABOUT DULUX

REG. U. S. PAT. OFF.



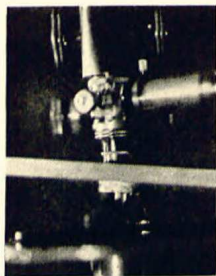
THERE SHE GOES—roarin' through! Thrill you, don't they, these fast-rolling monsters? But to us railroads they're only part of a lot of expensive and valuable equipment that must be carefully looked after and protected. Especially in the battle with weather and rust and corrosion—which used to cost us a terrific amount of money.

"But that picture has changed a lot today! It has been different since duPont paint experts gave DULUX to railroads to protect rolling stock, bridges, signal towers and stations against rot and rust and ruin. DULUX STAYS fresh and new-

looking. It's a finish that materially reduces repainting and maintenance costs."

For EVERYBODY—makers of refrigerators or builders of bridges...owners of factories or of homes—for everybody there is a vital story in the superior service records of duPont DULUX. It plays a leading part in reducing the huge losses in rust and rot that were once caused by weather. It can protect YOUR plant, YOUR machinery, YOUR product, the refrigeration in YOUR home. It can provide lasting beauty and color where appearance is vitally important.

The qualities of duPont Finishes are proved *before* you buy them—not after you have used them. The instrument shown here is a "Quartz Fingernail," one of many instruments used in duPont laboratories to maintain uniform quality standards in duPont Finishes.



To protect investments in industrial equipment or in manufactured products, use DULUX and other duPont Finishes. To reduce upkeep costs and to maintain the appearance of your home inside and out, rely on duPont Finishes. To get the greatest value in the things you buy, specify that they be finished with duPont Finishes. E. I. duPont de Nemours & Company, Inc., Finishes Division, Wilmington, Delaware.



REG. U. S. PAT. OFF.

DULUX

REG. U. S. PAT. OFF.

for industry and home

THE DU PONT MAGAZINE

Vol. XXX

FEBRUARY, 1936

Nos. 1-2

Organization for Restoration . . . North America's wildlife gets a new "break" in the program of the American Wildlife Institute . . .

By HENRY P. DAVIS

NORTH AMERICA's wildlife resources, so long the football of political agencies, may now receive proper recognition long overdue. Recent developments in wildlife restoration activities indicate the approach of a new era for fish and game.

The formation of the American Wildlife Institute, hailed as the most constructive step yet taken in the endeavor to restore wildlife to some semblance of its former plenitude, brings new faces, new viewpoints and new energy into the picture in the persons of some of the country's outstanding business men.

The establishment of a wildlife educational program in a series of land-grant colleges throughout the country has brought proper encouragement to those untiring scientific workers who have long contended that the most valuable game management principles cannot be determined until research on the life cycles of the various species has been completed.

The movement to coördinate the somewhat scattered efforts of large and small organizations working toward game and fish restoration into an international federation of all wildlife interests is under way.

Plans are being developed for holding the first North American Wildlife Conference in Washington, February 3, 4, 5, 6 and 7, 1936. This will be the largest gathering ever assembled in behalf of wildlife.

From all parts of the country the new program has met with enthusiastic

response. Older disciples of wildlife restoration, who have fought its battles for years in the face of apathetic interest, see dawn breaking in the light of new leadership; old problems approached from new angles; the application of methods developed by modern science, and increased activity of an international nature.

The American Wildlife Institute

Designed primarily as a business association of representative interests, who share directly or indirectly in the profits derived from the "billion dollars" annually spent by the hunters and anglers in pursuit of their favorite sports, the American Wildlife Institute

was organized August 14, 1935. The Institute's personnel while mainly based on business lines, and therefore directly interested in an adequate population of wildlife species, has a more personal interest in game and fish increase. Every officer, every trustee, every committee-member is a thorough-going sportsman who understands the necessity for applying sound business principles to wildlife restoration activities.

The Institute's president is Thomas H. Beck, president of Crowell Publishing Company and editorial director of *Collier's* magazine. Chairman of the board of trustees is Walter P. Chrysler, well-known automobile manufacturer. Powel Crosley, Jr., president of Crosley Radio Corporation, is chairman of the executive committee. Among others who are taking active part in the work of the Institute are W. M. Bonham, president, Southern Hardware Jobbers' Association; Harry Chandler, publisher, *Los Angeles Times*; C. K. Davis, president, Remington Arms Company; F. B. Davis, president, United States Rubber Company; Fred-eric Ewing, vice-president, Socony-Vacuum Oil Company; J. Karl Kinnear, president, Fishing Tackle Manufacturers' Institute; Frank W. Lovejoy, president, Eastman Kodak Company; Alvan Macauley, president, Packard Motor Company; John L. Pratt, vice-president, General Motors Corporation; R. J. Reynolds, Reynolds Tobacco Company; J. T. Skelly, vice-president, Hercules Powder Company; E. R.



● Thomas H. Beck, president of the American Wildlife Institute

Tinker, retired banker, and Leslie M. Stratton, president, National Wholesale Hardware Association. The board of trustees is composed of seventy-five members, among whom are some of the most prominent sportsmen and business executives in the United States, Canada and Mexico.

The Institute's purposes and functions may be summed up in a recent statement by Jay N. ("Ding") Darling, famous cartoonist, who recently resigned as chief of the Bureau of Biological Survey: "The Institute should bear the same relation to the mass activities for wildlife restoration that the electric starter bears to the motor and operating mechanism of the automobile. The newly organized Institute should not, as an organization, undertake the mechanical labors of game restoration, but, by its influence and support, provide a means and guidance whereby the existing but inarticulate sentiment for game, fish and other wildlife, now ineffective for lack of coordination, may become organized and bring to bear its mass force to carry out the intent and desires that are present in all sportsmen's, conservationists' and recreation groups. The American Wildlife Institute has been organized to provide the necessary leadership."

Mr. Darling, though returned to private life, continues his active crusade to secure "official recognition of wildlife restoration as a government responsibility." Before and after the Institute's organization, Mr. Darling has been the "spark-plug" of its activities. He is succeeded as chief of the Bureau of Biological Survey by Ira N. Gabrielson, long engaged in the Survey's work and internationally recognized as a wildlife authority. He has vowed a continuance of Mr. Darling's policies.

Under a fund of \$170,000, made available through contributions by the Remington Arms Company, Inc., E. I. du Pont de Nemours & Company, Inc., and the Hercules Powder Company, the Institute immediately launched its three major projects: the educational program, the organization



PHOTO BY BLANK-STOLLER, INC.
● Walter P. Chrysler, chairman of the board,
American Wildlife Institute

of an international federation of wildlife forces, and the North American Wildlife Conference.

The Educational Program

The need for scientific research in the realm of wildlife restoration has long been recognized. In a number of universities research in problems of great importance to wildlife has been slowly pursued under poverty budgets for a number of years. It was impossible for the Institute to undertake a program of assistance to all of these individual activities at once, so the funds earmarked for the purpose were apportioned in a manner designed to lend greatest encouragement to the general research program. Nine land-grant colleges were chosen from the many which applied, and, under a cooperative agreement with the Institute, the Biological Survey and the state game and fish departments, these educational institutions have organized programs of research in wildlife problems fundamental to each general locality, and established demonstration areas as proving grounds of the facts developed. Each program is financed for a period of five years. Under the agreement, the colleges have set up courses in wildlife manage-

ment as part of the regular curriculum for the student body. These courses are financed by the colleges alone.

The colleges which have organized their programs and launched this work are: Alabama Polytechnic Institute, Auburn, Alabama; Connecticut State College, Storrs, Connecticut; Iowa State College, Ames, Iowa; University of Maine, Orono, Maine; Oregon State College, Corvallis, Oregon; Agricultural & Mechanical College of Texas, College Station, Texas; Utah State Agricultural College, Logan, Utah, and Virginia Polytechnic Institute, Blacksburg, Virginia. The results of these experimental and investigational activities will be made available to students, farmers, landowners, sportsmen and others interested in assuring maximum wildlife crops, and they will be of particular value to organized groups who desire to improve their own local conditions.

This work will be of particular interest to the county agricultural agents throughout the United States, who will be better equipped to instruct the individual farmer in the proper methods of increasing the wildlife supply on his own land and making upland game a definite crop of his farm.

The Iowa State College has started

(Continued on page 23)



● Ira N. Gabrielson, new chief of the
U. S. Bureau of Biological Survey

Making Assurance Doubly Sure

The use of "Nitramon" with Cordeau and T.N.T. primers adds another safety factor in quarrying and open-pit mining

JUST a year ago when the technical representatives of the Explosives Department gathered in the du Pont Hotel for their annual convention, a reporter strolled into the lobby one noon to pick up some news. He was not disappointed. There were rumors that du Pont chemists had developed a new blasting agent, a substance unlike any other explosive ever manufactured. If this rumor were true, what a chance for a scoop!

He cornered one of the Company's officials, put the query to him point blank, and was told that the report was correct. The facts were unusual enough to be startling. A compound that looked like corn-meal—and equally harmless by itself—could, under certain conditions, be made to tear down the face of a quarry with all the force of a dynamite blast. But this new product, named "Nitramon," packed in a metal can, was as safe to handle and use as salt or sugar. One could pound it with a sledge hammer, shoot into it with a high-power rifle bullet, expose it to the fiery blast from a blow-torch and subject it to any abuse without causing an explosion.

Even a blasting cap applied directly was not potent enough to spur the material to action. Nothing less than the "kick" from a primed cartridge of dynamite—and a big one, too—would start "Nitramon" to work. That, in brief, was the gist of the news that quickly reached the press services and was relayed by radio and cables to the world—the most startling news since Nobel's discovery of dynamite. Since then the new product has been prepared in four grades and packed in cans ranging in diameter from four to eight inches and in height from sixteen to twenty-four inches.

Much less sensational is the information published here, but it adds another link in the chain of developments and

has a direct bearing on safety. For the world's safest accredited blasting agent has been made safer for quarrymen's use by substituting for the dynamite primer one that contains no dynamite. The accompanying inset illustration shows the essential details—a can of "Nitramon," its upper section packed with trinitrotoluene, and a tube installed at the top for the end of the branch line of Cordeau.

Contrary to popular belief, T.N.T. is much less sensitive to shock than nitroglycerin dynamite of the grade used to set off a column load of "Nitramon." But it can be detonated with Cordeau fuse—a small lead tube containing T.N.T.

The particular safety advantage gained by the use of the T.N.T. primer, in comparison with the dynamite primer, is that there is less risk of an explosion when, for any reason, unexploded charges are found in the debris of a rock pile. Shovel operators, under such conditions, do not forget that

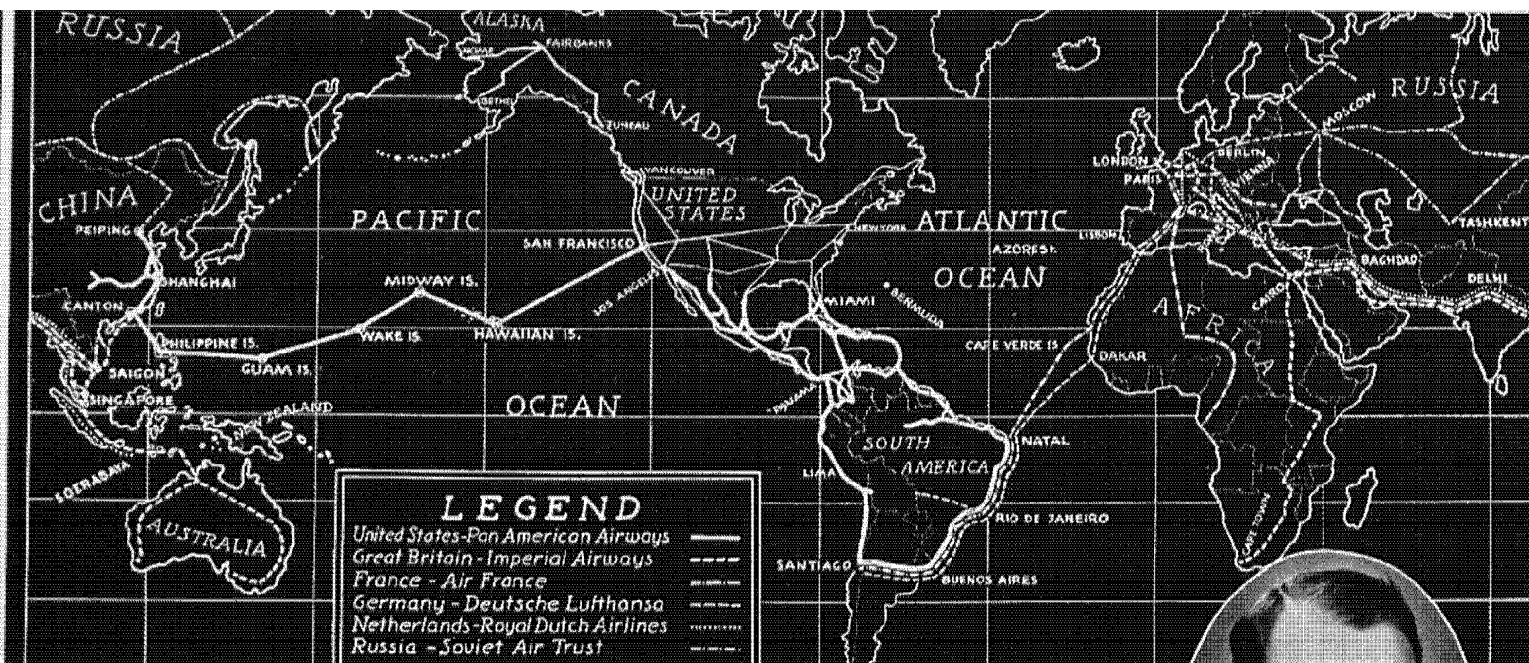
dynamite cannot be handled with impunity without some risk, whereas T.N.T. is relatively insensitive.

Considering that "Nitramon," T.N.T. primers and Cordeau fuse are of themselves not hazardous to handle, all the loading operations can be completed with a maximum degree of safety. There is no risk of an explosion until the Cordeau trunk line itself is primed with either a blasting cap or an electric blasting cap, and those attachments are made just before the shot is fired by means of a safety fuse in one case or by the operation of an electric blasting machine in the other.

The nature of high explosives and blasting agents and the conditions of their use cannot be dissociated from a certain degree of risk, but it is safe to say that the new T.N.T. primer marks a forward stride in safety to quarrymen and open-pit miners. It is now possible and practical to do an effective job of blasting and leave dynamite entirely out of the picture.

● Loading cans of "Nitramon" preparatory to a well-drill shot in a Pennsylvania quarry. Inset—Showing the composition and design of the new T.N.T. primer.





The Airline to the Orient

The pioneering of the trans-Pacific route has opened a new era in air transport service

By E. A. SAMPSON



● Juan Trippe, President of Pan American Airways, Inc.

LATE in the afternoon of November 22, 1935, the giant Glenn L. Martin flying boat *China Clipper* rose from the waters of San Francisco Bay with two tons of mail and a crew of eight to begin Pan American's trans-Pacific air mail service. Thousands of spectators lined the shore to witness the "take-off" in a flight destined to give the United States a closer contact with the Oriental markets and to make neighbors of the chain of Pacific Islands.

Before San Francisco was lost to sight, the lowering sun had enflamed the cloud banks in the sky. After night-fall, stars could be seen occasionally through rifts in the clouds. Nearly two miles below the big transport plane, the deep ocean rolled unseen.

In the pilot's cabin the radio compasses pointed out an aerial course easier to follow than a carefully marked automobile highway. Radio messages from the Pan American guiding stations at Alameda, Los Angeles, Honolulu and Midway Islands poured in information of position, direction and

weather. The hearts of the crew beat high, but the flight continued on schedule with such remarkable precision that the account might almost have been written before the start.

