THE DU PONT MAGAZINE





There's a Du Pont "Pyralin" Plastic Set for every type of home decoration. The styles and colors are authentic, designed and selected by leading authorities. Master craftsmen build into every "Pyralin" Set lasting beauty and utility. See the new and more beautiful "Pyralin" Sets on display at Department Stores, Jewelers, Gift Shops and Druggists.

"Pyralin"
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BY DU PONT

FOR PERFECTLY APPOINTED BOUDOIRS

"PYRALIN" SETS ADD A FRESH NOTE OF BEAUTY TO THE SMARTEST DRESSING TABLES

THE DU PONT MAGAZINE

VOLUME XXXII NO. 12 HOLIDAY NUMBER, 1938

DU PONT ANNOUNCES NYLON

The material of this name has large potential uses in the world of tomorrow

NO BETTER EXAMPLE of the fruits of research could be found than nylon—a product of chemistry so new that a name had to be coined for it, a material with so many possible applications that no one, however farseeing, can list them all, and so promising in its first uses that the du Pont Company will spend $8,000,000 on the first unit of a new plant to produce this material commercially at Seaford, Delaware.

Nylon, it may be explained, is the generic name for all materials defined scientifically as synthetic fiber-forming polymeric amides having a protein-like chemical structure; derivable from coal, air and water, or other substances, and characterized by extreme toughness and strength and the peculiar ability to be formed into fibers and into various shapes, such as bristles, sheets, et cetera.

Last month we called attention to its use in the manufacture of "Exton" bristles for Dr. West's Miracle-Tuft toothbrushes. That was one application. When you consider that it can be formed into filaments as strong as steel, as fine as those in a spider's web; that it is more elastic than any of the common natural fibers and that it possesses a beautiful luster, you get some idea of its exceptional characteristics.

In developing this newest of synthetic materials a group of du Pont chemists spent the better part of a decade. Their work started with an effort to synthesize from readily available native raw materials a wholly new group of chemical compounds to meet definite deficiencies of many existing industrial materials that in the main are now imported. Research opened the way for the discovery of the sought-for, chemically-made substance.

More research by chemists, physicists and engineers brought the product along to the point where a pilot plant was needed to determine how best to manufacture nylon commercially. One of the accompanying illustrations shows you this semi-works laboratory unit where the material is processed into yarn for test purposes.

As the output of this plant is limited, nylon will not be available to the trade until the big plant at Seaford is built and in operation. Construction forces are already at work and they expect to complete the job by the end of 1939.

No one has ventured to predict the number of applications that will be found for nylon, although in a formal statement the Company has thrown some light on that question. Textile manufacturers in particular will be interested to know that filaments of nylon can be spun finer than those of silk and rayon, and that the new material will take dyes used for silk, wool, acetate and certain of the direct dyes used on cotton and rayon.

Of particular promise is a high-twist nylon yarn for making fine



A visitor in the laboratory views with interest a nylon stocking made for test purposes. "Now notice its fine weave and transparency," he says.

hosiery of extreme sheerness, high elasticity, high strength and improved resistance to abrasion. Sewing thread and knit goods, narrow fabrics, woven dress goods, velvets, knitted and woven underwear represent other potential uses; also brush bristles, racquet strings, fishing lines and leaders, transparent wrapping film, plastic compositions, textile finishing agents, and coated fabrics. These are some of the products upon which laboratory studies have been made thus far, and the work is still under way.

Du Pont chemists believe the time will come when this nylon development will be considered as important historically as was the first transformation of nature's cellulose into man-made rayon. Fifty-odd years ago that started a new era of textile progress. Now comes a new material of even greater potentialities which may set in motion the next great forward surge.

That expectation is based on important differences between these two products. Rayon is derived from cellulose of vegetable origin. Nylon is not. It is the first man-made organic textile fiber ever produced from raw materials of the *mineral kingdom*, and has physical and chemical properties that differ radically from those of rayon and all other synthetic fibers. Properties determine uses. Because nylon possesses exceptionally desirable characteristics, never before combined in one material, there is reason to believe that many industries will find new applications for it.

Within the past decade the Company has developed and put on the market many uniquely useful products, such as:

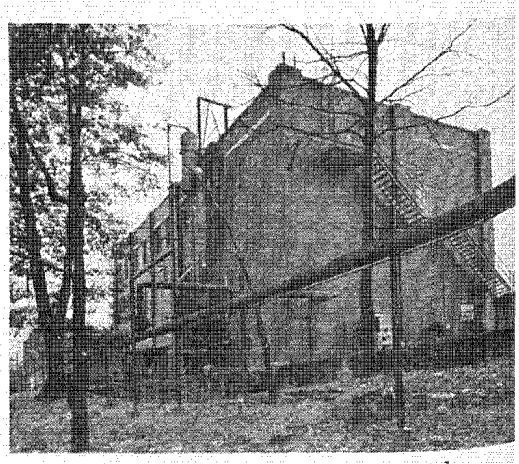
Moistureproof "Cellophane" cellulose film to protect foodstuffs from dirt and germs, and to preserve freshness and flavor.

"Cordura" rayon yarn, the supertough fiber for truck and auto tires.

Nitrogen compounds, derived from coal, air and water, to return vital elements to the soil.

Neoprene chloroprene rubber with the resilience, strength and toughness of natural rubber, yet superior in its resistance to gasoline, oils, sunlight, heat and aging.

Improved fire retardants to reduce fire hazards in home and industry.



The Semi-Works Building at the Experimental Station near Wilmington. Here nylon is now being produced on a small scale, pending the erection of the new $8,000,000 plant near Seaford, Delaware.