Through the night and half the following morning the four 800-horsepower "Twin Wasps" droned the song of a new epoch in aviation. Finally, after twenty-one hours and four minutes of bucking continual head winds, the graceful ship landed at Honolulu to complete the first hop on her way to Manila.

Since then the *China Clipper* has made several trips to the Philippines and back, carrying mail and express. She was joined on December 9th by her sister ship the *Philippine Clipper*, which has made the 16,000-mile round trip from California to Manila and back in less than 119 hours actual flying time. A third ship of the same design is ready whenever needed.

These flights are amazing when one considers that only thirty-three years ago the first successful flight of a

heavier-than-air machine kept one of the Wright brothers aloft only twelve seconds over the sand dunes near Kitty Hawk, North Carolina. Progress in aviation has been phenomenal, especially so during recent years.

Early in 1931 three men met in New York to outline plans for a trans-Pacific aerial service — Juan Trippe, thirty-two-year-old president of Pan American Airways, then operating more than 25,000 miles of important routes between the Americas; André Priestler, the line's brilliant chief engineer; and Col. Charles A. Lindbergh. Even then four long cross-country airlines were reaching out toward the Far East with its rich markets.

But these men were considering a commercial air route that almost everyone looked upon as visionary. There were no planes in existence capable of carrying a payload over the 2,410 miles to Honolulu, no corps of pilots with the necessary experience, and aerial navigation as a science was not then far advanced.

When specifications for the planes were given out, five out of seven manufacturers stated flatly that they could not be met. Finally, however, two agreed to make the attempt. In the summer of 1932, Igor Sikorsky accepted a contract to build three nineteen-ton flying boats; he has since undertaken seven more. Glenn L. Martin soon followed Sikorsky and started the construction of three twenty-five and one-half-ton ships. Both knew they were facing the most difficult problem in twenty years of experience.

Even though large seaplanes were deemed impractical, Sikorsky and Martin were not dismayed. Changes in design and other developments might remove that obstacle.

A tremendous amount of experimental work preceded actual construction. Full-scale reproductions were made of the cabin interiors to determine the best location of control cables, wiring, plumbing, structural members and even the arrangement of seats. Nothing was omitted in planning every detail including the best color schemes.

In building and finishing these ships, several du Pont products were used. Within the Sikorsky-built *Pan American Clipper*, which made the first exploratory flights, special new shades of acetate dopes, such as Skyline Green, Vesper Green, Dawn and Mist Green, were employed. The interiors of cabins and passenger quarters of the *China Clipper* were finished in clear and gray-

pigmented acetate dope, and gray, brown and yellow "Duco." In the pilot's cabin, dull black "Duco" was used to eliminate glare. "DuPrene," synthetic rubber, helped to insulate the entire ignition system of this Martin ship. "Pyralin" sheeting was used in the safety glass of the cabin windows, and "Plastacele," acetate plastic, facilitated inspection of the control-cable conduits. Incidentally, boudoir sets of Regency Period "Pyralin" were placed in the washrooms of each of the new "clipper ships."

Early in 1934 Sikorsky completed the *Brazilian Clipper*, first of the trans-ocean-type flying boats and sister ship to the *Pan American Clipper*. With luxurious accommodations for thirty-two passengers, and with a crew of four, there was still room for a ton of mail and cargo. At that time this was the largest plane ever built in America, with a wing-spread of 114 feet and a length of sixty-nine feet. As for efficiency, she was licensed to carry 99.8 per cent of her weight, and flew 192 miles an hour at top speed, with a cruising speed of 158. That summer she broke eleven international records.

In tests, the *China Clipper*, which Martin completed late in 1934, closely matched the performances of the *Brazilian Clipper*. It is a larger ship, having a wing-spread of 130 feet and a length of eighty-nine and a half feet. It is the first American aircraft capable of making flights from San Francisco to Hawaii profitable, since it can transport from twelve to eighteen passengers plus a ton of mail, another ton of express and enough fuel for 3,200 miles.

Both airplanes are completely equipped with the latest navigational accessories, including the radio compass, automatic pilot, and with facilities for two-way radio communication.

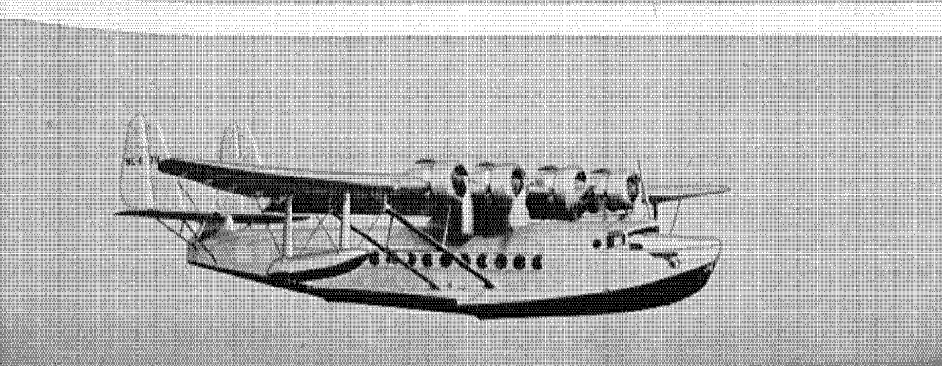
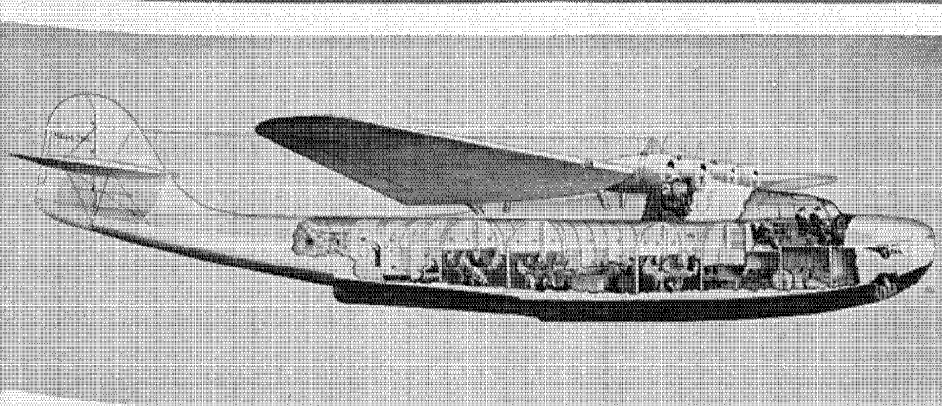
Building the planes, however, was only part of the task. The crews, captain, co-captain, navigator, radio officer and flight engineer had to be trained for trans-ocean flying. Pilots, no matter how extensive their experience, had to learn more about blind flying, mete-

(Continued on page 22)

● Top—A view of the beautifully designed *China Clipper* in a test flight near Baltimore, Maryland.

● Center—Showing the *China Clipper's* "bridge," express and passenger compartments and galley.

● Bottom—The Sikorsky *Pan American Clipper*, used in the trans-Pacific exploratory flights.





The Colors Are Permanent By ANSCO G. BRUNIER, JR.

COURTESY OF "MCAYO'S,"
ATLANTIC CITY

Cranston shirt fabrics—a billion yards in ten years—have been printed with vat dyes, and no one has successfully challenged their color fastness

Good printed-shirting materials do not fade, which is one reason for the rise in popularity of colored shirts for men's wear in recent years. Formerly, the white shirt was considered to be very much "de rigueur" as the correct style complement for every suit. Today, the well-dressed man can and does make his selection from a great variety of patterns, styles and colors.

The colored-shirt vogue has become firmly established; it is not merely a passing style fancy. In the United States something like 200,000,000 yards of colored shirting materials are produced each year, and if past performance is any criterion, the demand will continue to grow.

The high degree of perfection attained in the art of fast-color application was considered almost impossible a number of years ago. There is no comparison between the printed shirting materials of old and those of the present day. Perhaps you can remember when shirts bore the replicas of horseshoes, jockey caps and riding whips. It was the ambition of every boy to own a variety of them, and you may recall his disappointment when the prized designs faded and finally disappeared from the fabric after several home washings. The reason was that in most cases the patterns were produced with fugitive pigments and dyes. They looked colorful and attractive before the goods were washed, but the chemical instability of the coloring agents was all too soon revealed. Of course, some dyes were more permanent than others, but the best ones were not commonly used and buyers eventually became wary of all printed goods. It was only natural that they should develop a certain feeling of prejudice against printed designs. It was

well justified then, but not so today, for notable improvements have been made in dyestuffs and in the art of printing.

Perhaps the chief reason for the tremendous strides made in textile printing during the past few decades has been the development of a complete range of dyestuffs known as vat colors. They resist the most severe color-destroying actions. As we all know, the prime requisite of a colored or printed shirt is that it shall be fast to washing. Just think how many launderings a shirt goes through in a year. Obviously, the main object is to get the shirt clean, and home treatment is frequently not too gentle, for powerful bleaching agents are often added to hasten the process.

Commercial laundries operate scientifically. Their methods are modern, their detergents are carefully tested and every precaution is taken to insure perfect cleansing without damage to the color of the fabric. Any kind of a thorough washing is necessarily severe. Vat dyes have solved this color problem because they meet every standard test that can be applied to any fast-color textile fabric, whether it is printed, woven or piece dyed. So it is not surprising that they are employed extensively in textile printing.

A woman usually thinks of fast colors when purchasing washable dresses, children's playsuits, curtains or draperies, or when she goes shopping to buy a shirt for her husband. She wants to know—and properly, too—whether the colors are fast or not. When men buy shirts, they are usually less disposed to question fastness properties, making their selection on appearance, quality and design. The more they pay for an article the more reason they have to expect that the colors will be fast. But here is one illuminating fact: now-

adays, even the inexpensive shirtings are printed or dyed with vat colors, and the customer, whether he realizes it or not, gets quality in color without asking for it. That is an evidence of progress considering that twenty years ago one could not purchase a printed shirt even approaching the fastness properties of a woven shirt. Now both printed and woven shirts are colored with the same type of dye.

Printers of shirting materials were among the first to recognize the advantage of using vat dyes. The development of their business has taken place without any undue emphasis on color fastness. The increased popularity of printed shirtings has come about gradually and smoothly as vat-dyed prints have gained acceptance on merit and without extravagant claims. Thus, an old-time prejudice has been met and overcome.

The Cranston Print Works Company has been printing shirting materials almost continually since it was organized in 1825. Today, a large percentage of the American output is processed in its plant at Cranston, Rhode Island. Every single yard is printed with vat colors, and during the past decade approximately 1,000,000,000 yards were produced and sold without one single valid complaint that the colors were not fast. That is indicative of the painstaking care Cranston gives to all fabrics passing through its plant. Every lot of material is subjected to constant inspection and laboratory tests in all the processing stages. This insures finished products fully up to the high-quality standards the company has always maintained.

Information obtained from the cotton-goods market centers indicates that printed shirting materials will make new sales history during 1936. To give you some idea of what will be on the shirt counters this year, let me mention briefly a few predominant styles. There will be many high-quality "eighty-square" percales printed in the latest stripes, checks, plaids and tweed effects. You will also find "end-and-end" madras, novelty broadcloths, fancy oxfords and many other constructions attractively printed.

The versatility of present-day printing machines affords almost unlimited opportunities for producing new and complicated designs and patterns. And the work is done far

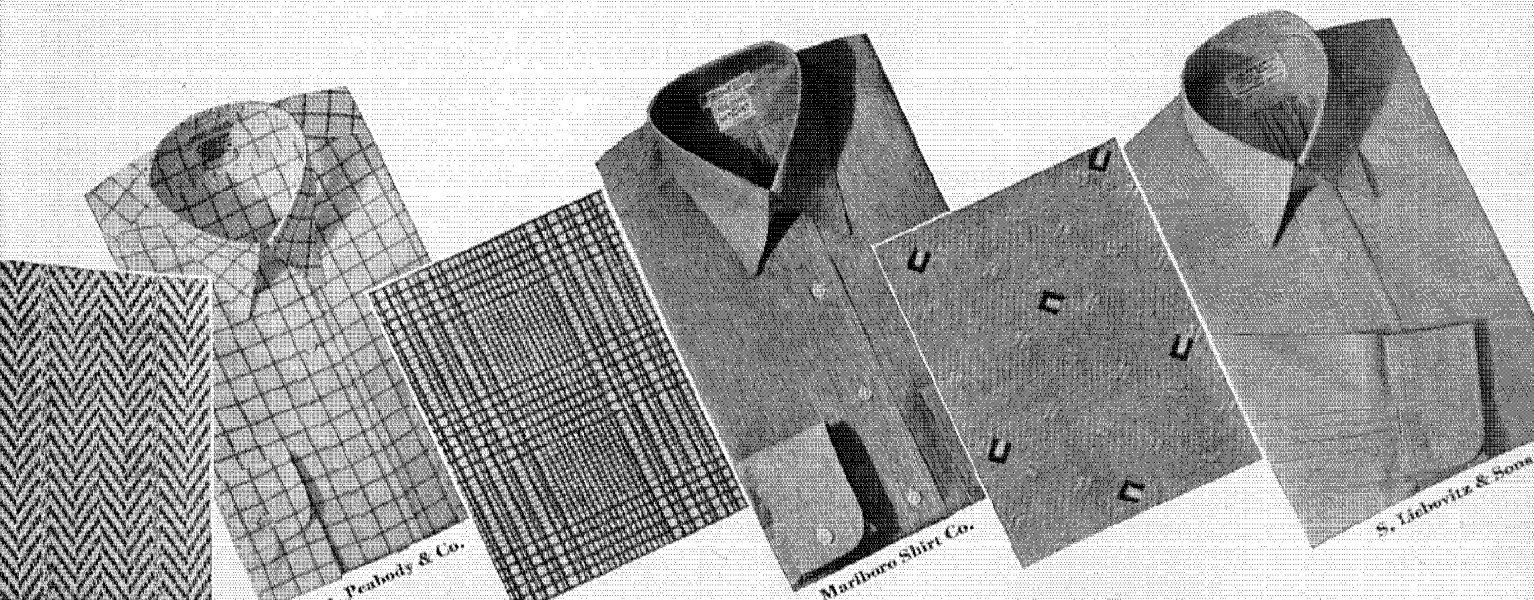
more rapidly and economically than with the loom. Moreover, there is comparatively no loss of time in switching from one pattern to another to meet any style change.

Textile printing has reached such a high degree of precision in reproduction that it is almost impossible to determine whether a fabric is printed or woven, unless it is examined under a microscope. This is particularly true of some of the current shirting fabrics in which clipped figure effects appear on novelty broadcloth or on madras grounds. These printed figures are superimposed so cleverly that even the most critical observer might think they were produced by Dobby or Jacquard looms. Some of these cotton materials, specially processed and finished to resemble wool, are made up in check combinations of two or three colors. They appear to be fine woven fabrics, but the effect is achieved by "double printing," which is to say, on both sides of the cloth. Others are printed on a dyed ground, or are double printed so as to leave no white reverse surface to reveal whether they are printed or woven. Shoppers can no longer tell a print from a weave by examining the reverse side.

Some of the best-known converters in the cotton textile industry who are featuring merchandise of this kind are: J. P. Stevens & Company, Federated Textiles, Inc., Cohn-Hall-Marx Company, Langdon Textile Company, Pacific Mills, Clarence S. Brown, Alfred L. Helwirth & Company and many others. And among the prominent manufacturers who are concentrating on fast-color printed shirtings are such famous names as Cluett, Peabody & Company, A. H. Ide & Company, Inc., Essley Shirt Company, Inc., S. Liebovitz & Sons, Marlboro Shirt Company, H. D. Bob Company, to mention only a few whose standards of workmanship, quality and style have long been recognized.

Even the most exclusive makers of Great Britain and France are using prints for shirts that actually sell at retail prices ranging from \$7.50 to \$18.00 each.

But in this country any store will sell you printed colored shirts supported by the reputation of some of the finest finishing plants in America and you can buy such shirts at prices you can well afford to pay with full confidence that the colored patterns will last as long as the fabric itself.



Cluett, Peabody & Co.

Marlboro Shirt Co.

S. Liebovitz & Sons



● Retailers find that the more they show, the more consumers buy

The Urge to Buy*

By M. G. POLLOCK

MR. JONES goes into a men's furnishing store to buy a pair of socks. He comes out with two pairs of socks—three ties, three shirts and a pair of suspenders.

Mrs. Brown goes into the grocery store for a loaf of bread and a pound of butter. She comes out with the bread, the butter; also rice, dates, tomato juice and coffee cake.

Even as you and I.

What causes this—what lies behind these curious manifestations of the urge to buy? How widespread is this phenomena and what are manufacturers and dealers doing about it? That's what the Du Pont Cellophane Company wanted to know when it put its Consumer and Retail Research Department on the job to find out the facts.

Probably few shoppers are prone to be introspective, at least in a store environment. They are usually far more interested in merchandise than in mental processes; nevertheless, there is good authority for dividing all buying into two broad classifications:

a. *Planned*—Purchases made with definite previous intent. For example, your wife needs a new hat. She goes downtown and buys one—and nothing more.

b. *Impulse*—Purchases made without previous intent, such as the examples first cited.

In this case, the buyer's mind is not made up until in a flash he or she sees or is reminded of some product which appeals. That might be called "The Zero Hour," for then the product either "goes over the top" or doesn't.

Impulse purchasing may be observed in all types of stores, but it is most notably evident in grocery stores and markets.

*Excerpts from a paper recently delivered by Mr. Pollock at the Boston Conference on Distribution.

Fifty years ago most foodstuffs were bought by the housewife once or twice a week. Her list was made up days in advance, as she ran low or out of things, and then she went down to the general store and "stocked up." There wasn't very much doubt in her mind as to what brand of product she would buy, because there were not many products offered and even fewer brands. She had plenty of time to make purchases intentionally and deliberately.

In more recent years, however, the automobile, the movies, golf, bridge, the radio—all these new diversions began to fill up Mrs. Consumer's days. Her shopping has become more hurried, her mind less consciously centered on specific things to be bought. Nowadays, she may or may not even make out a list.

While new means of transportation and diversion were evolving, three other important changes were taking place in the retail store. First, there was a gradual change in facilities for display and layout in retail establishments of all types. Managers of food stores, department stores, drug stores and others were discovering that the more merchandise they displayed, the more consumers bought. Second, as the number of products increased, clerks and proprietors found less time for actual selling—the products had to sell themselves, and third, as an outgrowth of these trends, more emphasis began to be placed on packaging.

While the new retail set-up was making it easier and more pleasant for the consumer to buy, packaging was, among other things, making it possible for the consumer to secure smaller amounts of merchandise at one purchase; assuring her of getting her favorite brand; giving her more useful and convenient containers, and guaranteeing fresh

and clean products. Moreover, visible packaging was providing her with the opportunity for a more confident and wider selection of merchandise than ever before.

The grocery store of fifty years ago carried comparatively few products and even fewer brands. A barrel of flour, a cracker box, large tin canisters of spices and dried vegetables. What a difference today! We are told that the average grocery store today stocks more than 3,000 different items; the average drug store, more than 6,000. Let him who dares estimate the number of items carried in stock by the average department store. It must suffice to say that more than 50,000 have been counted in some stores.

Consider, then, this battery of merchandise trained on you when you go shopping. Do you ask for a specific brand? Probably, if you are influenced by advertising, and who is not? But, unfortunately some of its power is lost somewhere between the pages of the newspaper, magazine or the radio program and the actual point of sale at the retail counter.

A well-known magazine recently conducted a survey to determine just how customers reacted at "the zero hour" with respect to brand specifications. In typical grocery stores, this survey showed that three out of five buyers specified a brand. Two out of five did not.

From another study, by a large eastern university, it was developed that brands were specified by customers in 63.9 per cent of the cases, while 36.1 per cent of the purchasers were apparently not brand conscious. The particular products in question were coffee, tea, sugar, peaches, peas, catsup and bread.

Thus, it would seem that consumers—a large percentage of them—enter stores with fairly open minds and may, therefore, be influenced by what is suggested to them or by what they see on display.

As a further extension of these interesting studies, sales executives of the Du Pont Cellophane Company have been most curious to know in percentage terms how many people actually purchased goods on impulse. They directed that a special study be made in the field and it was completed recently. Investigators were placed in grocery stores, both chain and independent, over wide area. Actual purchases made by customers were observed and reported, and as each customer left the store, she was shown a list of groceries and asked two questions:

"How many of these items were on your original shopping list?"

"How many did you decide to buy after you entered the store?"

The results are interesting:

Seventy-five per cent of the women bought one or more items on impulse—items which were not on the original shopping list.

Of the seventy-five per cent who did some of their buying on impulse, an overwhelming percentage bought goods of a value equivalent to one-fifth of their total

purchases. Sixteen out of one hundred questioned said that impulse accounted for half of their total buying, which indicates that impulse is an important factor in retail food merchandising.

Considering the entire group of consumers and their total purchases, it was discovered that 24.1 per cent of the items—nearly one out of every four—was bought on impulse.

In attempting to discover some of the factors influencing impulse buying, it was found that two-thirds of all items purchased on impulse were on display. Retailers, of course, have long been conscious of the importance of proper display. Results of this study merely emphasize it. Most of the other impulse purchases were prompted by the reminders of clerks and the effectiveness of the displays in the store.

On making further observations, it was found that a substantial percentage of items on display had exceptional eye-appeal either through color or design, and an outstanding proportion involved the use of transparent wrapping, permitting complete visibility of the product itself.

From these studies it is easy to see that a manufacturer has to keep in mind this army of impulse buyers when he is developing packages for his products.

Undoubtedly, you are an impulse buyer yourself. Try to remember how many items you purchased today which you had not intended to, and then compute the percentage and compare it with the figures secured in this survey.

The next time you are in a retail store, examine some of the products on display. You will find most dealers realize that eighty-five per cent of the buying is done through the eye, so they instinctively place attractively packaged products in the foreground, knowing that when "the zero hour" comes, they will go "over the top."

Manufacturers and retailers who are interested in this "Survey on Impulse Buying" may secure a copy by writing directly to the Du Pont Cellophane Company, Inc., 350 Fifth Avenue, New York City, New York, Department P.



She hadn't intended to buy it, but . . .

"Crystal Urea"—Another forward stride toward America's chemical independence is made by the du Pont Company at Belle, West Virginia

By CHAPLIN TYLER

SINCE the turn of the century—and especially during the past two decades—America has striven to become independent chemically. Readers of this magazine are familiar with the development of domestic industries for the large-scale manufacture of dyestuffs, ammonia, methanol, camphor and rubber by synthetic methods. Now another degree of chemical independence is added through the large-scale production of urea by the Ammonia Department of the du Pont Company at Belle, near Charleston, West Virginia. The new plant for urea is the first of its kind in America, and has a capacity more than sufficient to supply the entire domestic demand. Heretofore, all of the urea needed by American agriculture and industry has been imported from Europe, practically all of it being of German manufacture.

What is urea? Without going deeply into chemical theory, urea can be described as being a product of ammonia and carbon dioxide, which, under the proper conditions of heat and pressure, condense to form urea, with water as a by-product. Conversely, urea will decompose when heated with water or with dilute acids or alkalis, yielding ammonia and carbon dioxide. Urea is a white crystalline solid, odorless, and has a salty, cooling taste.

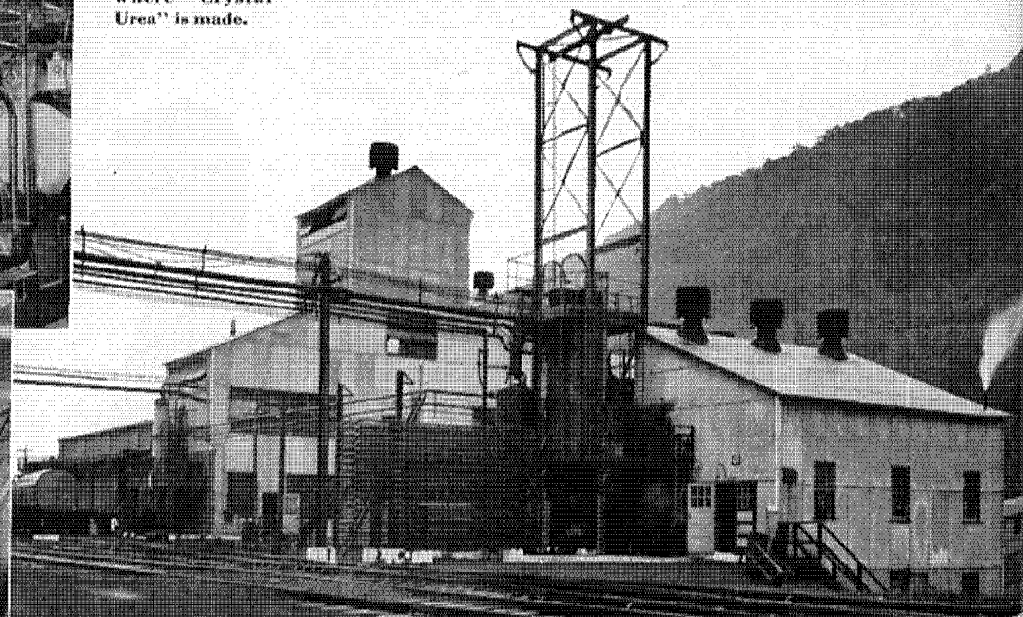
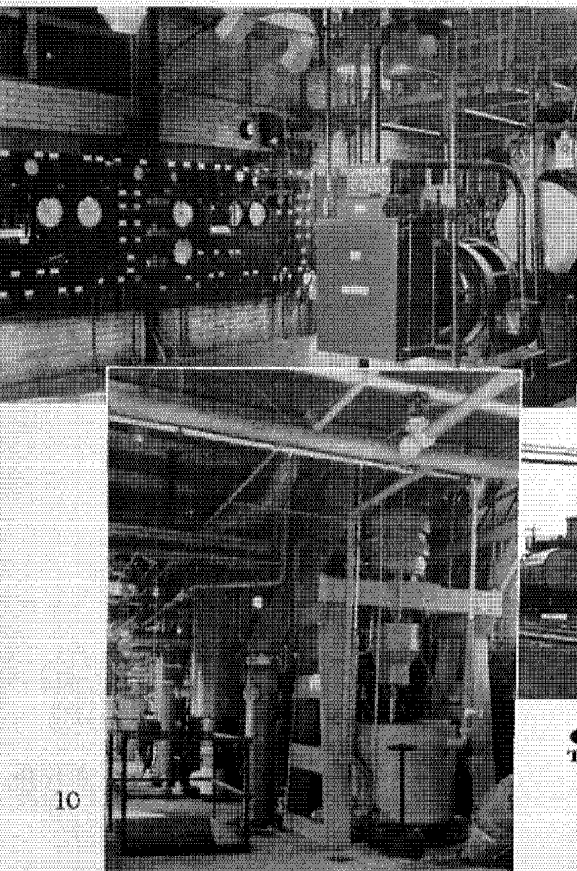
This product is interesting from the viewpoint of scientific history because it was the first organic substance to be made

synthetically. Today, the manufacture of organic chemicals is the largest departmental activity of the du Pont Company, but not until 1828, when urea was synthesized, was the foundation laid for this branch of chemistry.

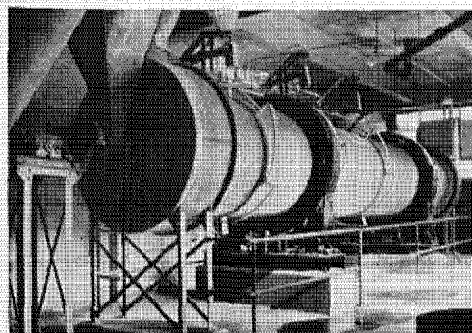
Prior to 1828, the term "organic" denoted those substances that occurred in the animal or plant organism. Berzelius, a leading chemist of those times, ascribed the existence and the formation of organic substances to life itself. But in 1828, Wöhler, a German chemist, then only twenty-eight years old, produced urea accidentally by heating a solution of ammonium sulphate and potassium cyanate, both of which were known to be inorganic (mineral) products. What he actually sought was the inorganic substance ammonium cyanate, but under the conditions of the experiment part of the ammonium cyanate was converted to urea. Thus, the first transition was made from the "mineral" to the "animal" classification of chemical substances. Shortly thereafter, the theory of "vital force" was abandoned as a basis of organic chemistry and the path to an entirely new field of chemical synthesis was opened up.

The discovery of the urea synthesis by Wöhler was not, however, soon to be exploited commercially. There was no immediate demand for the product; in fact, chemical manufacture of those times was largely restricted to inorganic substances such as the common acids and their salts. It was nearly one hundred years later that the Badische Anilin und Soda Fabrik—now part of the I. G. Farbenindustrie—

● Left—A view within the control room in the plant where "Crystal Urea" is made.

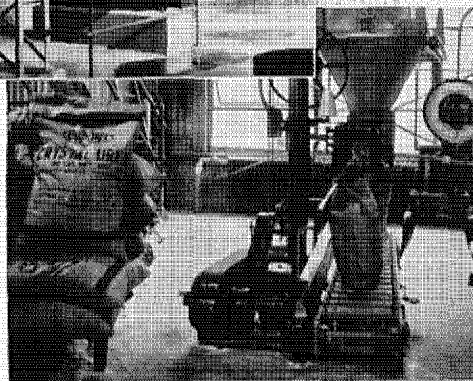


● Where "Crystal Urea" is produced at Belle, West Virginia, by the du Pont Ammonia Department. This is the first plant of its kind in America. The interior view, left, shows a centrifuge.



● Left — A "close-up" view of the drying unit in the plant

● Right — The bagging equipment. Here the product is packaged, weighed and sealed.



developed the chemical process for making urea on a commercial scale, and for the past ten years or so this German urea has enjoyed wide distribution, largely for fertilizer use. Curiously enough, urea, the first synthetically-produced organic substance, was one of the most recent to be manufactured on a large scale.

There were several reasons for this lag. There was no urgent demand for urea, and moreover, the process as carried out by Wöhler was not attractive from the economic point of view. During the period 1914-1918 the Germans developed the ammonia synthesis, and this provided both the ammonia and carbon dioxide necessary for a more direct and economical production of urea. But even so, the chemical engineering problems were formidable, and these had to be fairly well overcome before urea could compete with such forms of nitrogen fertilizers as sodium nitrate, ammonium sulphate and calcium cyanamide.

In 1926, the du Pont Company began to manufacture synthetic ammonia at Belle, West Virginia, and soon thereafter it was recognized that the urea synthesis afforded a promising and logical outlet for ammonia. Consequently, experimental work was started on a urea process, and the first step was the development of a product known as "Urea-Ammonia Liquor" which is essentially a crude solution of urea in ammonia water. This liquid product is shipped in tank cars and is used widely as an ingredient of mixed fertilizers having a superphosphate base.

The second step undertaken at the Belle plant was the recovery of urea from the crude solution in a practically pure crystalline form, this product being known as Du Pont "Crystal Urea." In the du Pont plant, liquid ammonia and liquid carbon dioxide are pumped into a series of pressure vessels where the reactions occur. When the chemical reactions have been completed, a solution of urea in water

is drawn off, and the crystalline product is recovered by evaporation, centrifugal separation and drying.

Du Pont "Crystal Urea" is packed in moisture-proof paper-lined burlap bags, 100 pounds net weight. The guaranteed content of nitrogen is 46 per cent, but the actual content, when packed, is somewhat greater, approaching the theoretical content of 46.6 per cent.

Because of this high content of nitrogen, urea is much more effective per unit of weight than any other commercial form of nitrogen fertilizer. For example, 100 pounds of urea is equivalent to 225 pounds of ammonium sulphate or to 285 pounds of sodium nitrate, these two products being the most widely used nitrogen fertilizers.

But a high concentration of nitrogen is by no means the only attractive feature of urea for fertilizer use. The chemically-made product is the nearest artificial approach to farm manure, the "gold standard" of fertilizers in Europe, as anyone acquainted with rural France will affirm. More than half of the nitrogen in farm manure is in the form of urea.

Many experiments have been conducted in recent years with urea supplying a part or all of the nitrogen in fertilizers applied for various crops. In these official tests, which have included cotton, corn, tobacco, potatoes, watermelons, strawberries and various vegetable crops, urea has usually given as good or better results than any other form of nitrogen. The experiences of practical farmers have also confirmed these tests.

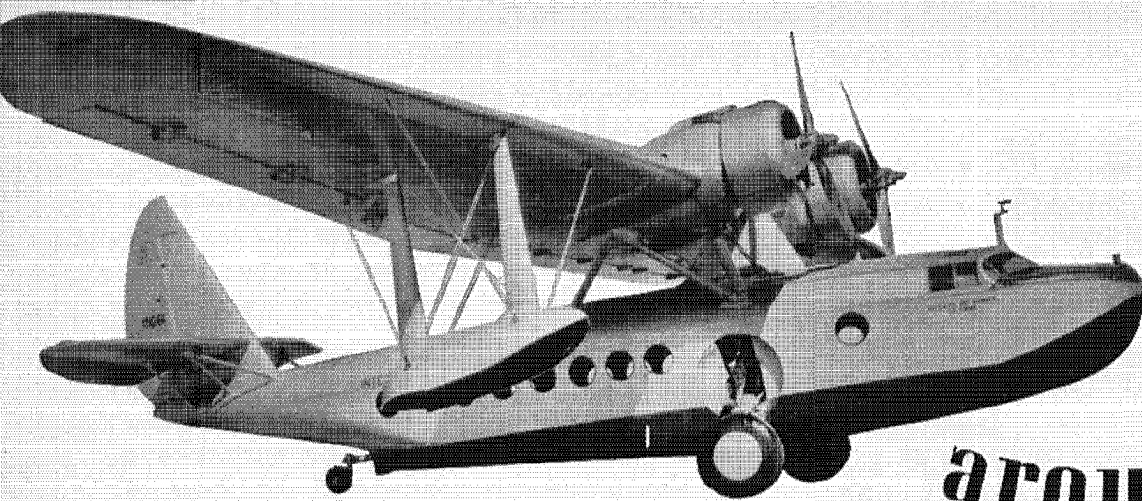
Aside from the use of urea in agriculture, there are industrial uses of growing importance. Of these, the largest consumption is in the plastics industry as a constituent of the urea-formaldehyde plastics. These plastics can be made in translucent white, or in any color, and they are resistant to surface abrasion, heat, moisture, dilute acids, and sunlight. This range of desirable properties accounts in part for the sharp increase in output of the urea plastics during the past five years.

Other industrial uses for urea include casein glue manufacture; textile finishing; textile printing; fireproofing processes, and organic synthesis, especially the class of pharmaceuticals known as the barbitals.

The chemical and physical properties of urea indicate that other uses will be developed, now that it is available in quantity and at a cost of less than five cents a pound.

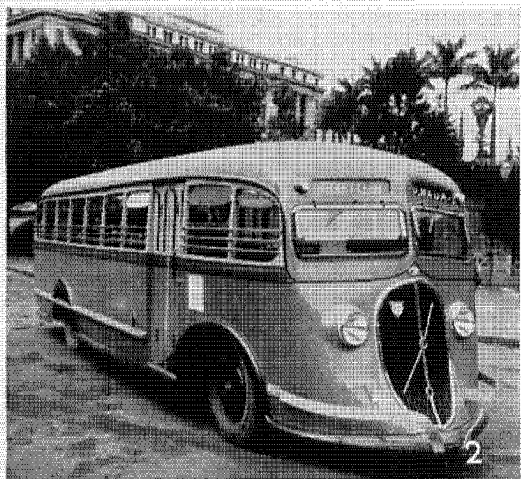


● One corner of the storage room—"Crystal Urea" awaiting shipment.



1. A Sikorsky plane of the Inter-Island Airways, Hawaii. Exterior in "Dulux."

around the world



NINE years ago this month we published an article entitled "Around the World with 'Duco'," dealing with the world-wide acceptance of this cellulose finish. But even then and for several years before du Pont chemists had been searching for another finish that would require less carefully controlled conditions of application.

Finally, in 1930, came the announcement of a new line of du Pont finishes known as "Dulux"—unlike anything produced previously, but suitable for nearly all surfaces and applicable by spray gun or brush. These products were as revolutionary as "Duco" was, and it had marked the most important development in finishes in a hundred years.

Today, throughout the world, signs displaying the trade-marks Du Pont "Duco" and "Dulux" give evidence of the universal acceptance of these names. They are instantly recognized by the citizens of Rio de Janeiro, Stockholm, Manila, Madrid, Habana, Buenos Aires and scores of other cities in more than forty different countries.

The properties of "Dulux" have been demonstrated thoroughly on streamlined trains, airplanes, commercial vehicles, boats, building interiors, household furniture, refrigerators and many other objects.

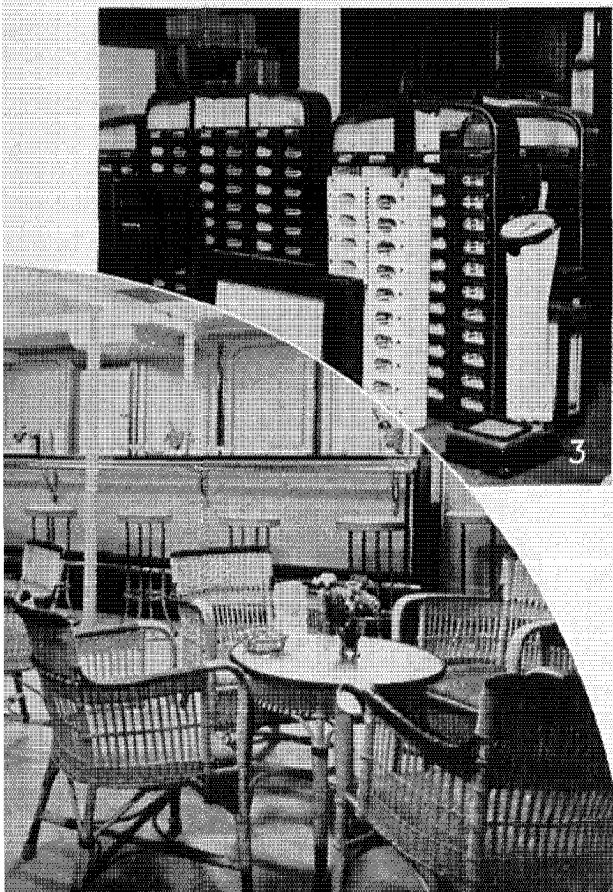
Last year two trucks in a motor caravan traveled from Brussels to the Belgian Congo and back, providing an unusual test for this finish. On this expedition of 16,500 miles, the temperature on the Sahara frequently dropped below freezing at night and rose as high as 124 degrees Fahrenheit during the day. Some of the sand storms encountered lasted as long as six hours, and the sand was driven with such force that it punctured the skin on the faces of the party. Despite this severe exposure, when the trucks were washed for inspection, after their return,

2. A Grassi-built bus in "Dulux" finish, Rio de Janeiro, Brazil.

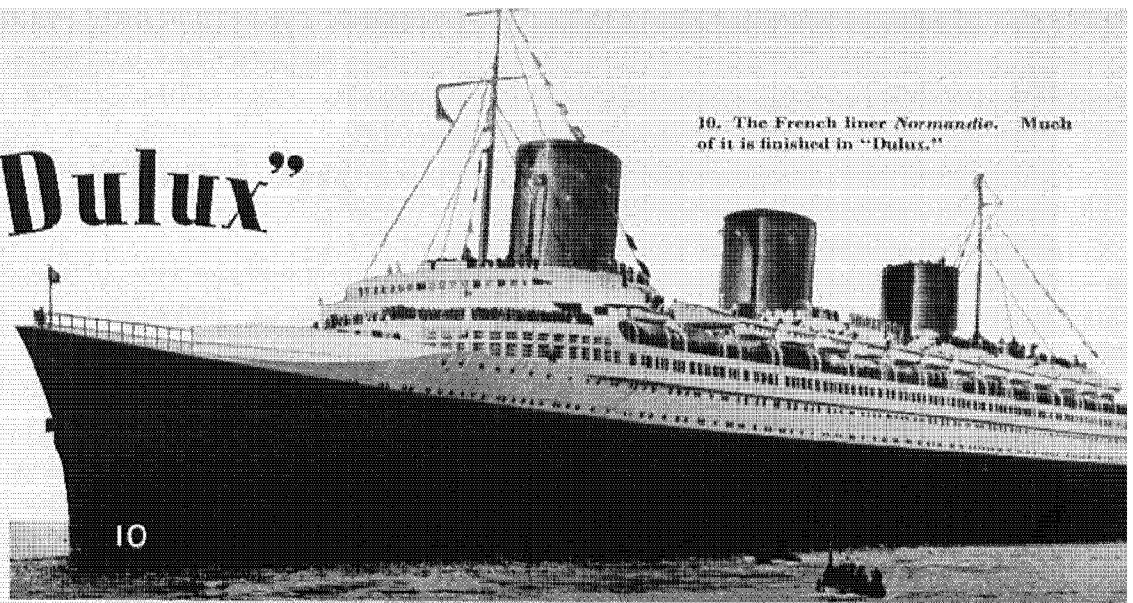
3. Vending and other machines finished in "Dulux," Malmo, Sweden.

4. On Holland-American's Volendam. Mouldings and furniture in "Dulux."

5. A Rising Sun Petroleum Company filling station, Tokio, Japan. The pumps and back fence were finished in "Dulux."



World with "Dulux"



10. The French liner *Normandie*. Much of it is finished in "Dulux."

it was found that the "Dulux" finish had come through the ordeal with no loss of color, and the film was still intact except for slight abrasions from rocks and other objects.

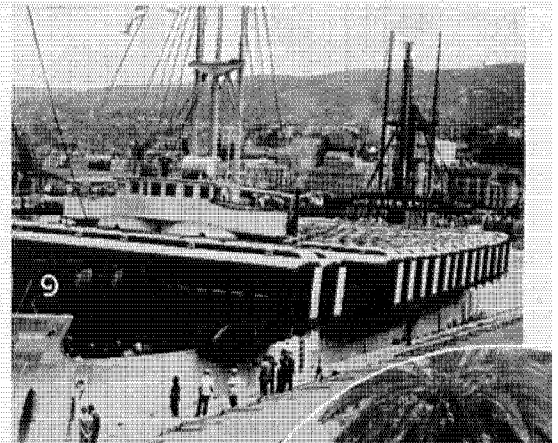
We shall not attempt to list all the uses that have been made of this finish. Citation of a few instances will suggest their diversity. In Honolulu recently, 1,700 fire hydrants were coated with "Dulux," and in a prison in Java, some of the inmates are employing this finish in making Sam Browne belts. Incidentally, its use on leather in several countries, particularly in Cuba and Brazil, furnishes an excellent indication of the flexibility of "Dulux."

In the marine field, "Dulux" has met highly specialized requirements. If you take a trip on the *Normandie*, which has been described as the "ultimate expression of a people," notice how much of beauty and distinction the first-class promenade deck owes to this material. And this is also true of many of the bathrooms, showers, offices, cabins, beds, show-cases and staircase railings. Steamship lines, such as United States, Panama Mail, Matson, United Fruit, American-Hawaiian, Dollar, Atlantic Refining, Barber, Portuguese Navigation and New York and Porto Rico Steamship Company use "Dulux" extensively.

Railways in this country and abroad are among the largest users, finding in it the desired durability and appearance values. This product is employed by railways in Chile, Belgium, Switzerland, Netherlands, India and China, and by the *Cia Metropolitana de Madrid* and the Tramway Company of Lisbon, Portugal.

Another use for which "Dulux" is admirably adapted is for the interiors and exteriors

(Continued on page 24)

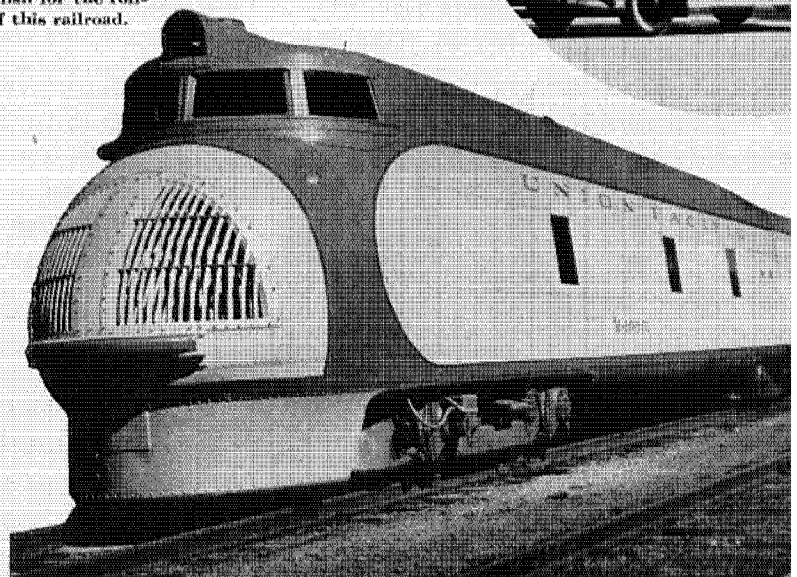


9. Bethlehem Steel cars, in "Dulux," for the Chilean State Railways, Valparaiso.

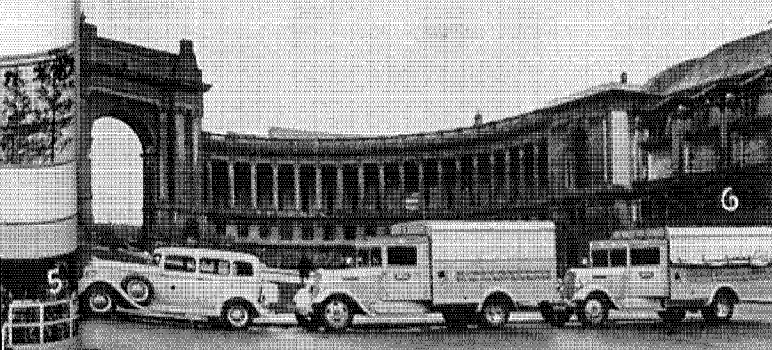


8. One of the Honolulu Rapid Transit Company's Silver Fleet buses, in "Dulux."

7. Union Pacific streamlined train. "Dulux" is the standard finish for the rolling stock of this railroad.



6. The caravan that made an expedition in 1934 from Brussels to the Belgian Congo. The two trucks were finished in "Dulux."



The Fashion Parade for

With novel and charming prints and weaves in Du Pont Rayon fabrics setting a smart pace

By STELLA EPSTEIN



● A smart, one-piece Davidow frock with green, black and white stripes. It is fashioned from a fine jersey-texture fabric of Du Pont Rayon yarn

● Styled for the South is this suit of Alpine Down, a Cohn-Hall-Marx, sheer woolen-type fabric of Du Pont Spun Rayon. The accessories are brown

SHIRTING materials of direct interest to men have been discussed elsewhere in this number, so there is justification for at least a few brief notes about fabrics with a special appeal to women—the materials which are now of fashion importance in Florida's popular resort centers.

The resort styles, introduced there, usually determine what will be worn all along the Atlantic coast during the summertime. What follows may therefore be considered as a preview of materials and styles.—EDITOR.

Following the trend toward smoother textures, one of the striking new print types on washable twill cloth is a Persian print shown in the line of Marshall Field & Company. The contrasting color combinations on a pure white, such as rayon alone produces, are most effective.

Other prints expressing quality and classic smartness are the sport and floral motifs on Super-Lambskin, a lovely mellow, pearly-skin, washable crepe by Cohn-Hall-Marx Company. Here again is an adherence to the trend toward smoother textures, obtained by the finest sizes of rayon yarn.

Printed wool-type fabrics are now the vogue for sport and play clothes in southern resorts. Tiny all-over prints of striking design appear on Como-spun made of Du Pont Spun Rayon. Bird patterns suggesting tropical themes are used. The fabric comes in a

wide range of colors, some of them dark and others in deep pastel shades of mellow tones.

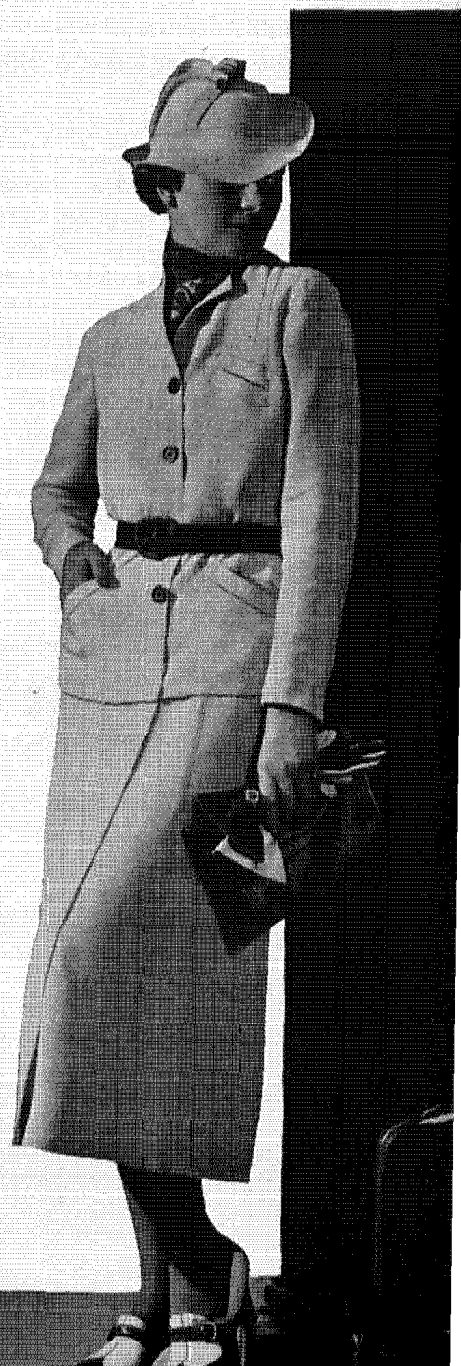
A new charm is added to usual sport patterns when Darby prints are spaced around a Dobby weave on petal skin crepe of Du Pont Rayon. Others for cruising costumes feature a Tattoo print spaced closely to the same Tattoo woven design.

Duonella prints on hairy spun rayon weave are a delightful combination. Floral designs and the simple classic types are shown in the collection by Ameritex-Sudanette Company. Dusty blue and pink constitute the background for rich wine tones, and plain colors offer the new mustard yellow, azure blue and others.

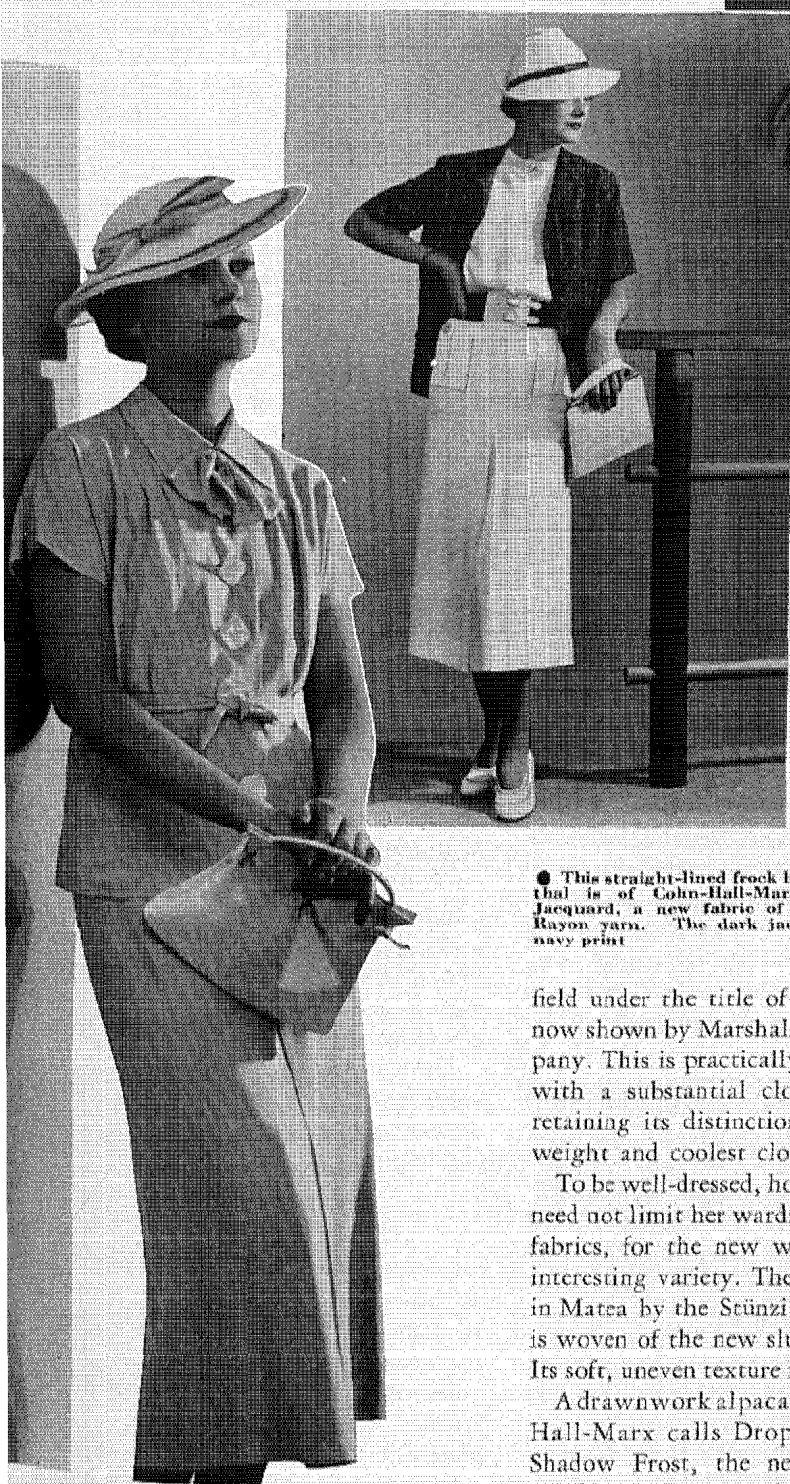
The Jakar prints, as created by the Robinson-Archibald Company, combined with plain fabrics are the vogue for afternoon and town costumes. Bizarre effects and interesting treatments of sleeves and necklines are achieved through the use of this panel print.

The new imported collection of prints is being introduced on novelty rayon sheers such as those with uneven surface weave and tiny nub effects. Printing on this type of cloth tends toward Japanese floral patterns. The new fleck of nub weave in rayon yarns is also used as a print ground for strikingly bold patterns in afternoon and informal evening clothes.

Spun rayon combined with wool is making its debut into the suit and coat



Southern Wear



● This straight-lined frock by Lowenthal is of Cohn-Hall-Marx' Arrow Jacquard, a new fabric of Du Pont Rayon yarn. The dark jacket is in navy print

field under the title of Challis Serge, now shown by Marshall Field & Company. This is practically a new textile with a substantial cloth hand yet retaining its distinction as the finest weight and coolest cloth of its type.

To be well-dressed, however, milady need not limit her wardrobe to printed fabrics, for the new weaves offer an interesting variety. The Rustic weave in Matea by the Stünzi Silk Company is woven of the new slub rayon yarn. Its soft, uneven texture is very smart.

A drawnwork alpaca, which Cohn-Hall-Marx calls Dropstitch Crepe; Shadow Frost, the new raised and shadow-stripe combination; and Punchhole Pencil Stripe on dull rayon crepe are noteworthy among the new novelty rayon weaves which southern sojourners are popularizing.



● A trim sport suit of Congo Cloth, the Du Pont Spun Rayon yarn fabric

The Spun Rayon fancies include the Shantung linen weave, a new Palm Beach fabric by Mallinson, and the Oxford Dot and Alpine Down by Cohn-Hall-Marx.

Clocky weaves by Mallinson and L. & E. Stirn, and Congo Cloth, the perfect suiting fabric, are prominent again in southern resort wear. Congo Cloth is now presented in a range of pastels, navy, dark brown and ivory white.

One of the interesting rayon sheers introduced for advance spring styles is a finely woven plain design of the new thick and thin yarn over a cobweb ground of rayon; another is the Romain sheer, resembling the very finest of jersey types with a sheer crepe hand.

Satins and chiffons hold sway over the formal evening gowns. Stünzi again presents Sorisso of Du Pont's new slub yarn, and Mistvel offers the velvet-surfaced pattern on chiffon. Stiffer nets, such as Organet and Ironet, are expected to be used abundantly, too.

With such an array of fabrics from which to choose, milady may begin at once to plan a smart, serviceable spring and summer wardrobe.

● Davidow employed Drop Stitch Crepe, a smart fabric of Du Pont Spun Rayon, in a soft pink tone for this summery two-piece frock. It comes in other pastel shades, also in white

THE DU PONT MAGAZINE

Published and copyrighted by

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

WILMINGTON, DELAWARE, U. S. A.

Subscription \$1.00 the year

E. R. MANCHESTER, *Editor*

Publishers may reprint, with credit, all articles and illustrations except those carrying special copyright. Electrotypes will, when possible, be furnished on request.

VOL. XXX FEBRUARY, 1936 Nos. 1-2

Tobogganing

ON the walls of the Assembly Hall of the recently-dedicated Theodore Roosevelt Memorial in New York City are four large plaques identified as Nature, Youth, Manhood, and The State. In raised bronze letters on each plaque are four brief inscriptions selected from the writings and sayings of the former President, and the first one of them placed under the heading, Nature, reads, "There is a delight in the hardy life of the open."

That simple declaration so well expresses the spirit of the cover illustration this month that one might almost consider it a specially-written legend. Winter pastimes—skating, skiing and tobogganing—make a strong appeal to rugged, virile people who find life most full of zest out in the open. Others may prefer quieter recreations, a good book and a comfortable chair by the fireside, the thrill of making a "grand slam" at bridge or the pleasure of basking in the warm sunshine at some tropical resort. But few people who have sensed the thrill of tobogganing down a steep and tortuous slide ever forget that experience. Coasting down a prepared slide at terrific speed over the hard-packed snow is truly an exciting, adventurous sport and, like a steeplechase, perhaps part of its appeal is the chance that some mishap may occur along the way.

The picture reproduced was snapped by H. Armstrong Roberts at Lake

Placid, New York, the scene of many winter-sport carnivals, and obviously the tobogganers about to take off are enjoying the prospect of a thrilling trip down the famous slide. If this illustration happily brings to mind your own exploits in this field of sport—and we hope you are still an active participant—then our picture will have served its purpose.

Advances in Perfume Synthesis Revealed

SYNTHETIC organic compounds of high molecular weight, known as "large rings," promise to be of practical value in perfumery and possibly in medicine, according to a report made by Wallace H. Carothers, du Pont chemist, at the recent National Symposium of Organic Chemistry in Rochester, New York.

Following the discovery in 1926 by Ruzicka, a Swiss chemist, that the essential principles of musk and civet are compounds of the large-ring type, Dr. Carothers and his collaborators in the du Pont Fundamental Research Laboratory, Julian W. Hill and E. W. Spanagel, claim to have developed the theory underlying these compounds as well as methods that enable their synthesis to be controlled. As a result, an enormous new field of chemistry has been opened up.

From the biological and practical side, large rings are significant chiefly because of their odor. Musk and civet, long used in perfumery and regarded as being virtually indispensable, owe their value to the principles "muscone" and "civetone," the only known examples of large rings in the animal world. But the musk animal is so rare that a pound of the pure essence muscone would have a market value of about \$40,000.

"Many of the synthetic large rings have musk-like odors," said Dr. Carothers, "and are competing with natural musk and civet. The potentialities in this field are great, as the synthetic materials can be modified to secure many desired odor variations." Musk and its synthetic rivals are used only in fine perfumes to blend various

odors into a single fragrance as well as to confer permanence on odors that otherwise would be fugitive.

"Except in perfumes," concluded Dr. Carothers, "large rings have not been put to practical use, but as yet the possibilities are mostly unexplored. Both civet and musk are presumed to have secondary sexual functions, and musk is said to be used in Chinese medicine. This suggests pharmacological possibilities. In any event, the purely theoretical investigation of so large a field is almost sure to yield results of ultimate practical value."

Larger Office Quarters

PLANS have been approved for an additional office building in Wilmington to occupy the site from the west side of Orange Street, from Tenth to Eleventh. The new building is intended to relieve the present congestion in the du Pont Building and to provide for expansion in the future. It will provide 170,000 square feet of rentable office space above the first floor. It will be thirteen stories high, as is the present building on the Orange Street front, and will conform in general outward appearance to the du Pont Building. It is proposed to connect the two buildings by a bridge at the eighth floor, and to carry power lines, wires, and other operating equipment from the present building by way of a tunnel into the new structure.

The plans for the new building provide for air conditioning and for all of the most modern developments in office building construction.

The Libraries

INDUSTRY leans heavily upon research these days and finds it worth while to maintain extensive library facilities for workers. For example, it may be noted that in the forty libraries of the du Pont organization there are approximately 58,000 bound volumes, more than 47,000 pamphlets, and about 2,400 magazine and trade-paper subscriptions. Forty-seven men and women are employed exclusively in library work, according to a recent survey.

? WHAT'S NEW ?

A NEW operating manual issued by the "R. & H." Chemicals Department is entitled *Electroplating with the du Pont Sodium Stannate-Acetate Bath*. Chapter headings deal with the value of tin as a protective coating, the plating solution, control and maintenance, preparation of base material, and analytical methods of bath control. This twelve-page manual should be of interest to those who are engaged in coating metals with tin.

NEW, non-tarnishable "Fabrikoid" in gold and silver has been announced by the "Fabrikoid" Division of the du Pont Company. This washable coated material is suitable for evening shoes, handbags, belts and novelties, the fine kid textures being especially important now. The various grainings provide a complete range both of pale, light tones and of deep bronze and dulled aluminum shades.

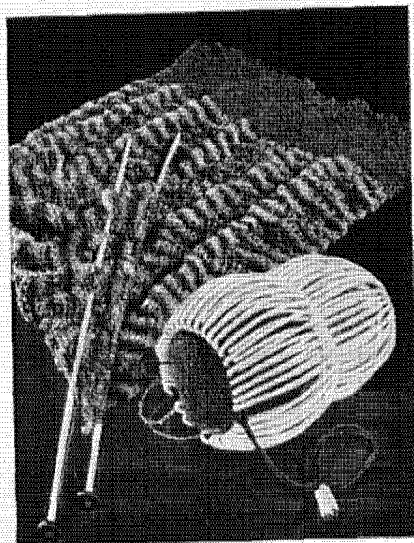
TWO new emulsifying agents for oil and wax emulsions were put on the market recently by the du Pont Company and identified by the trade-names "Avirol" OS and "Avirol" WS, respectively. Stable emulsions of all kinds of oils and waxes can easily be prepared with one of these products. More detailed information about them can be obtained from the Fine Chemicals Division.

RECENTLY introduced by the "Fabrikoid" Division of the Company is a new type of non-skid rug underlay which differs from other products in that both sides, instead of one, have a gripping, crepe surface. Colored in a soft shade of medium green, the material, known as Sponge "Rug Anchor," has the resilient gripping properties of its prototype and also protects against dust and dirt. It is offered in widths of twenty-four, thirty-two and fifty-four inches.

THE Organic Chemicals Department has announced the development of "Thermoflex A," a new antioxidant especially effective for the prevention of flex-cracking. Repeated rapid stretching or bending of rubber gives rise to splitting, which type of failure is known in the rubber industry as flex-cracking.

A NEW application for "Velvetex," a du Pont rubber composition in sheet form, has been developed by Sainberg & Company, Inc., 37 West 26th Street, New York City. This resilient material with a new process adhesive back forms a perfect cushion for use under glass desk tops. This material, also called Glas-Stop, may be used to anchor dial phones.

WOMEN who have struggled with tangled knitting yarn will be interested in a collapsible yarn holder made of white Du Pont "Pyralin." The plastic material is flexible enough to accommodate a ball of yarn and it is made with a looped cord which allows the container to hang conveniently from the wrist. This yarn cage is manufactured by Joseph H. Meyer Brothers, 389 Fifth Avenue, New York City.



A NEW descriptive folder issued by the Grasselli Chemical Company, Inc., is entitled, "Prevent Pecan Rosette with Grasselli Zinc Sulphate." Of the three methods of treatment discussed, two of them are recommended for winter application. Copies may be obtained from the Cleveland office.

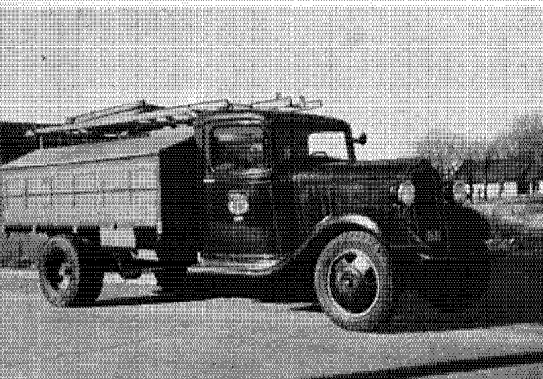
THE du Pont Company's Dyestuffs Division has announced the development of "Lithosol" Fast Green B Paste (Patent applied for) which produces yellow shades of green. This new addition to the line of lake colors is of interest as a pigment for wall-paper printing and for printing inks. It is also recommended for use in the beater or as a coating product in paper mills.

THE latest revision of the booklet *Safety in the Handling and Use of Explosives*, with sixty-eight pages of text and illustrations, is being distributed by the Institute of Makers of Explosives, 103 Park Avenue, New York City.

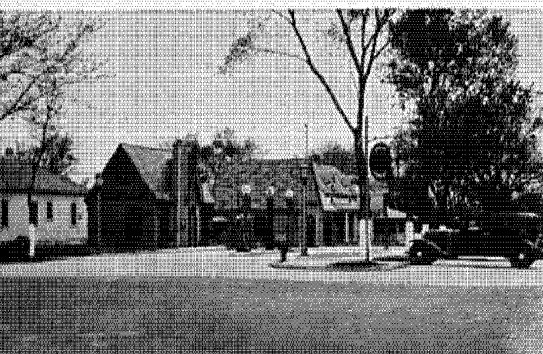
A RECENT revision of the informative pamphlet *How to Insure Your Crops with Du Pont "P.A.C." Formaldehyde* includes specific directions for treating oats, wheat, barley, rye, millet, sorghum, potatoes and other vegetables. The text also presents a new method of soil treatment with particular reference to greenhouse work. Copies may be obtained from the "R. & H." Chemicals Department at Wilmington, Del.

RECENTLY issued by the "R. & H." Chemicals Department of the du Pont Company is a new technical bulletin, "Chlorinated Hydrocarbons," which lists the properties and characteristics of sixteen of these materials now available in commercial quantities. Industrial consumers will be interested in the information which is set forth in charts, graphs and text.

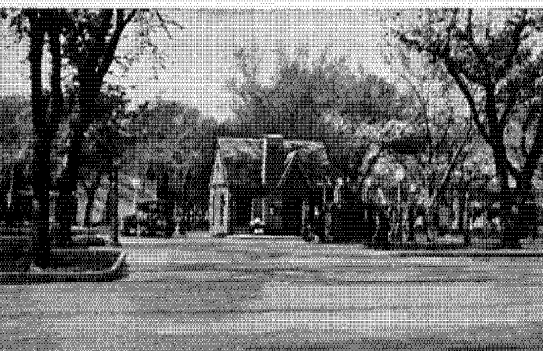
The Phillips Petroleum Company keeps its gasoline bulk and service stations attractive by . . . **Systematic Maintenance**



● One of the Phillips Petroleum Company's paint trucks starts off for some service station where a repainting job is scheduled. All materials and accessories are stored in the box body and the ladders will make the trip on the top.

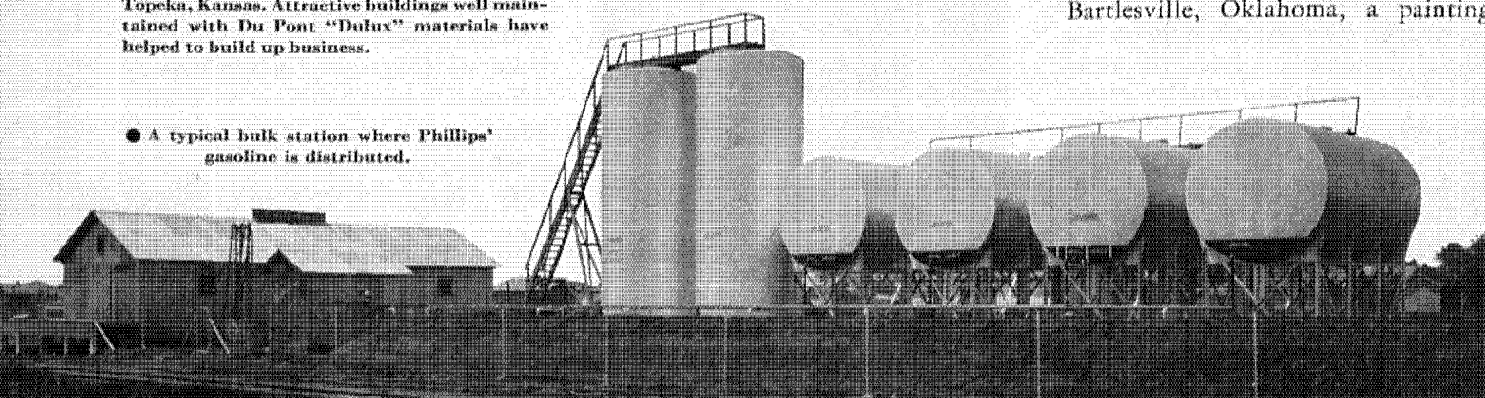


● Phillips' service stations—more than 1,500 of them—are all painted in orange and green. The one shown here is located at Fourth and Cherokee Streets, Bartlesville, Oklahoma.



● Another station at Sixth and Lane Streets, Topeka, Kansas. Attractive buildings well maintained with Du Pont "Dulux" materials have helped to build up business.

● A typical bulk station where Phillips' gasoline is distributed.



APPROXIMATELY seven years ago, the Phillips Petroleum Company started the retail sale of controlled volatility "Phillips 66" gasoline. Today, this product is dispensed through more than 1,500 service stations and 700 bulk distributing stations, all operated by the company. Its officials early agreed that successful merchandising of the product required distinctive color treatment of its retail outlets—and excellent maintenance, particularly with reference to paint. Careful attention to such details has accounted in no small degree to the company's rapid growth in the mid-western section of the country.

Du Pont color experts recommended the beautiful orange and green color combination which has made Phillips' service stations so distinctive and attractive. The green body blends in so harmoniously with residential neighborhoods that it adds to rather than detracts from the surroundings as will be seen in the illustrations.

It is believed that the methods used by the company in repainting its stations, the records kept and means of controlling paint materials will be of interest to others, so we shall discuss briefly these points.

Economical painting requires (1) a paint material of long life and high decorative value; (2) a properly prepared surface so that the paint will adhere to it, and (3) a method of application suitable to the product and to the surface upon which it is being used.

Before adopting the present system, paint maintenance work had been

done by service station attendants and by local contractors. After a few years, however, it was found that uniformly satisfactory results could be obtained only by the use of company-operated and equipped crews, working under the direction of the Engineering Department, which has developed the following methods:

Each crew is furnished with an air compressor and spray gun, electrically-driven sanding discs, scrapers, brushes, ladders, and other paraphernalia. Particular stress is laid on cleaning thoroughly all surfaces to insure proper adherence of the paint materials used.

Late in each calendar year a survey is made of all service and bulk stations to determine which ones will have to be painted the following year. A thorough examination is made. If the inspector thinks the existing coat will last another twelve months and look well, no maintenance work will be recommended; otherwise, the property will be scheduled for repainting.

As early as possible in the spring crews are started in sufficient number to finish the program by November 15. They plan, if possible, to apply the materials during the period from May 1 to November 1. The crews are assigned territories so arranged to avoid any unnecessary travel. A general paint superintendent inspects periodically the work completed by each crew and he makes suggestions as to the improvement in methods and workmanship. Figure 1 shows the form of the inspection report he makes to headquarters.

In the central operating office at Bartlesville, Oklahoma, a painting

Each service station crew is required to fill out a Daily Field Work Report—see Figure 3—showing all direct charges for which they are responsible; that is, for labor, local material purchases, and the like. On completing any assignment, they note at the bottom of the sheet specifically what paint was used and how much was required. Upon receipt of these reports in the operating office, cost figures for painting each property are computed and entered on the form shown in Figure 4, together with other pertinent data about the station. This system has proved advantageous in determining when to paint and how best to control the use of the paint materials.

The use of Du Pont "Dulux" materials has enabled the company to obtain excellent results from each paint application, and the costs of tests and record keeping have been well repaid by the longer life and increased attractiveness of each job well done. The Phillips Petroleum Company feels that the fine appearance of its stations has helped to build business and that the dependable paint materials used are in keeping with the high quality of its own products.

[illegible]

Form 100-278, May 1944
117-1-2224-D

DAILY FIELD WORK REPORT

FIGURE
3

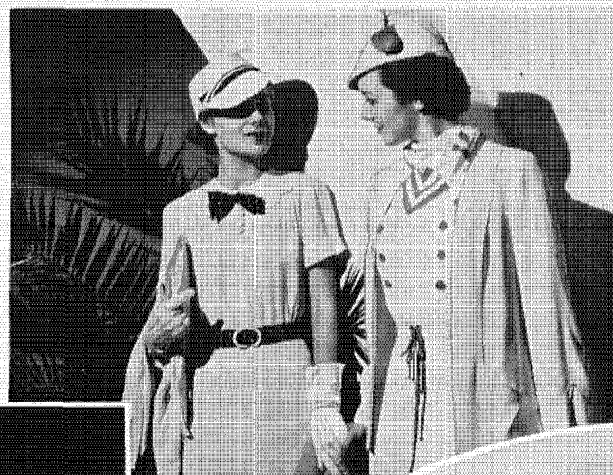
Station or Job No.	Location of Work	Date	Report No.
A.F.E. No.			
Work being done			

	NAME	KIND OF WORK	HRS.	RATE	AMOUNT		
LABOR							
NOTE TO FOREMAN: Use additional sheets if necessary, but only totals on first sheet only.		TOTAL LABOR COST TODAY LABOR COST BROUGHT FORWARD TOTAL LABOR COST TO DATE					
MATERIAL, ETC.	(ITEMS)	USED FOR	QTY OR ORDER NO.	PRICE	EXTENSION		
NOTE TO FOREMAN: List here all cash and charge items including material, room rent, etc., but not including gas, oil and repairs for autos, trucks and equipment.		TOTAL EXPENDITURES TODAY MATERIALS, ETC. BROGT FORWARD TOTAL EXPENDITURES TO DATE					
EQUIPMENT	FROM RATES	NO.	RINGS	USED FOR	HRS.	RATE	AMOUNT
NOTE TO FOREMAN: When equipment is rented from outside companies, a letter showing the terms of agreement must accompany this report.			TOTAL EQUIPMENT CHARGES TODAY EQUIPMENT CHARGES BROGT FORWARD TOTAL EQUIPMENT CHARGES TO DATE				
PROGRESS							

DATE ON JOB TO DATE:	WEATHER TODAY:	PERCENT COMPLETE:
SIGNED _____		GRAND TOTAL TO DATE _____

Original and Duplicate to Bardonia Office. Completion report to accompany last report on job.

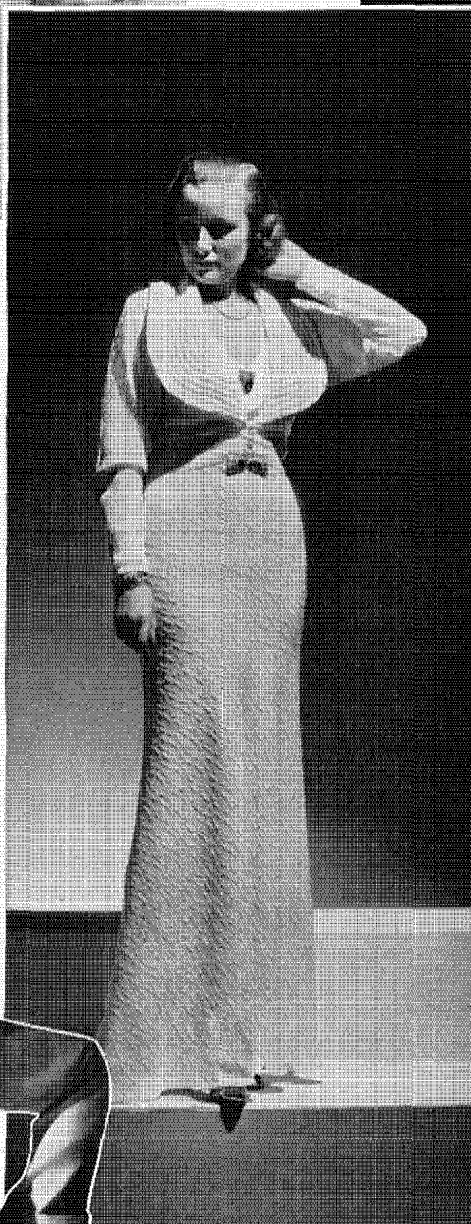
[illegible]



Sunshine Ahead...

*in these Ensembles
of "ACELE"—
Fashion's Favorite,
the Luxury Yarn
made by Du Pont*

Designed especially for 1936 cruise and summer wear. These frocks are beautifully made and are rich in style value.



● Top, left—Blue Skies—two versions of equal chic and wearability in the celebrated Prunella. Bonwit Teller.

● Top, right—Smart Simplicity in the best 1936 manner. Created in famous Prunella. Jay Thorpe.

● Above—Fashion Future for wear down South and for eminent success this summer. Made of Ho San crepe containing Du Pont's new naere slub rayon yarn. Jay Thorpe.

● Center—First Lady of the Evening—a gala frock for gala occasions in a new matelasse Red Pepper. Lord & Taylor.

● Left—An Ensemble of youthful and slimming lines in Cross Roads, a shadow diagonal. Lord & Taylor.



HARDWARE**DU PONT**
PAINTS - VARNISHES -
DU CO**PAINTS**

Presented on "Pyralin" *A merchandising problem has been solved by the use of window transparencies made of Du Pont "Pyralin"*

By R. T. ELLIS

FOR nearly a quarter of a century, the International Transparency Company of Cleveland, Ohio, and its predecessor have been manufacturing window transparencies for large advertisers. On its list of customers are such familiar names as Coca-Cola, du Pont, Goodyear, American Chicle, Goodrich, Ex-Lax, RCA-Victor, Hires, Atwater Kent, Aetna Fire Insurance and United Cigars.

Briefly, this is how window transparencies are made: A thin sheet of cellulose, less than .002 of an inch thick, is lithographed on both sides and then covered, first, with two coats of a sticky, varnish-like liquid, and finally, with two coats of a special remoistening adhesive. Between coats the large sheets are placed in trays, which are kept in the drying-room for twenty-four hours.

When dry, the sheets are withdrawn and slip-sheets are placed between them to prevent sticking and offsetting. The sheets then pass to the cutting department, where they are die-cut or straight-cut, depending upon the type of finished sign. Careful inspection follows, then packing and shipping.



The transparencies are now ready to go to work in various stores, informing the great buying public that a certain product is on sale.

The attractive top-of-the-window signs we see on every hand add color and decoration to the store front and provide an effective frame for the window display below it. And when the store lights are turned on, the advertising message to foot and vehicular traffic outside is all the more powerful and distinct. The interior of the store, too, is improved by the warm, friendly band of color.

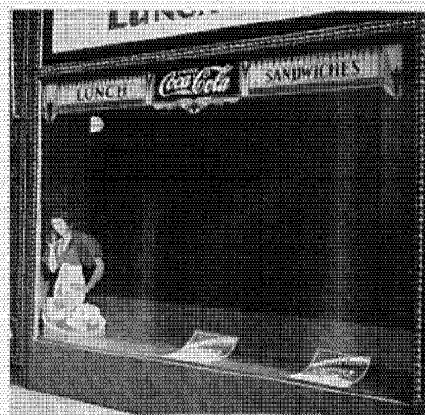
These signs, factory-coated with the adhesive, are easily mounted; no special tools are required. One merely immerses the whole sign in water for three to five minutes, cleans the glass window or door and applies the sign in its permanent position. This operation is simplicity itself, but care must be taken to remove all of the surplus water and adhesive in order to secure a neat, long-lived mounting.

Transparencies made by International have adhesive on both sides and may be mounted either way to the glass. Inside areas on mirrors, show-cases and the like are also available for the advertiser's use.

There are many International transparencies still in service after five, eight and ten years of effective advertising on store windows and doors. These, of course, are exceptional cases, for the average life of a mounted transparency is probably about two years.

The company mentioned also employs transparencies mounted on sheets of Du Pont "Pyralin" to show prospects

the beauty and richness of its finished product, and also to demonstrate its use. "Pyralin," as you know, is the trade-mark for the pyroxylin plastic material made by the Du Pont Viscoloid Company. It is manufactured in twenty by fifty-inch sheets,

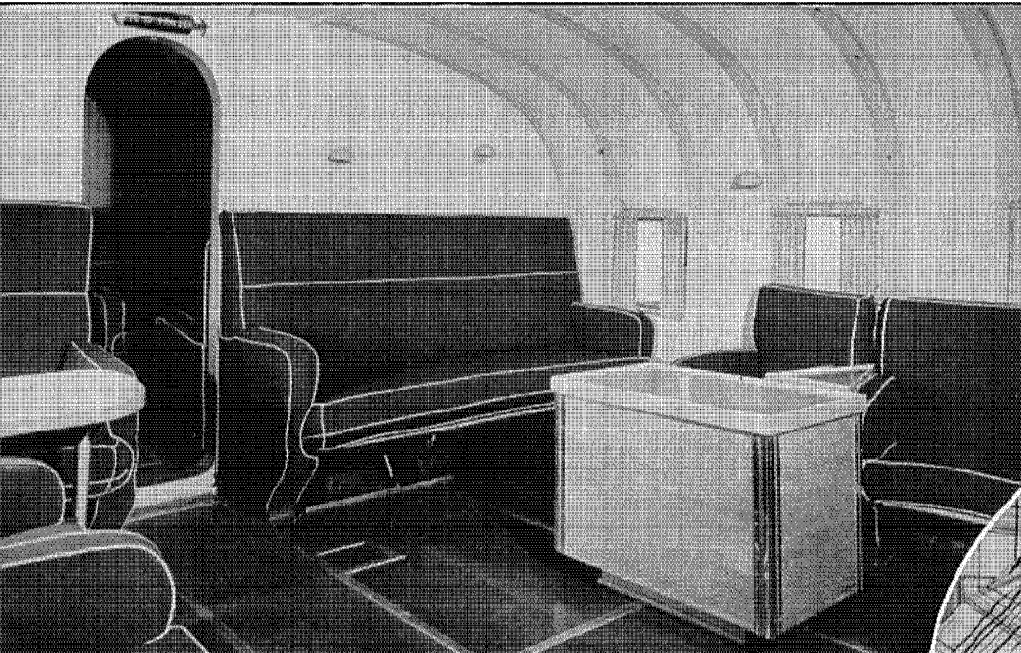


transparent, translucent or opaque colors; and may also be obtained in rod and tube form.

Sales representatives of the International Transparency Company have adopted the practice of holding or tacking up a finished sign in position on a dealer's window, so that he can visualize the effect. As a sales aid these mountings have proved to be especially helpful.

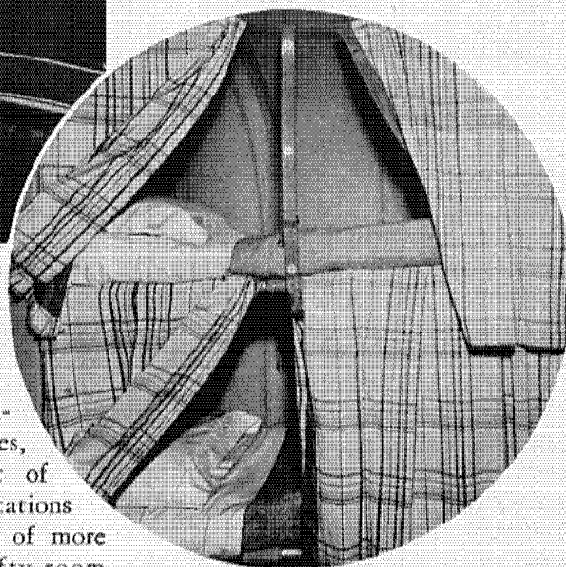
A transparency is rather delicate and difficult to handle, because it is meant to be mounted on glass and, therefore, is not a thick, rugged substance. It has been quite a problem to show samples to prospects, but with a Du Pont "Pyralin" mounting there are no difficulties in handling. Nor

(Continued on page 24)



● The *China Clipper's* big lounge room, showing seats typical of the forty-eight on board. Curtains form the required dressing rooms.

● Below—Two of eighteen berths on this *Clipper*, made up as they will be for overnight passengers between San Francisco and Hawaii.



The Airline to the Orient

(Continued from page 5)

orology, navigation, radio, engine shop work and every detail of clearing the cargoes and caring for the passengers. Most of them speak at least one language in addition to English, and all are familiar with international law as it affects air transport.

To train these men, a seventeen-ton Sikorsky S-43 was turned into a flying laboratory. And then in 1934, when the *Pan American* was finished, it was assigned to this work. Such schooling explains in large part the remarkable no-accident record Pan American Airways has set up on the 32,000 miles of South American coastal routes and the 99.87 per cent maintenance of schedules.

Prior to the first trans-Pacific exploratory trip, ground crews were sent to Midway and Wake Islands to cut away the heavy underbrush and remove coral

rock. Since last July, bases have been ready all the way across the Pacific to Manila. Docking floats, radio and fueling equipment, ships, offices, living quarters and a set of five complete ground stations have been set up at a cost of more than \$2,000,000. Two fifty-room hotels for transients are now under construction, one on Midway and the other on Wake.

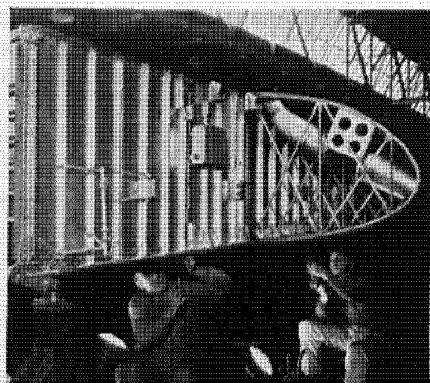
Each base crew consists of manager, agents, radio men and mechanics, with every man trained to handle the routine duties of his job. Radio operators have stood watch since the erection of their sets. Weather observations are made hourly. The four pioneering flights of the *Pan American Clipper* last summer provided a final test of base facilities and of the skill of the ground crews. Her first round-trip flight carried her to Hawaii; the second, to Midway; the third, to Wake; and the fourth, to Guam. And not a single mishap occurred.

One of the great triumphs of this pioneering project has been the extension of aircraft radio direction-finding devices to unprecedented ranges. The navigation officer can now determine

his position to the fraction of a mile by the radio bearings he takes on sea craft and the shore and base stations. Gone forever is the hazard of losing one's way while crossing great expanses of ocean.

Bi-weekly flights are now being made, the first five with air mail only. Passenger service will follow when the routine has been adjusted to accord with the actual flying experience. As traffic builds, schedules will be increased in speed and frequency; but, in line with its safety policy, Pan American Airways will proceed cautiously.

History alone will record the ultimate significance of this great project that has been four years in development and has cost four million dollars. But we must doff our hats to Pan American Airways for the imagination, courage and efficiency with which they have pioneered the trans-Pacific air transport service. Historically, it may be as important as the first trans-continental railroad.



● Assembling a wing of the *China Clipper* at the Glenn L. Martin plant, Baltimore. New principles of structure and loading have made practical building even larger ships.

Organization for Restoration

(Continued from page 2)

an ambitious program as a result of this cooperation. Work in quail management, wildlife extension, cotton-tail rabbit studies, pheasant management, parasites and diseases of wild animals, duck studies, problems of wintering bob-white quail, and the ecology of the muskrat, has been started. Engaged in these efforts will be a number of faculty members and graduate students.

The Institute plans to enlarge this educational program as time goes on and as funds permit.

The Federation of Wildlife Forces

Wildlife has had various small voices crying in its behalf for years. People who love the outdoors and the wild things of the fields, forests and streams have realized that diminution, to a serious degree, has taken place. But their voices have been very much like those crying in the wilderness.

The greatest need, both nationally and internationally, to accomplish necessary recognition—political and economic—is a federation of all the conservation and sportsmen's groups. Local fish and game clubs, and other interested organizations and individuals, exist in ample numbers to wield the necessary influence—if united. This need has long been recognized and discussed. But that is as far as it has gone. The Institute, however, believes in action and began a campaign to effect such a federation of all wildlife interests.

Into the picture came the United States Junior Chamber of Commerce, a national organization of young business men, searching for a constructive program of national activity. President Allen Whitfield, a young attorney of Des Moines, Iowa, and Charles E. Clarke, Jr., of Jacksonville, Florida, chairman of his national conservation committee, agreed that here was a job needing immediate attention. With characteristic enthusiasm, they put the machinery of their group to work in accomplishing it.

Final plans will be presented at the North American Wildlife Conference in February, when it is expected that the federation will be perfected.

The Institute will in no way be connected with the federation. It is merely lending its machinery and support in creating the interest in this organization. It will have no part in the election of the officers or the establishment of the policies. It hopes, however, to aid the federation, when called upon, in any manner possible.

The federation will be an autonomous organization—an organization of organizations—a channel through which national sentiment in behalf of wildlife can be centered and its influence exerted to the best advantage. It will be the voice of the wildlife interests of North America, the greatest need known in the problem of restoring our wildlife resources. Such a federation as planned, representing the interests of all those who love the outdoors, can secure that recognition which wildlife resources have so desperately needed.

North American Wildlife Conference

This great conclave in Washington replaces the American Game Conference, which has been held annually in New York for the past twenty-one years. Authorities of the United States, Canada and Mexico will meet there on common ground. Every phase of the wildlife restoration problem will be discussed at this meeting, by authorities and laymen, by sportsmen and lovers of the outdoors. Wildlife exhibits, including species of the past and present, are planned. Every meeting, whether it be of a general or scientific nature, will be open to the public and everyone interested in the perpetuation of North America's wildlife is urged to attend.

It is hoped that a comprehensive and effective program of wildlife restoration activity, national and international in its scope, will be formed to insure more fish and game, and more enjoyment of the outdoors for all.



UNDERWOOD & UNDERWOOD

Page the Allergist

If you have never been afflicted with hay fever, rose coids or asthma, you may not be acquainted with the strange term used in our caption. It is a comparatively new word identifying a specialist in one branch of the medical profession that deals with these ills.

Allergic individuals are super-sensitive to a great many substances that are harmless to normal persons. And the sources of irritation are not all in the open fields and gardens; they may and often do originate in the home from ordinary house dusts traceable to pillows, the stuffing in upholstered furniture, cattle hair made into rug cushions, and, in particular, mattresses that collect and spread "dust atopen."

The news is that something has been done to minimize that menace, for du Pont technicians working with a Cleveland, Ohio, manufacturer have developed at the Fairfield, Connecticut, plant a dust-proof mattress encasing that has proved helpful in many if not all cases. If determinative tests show that an asthmatic patient reacts to dust from bedding, and a competent physician recommends that the mattress be encased, then that is manifestly the thing to do. The du Pont Company supplies the material for the encasings, and they are made to measure by the Allergen-Proof Encasing Company, 4046 Superior Avenue, Cleveland, Ohio.

Around the world with "Dulux"

(Continued from page 15)

of airplanes. This product, widely used in the United States, is now the standard fuselage finish on the planes of the *Lineas Aero-Postales España*, and has also been employed extensively on the Pan-American flying boats.

One could go on at length listing industrial users of "Dulux," who have found its properties valuable in their business. Manufacturers of refrigerators and metal furniture find it excellent because of its initial and enduring beauty. Many sign manufacturers, such as Publicidad Eureka, Argentina, one of the largest sign makers in South America, have standardized on it.

Research on "Dulux" in the Company's laboratories and field tests on exposure farms in the United States never cease. Du Pont representatives

at home and abroad are kept informed of the results, and are qualified to specify the right type of material for each application everywhere in the world.

Presented on "Pyralin"

(Continued from page 21)

any of the beauty is lost because this plastic takes the place of glass itself and, being clear and transparent, allows light rays to pass through freely, duplicating the conditions that contribute so much to the beauty and attractiveness of the transparency on a dealer's door or window.

The company often supplies customers with "Pyralin"-mounted samples for their permanent advertising exhibits, and also for sales department use. In introducing a new sign, frequently every salesman of the client is supplied with a mounting of this

type so that he can show a customer what is being done to move the advertised product from his shelves, and how the transparency can reinforce national advertising at the point of sale.

Perhaps you have need of transparencies or other articles made of "Pyralin." In either case, write to the Du Pont Viscoloid Company, Inc., 350 Fifth Avenue, Dept. 25, New York City.

A Suggestion

If this publication does not reach you regularly, we suggest that you examine carefully the name and address shown on the next envelope that carries a copy to your home or office. Then, if necessary, note any corrections on the envelope and send it back to THE DU PONT MAGAZINE for the attention of the circulation manager. That will be easy to do, and it will help.



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

THE GRASSELLI CHEMICAL CO., INC.

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, zinc chloride.

Birmingham, Ala., S. Bessemer Road
Boston, Mass., 140 Federal Street
Brooklyn, N. Y., 152 Morgan Avenue
Charlotte, N. C., 412 So. Church Street
Chicago, Ill., 2101 Canalport Ave.
Cincinnati, Ohio, 305 Walnut Street
Cleveland, Ohio, 629 Euclid Avenue
Detroit, Michigan, 1539 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., 1140 S. Robertson St.
New York, N. Y., 350 Fifth Ave.
Paterson, N. J., 6 Waite Street
Philadelphia, Pa., 3590 Gray's Ferry Road
Pittsburgh, Pa., 107 Sixth Street
Rensselaer, N. Y., 34 Riverside Ave.
San Francisco, Calif., 584 Mission Street
Sodus, N. Y., 55 Maple Avenue
St. Louis, Mo., 116 W. Ferry Street
St. Paul, Minn., 2303 Hampden Ave.

ORGANIC CHEMICALS

Alcohol Division

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

Wilmington, Del., Du Pont 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

Aromatics, perfumes, photographic and pharmaceutical chemicals.

Chicago, Ill., 7 So. Dearborn Street
New York, N. Y., 61 Thomas Street
Wilmington, Del., Du Pont Building
"Cel-O-Glass," "Vio-Ray" Window Fabric,
Ergosterol and Vitamin D.
Wilmington, Del., Du Pont Building
Hydrogenated oils, detergents, wetting-out agents and textile assistants (Refer to offices listed under Dyestuffs Division).

Rubber Chemicals Division

Anti-oxidants, vulcanization accelerators, rubber colors, "DuPrene," "S. D. O." (corrosion-resistance coating) and special chemicals.

Boston, Mass., 140 Federal Street
Chicago, Ill., 7 So. Dearborn Street
San Francisco, Calif., 601 Third Street

SMOKELESS POWDERS

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

SMOKELESS POWDER DEPARTMENT
Wilmington, Del., Du Pont Building

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

KREBS PIGMENT & COLOR CORP.

Boston, Mass., 7 Charlton St., Everett Sta.
Chicago, Ill., 2101 Canalport Ave.
Cleveland, Ohio, 1221 Guardian Bldg.
Kansas City, Mo., 29th & Southwest Blvd.
Los Angeles, Calif., 918 E. Sixty-First St.
Newark, N. J., 256 Vanderpool St.
Philadelphia, Pa., 3560 Gray's Ferry Rd.
San Francisco, Calif., 1401 17th St.

TEXTILE FIBERS

Viscose and acetate rayon; staple fiber and commercial cellulose acetate flake for industrial uses.

DU PONT RAYON COMPANY, INC. Viscose Process Department and "Acele" Department

Charlotte, N. C., 412 So. Church Street
Chattanooga, Tenn., 609-11 Provident Bldg.
New York, N. Y., Empire State Building
Philadelphia, Pa., 1616 Walnut Street
Providence, R. I., 941 R. I. Hospital Tr. Bldg.
San Francisco, Calif., 601 Third Street

AMMONIA AND ALCOHOLS

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

AMMONIA DEPARTMENT

Wilmington, Del., Du Pont Building

National Ammonia Division

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

Chicago, Ill., 332 S. Michigan Blvd.
New York, N. Y., Empire State Building
Philadelphia, Pa., Delaware Ave. & Van
Kirk Street, Frankford P. O.
San Francisco, Calif., 601 Third Street
St. Louis, Mo., 3600 N. Broadway

FABRICS—FINISHES

FABRICS AND FINISHES DEPARTMENT

"Fabrikoid" Division

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

Chicago, Ill., 2100 Elston Avenue
Detroit, Michigan, General Motors Building
Newburgh, N. Y., Ellenville Road
New York, N. Y., Empire State Building
San Francisco, Calif., 601 Third Street

Finishes Division

"Duco," "Dulux" and a complete line of finishing materials for automotive manufacturers.

Detroit, Mich., General Motors Building

"Duco," "Dulux," nitrocellulose, solvents, leather cements, 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.

Atlanta, Ga., 619-21 Peachtree Street, N. E.
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), "Plastacee" (acetate plastic) and "Phenalin" (cast phenol formaldehyde resin) in the form of sheets, rods and tubes. Also manufacturers of toothbrushes, "Lucite" and "Pyralin" toiletware, combs, hair ornaments, toys and novelties, fabricated from "Pyralin" and "Plastacee," and "Pyrahed," a scuffless shoe heel covering material.

DU PONT VISCOLOID COMPANY, INC.

Chicago, Ill., 36 So. State Street
New York, N. Y., Empire State Building
San Francisco, Calif., 111 Sutter Street

SPECIAL CHEMICALS

THE R. & H. CHEMICALS DEPARTMENT

Sodium, cyanides, peroxides, chlorine, heat-treating salts, formaldehyde, hexamethylenetetramine; gold, silver and platinum preparations, colors, ceramic materials of all types; methyl chloride and other refrigerants; non-flammable solvents and other chemicals for all industries.

Baltimore, Md., 301 O. T. National Bank Bldg.
Boston, Mass., 140 Federal Street
Charlotte, N. C., 414 So. Church Street
Chicago, Ill., 230 E. Ohio Street
Cleveland, Ohio, 1235 Guardian Building
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
Pittsburgh, Pa., 312 Fulton Building
San Francisco, Calif., 601 Third Street

Canadian Representatives:

Canadian Industries Ltd., 1135 Beaver Hall
Hill, Montreal, Quebec

Canadian Industries Ltd., 372 Bay Street,
Toronto 2, Canada

SEED DISINFECTANTS

To prevent and control many seed-borne plant diseases and to improve crop yields.

BAYER-SEME-SAN COMPANY, INC.

Wilmington, Del., Du Pont Building

SPORTING ARMS, AMMUNITION, CUTLERY, TARGETS, TRAPS AND ACCESSORIES

Autoloading, pump-action, over-and-under shot-guns; the famous Parker line of double-barrel shot-guns; autoloading, pump-action and bolt-action rifles; "Kleanbore" metallic cartridges and shot shells; Peters' metallic cartridges and shot shells; Chamberlain traps and targets for trap and skeet shooting; Peters' "Durock" traps and targets; "Rem" Oil, Gun Grease, Rust Remover and Powder Solvent; and a complete line of pocket knives, professional and household cutlery made by Remington.

REMINGTON ARMS COMPANY, INC.

Atlanta, Ga., 1518-19 Healey Building
Bridgeport, Conn., 939 Barnum Avenue
Dallas, Tex., 1239 Athletic Club Building
Ilion, N. Y.
Kings Mills, Ohio
Memphis, Tenn., 2201-2 Sterick Building
Minneapolis, Minn., 614 Plymouth Building
New York, N. Y., 350 Fifth Ave.,
Empire State Building
San Francisco, Calif., 55 New Montgomery St.
St. Louis, Mo., 1568 Arcade Building

"CELLOPHANE"

"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 and transparent seamless tubing.

DU PONT CELLOPHANE COMPANY, INC.

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

INTERNATIONAL FREIGHTING CORPORATION, INC.

Chicago, Ill., 1824 McCormick Building
New York City, N. Y., 17 Battery Place
(Buenos Aires, Argentina, Av. Roque Saenz
Peña 616)

EXPLOSIVES

Black powder in granular and pellet form; dynamite, "Nitramon" and blasting accessories—a complete line of products for all industrial and agricultural uses.

EXPLOSIVES DEPARTMENT

Birmingham, Ala., Brown-Marx Bldg.,
2000 First Ave.
Boston, Mass., 140 Federal Street
Chicago, Ill., McCormick Bldg.
Denver, Colo., Midland Savings Bldg.,
444-17th St.
Duluth, Minn., Hartley Bldg., 742 E.
Superior St.
Huntington, W. Va., Union Bank Bldg.,
4th Ave. and 9th St.
Joplin, Mo., Joplin Nat'l Bank Bldg., 402
Main St.
Juneau, Alaska, Blomgren Building
Kansas City, Mo., Plaza Bank Building
New York, N. Y., Empire State Building
Pittsburgh, Pa., Gulf Building
Portland, Ore., American Bank Building
Pottsville, Pa., Schuylkill Trust Company
Bldg.
St. Louis, Mo., Arcade Building
San Francisco, Calif., 111 Sutter Street
Seattle, Wash., Hoge Bldg., 2nd Ave. and
Cherry St.
Scranton, Pa., 1st Nat'l Bank Bldg., 207
Wyoming Ave.
Spokane, Wash., Old National Bank Bldg.,
Riverside Avenue and Stevens St.
Springfield, Ill., Reich Bldg.
Wilkes-Barre, Pa., Brooks Bldg., 15 So.
Franklin St.

American Glycerin Division

Torpedoing oil and gas wells with liquid and solidified nitroglycerin to increase productivity.

Bradford, Pa., P. O. Box 22
Tulsa, Okla., 936 Kennedy Bldg.
Wilmington, Del., Du Pont Building
Winchester, Ky., P. O. Box 94

PHOTOGRAPHIC FILM

Motion picture, portrait and X-Ray film.

DU PONT FILM MANUFACTURING CORPORATION

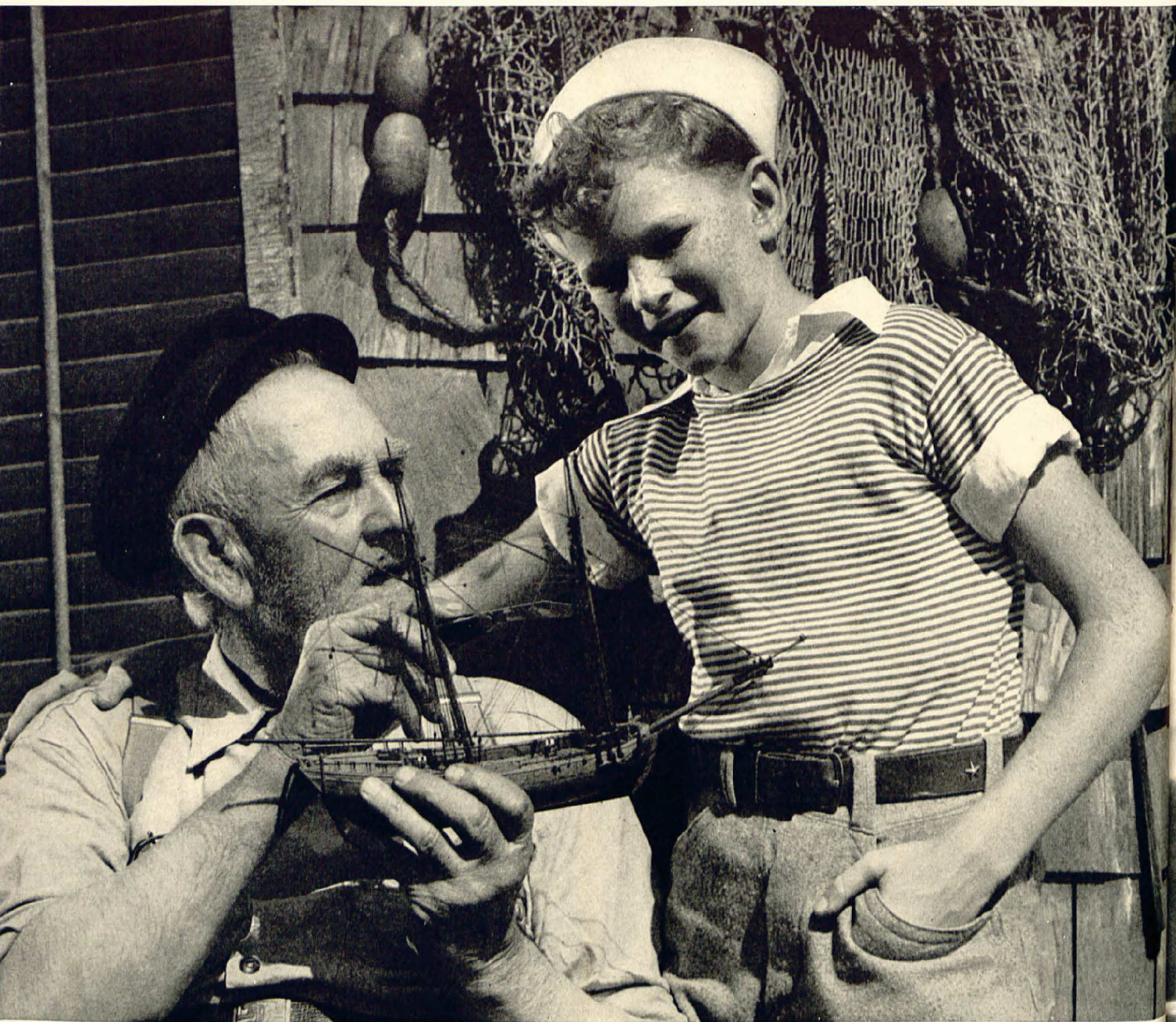
New York, N. Y., 35 West 45th Street
Hollywood, Calif., 6656 Santa Monica Blvd.

FOREIGN OFFICES

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

Brimsdown, Middlesex, England,
(Remington Arms Union Metallic
Cartridge Co., Limited)
Buenos Aires, Argentine Republic,
Industrias Químicas Argentinas Duperial,
S. A. Industrial y Comercial Edificio
Volta, Av. Roque Saenz Peña 832
Hankow, China, 23 Tungting Road
Kobe, Japan, Crescent Building, No. 72
Kiyomachi (P. O. Box No. 384)
London, W. C. 2, England, Bush House,
Aldwych
Mexico City, Mexico, Edificio Cidosa,
Avenida Uruguay 55 (Office of Du Pont
S. A.)
Montevideo, Uruguay, Industrias Químicas
Uruguayas Duperial, Avda. Gral. Rondeau
2103-9, Esq., Panama
Paris, France, Paris Development Office,
14 Rue Lincoln; 16 Place Vendôme
Rio de Janeiro, Brasil, S. A. Du Pont do
Brasil, Rua dos Ourives 92. Caixa Postal
450
Shanghai, China, Robert Dollar Building,
51 Canton Rd. (P. O. Box No. 393)
Tientsin, China, 52 Taku Road

" and allus spit to loo'ard!"



CAPTAIN Ezra Whittaker is the whittlingest man you ever did see. He makes the most amazing ship models with his pocket knife—and he tells the most amazing stories (salted with sea-going advice) about rounding Cape Horn on the clipper "Amelia B."

He's a stickler for realism, too. When his whittling is done, he'll coat those tiny spars with the same kind of finish they use on real ships—like that schooner out there by the lighthouse.

The kindly old sailorman isn't aware of the

part Du Pont plays in this story. But the keen knife bears the name Remington-Du Pont, and Du Pont chemical research created the Dulux marine finishes . . .

. . . and the lemon drops that Captain Ezra carries in his pocket for polite young lads come in a Cellophane wrap to keep them clean and fresh.

This gives just a quick idea how nearly every person, young or old, on land or sea, is served daily by useful products of Du Pont.

BETTER THINGS for BETTER LIVING[®]
... THROUGH CHEMISTRY



*Producers of Chemical Products
since 1802*

Wilmington, Delaware

Listen to "The Cavalcade of America" every Wednesday evening, 8 p.m., E.S.T., over Columbia Broadcasting System

PRINTED IN U. S. A.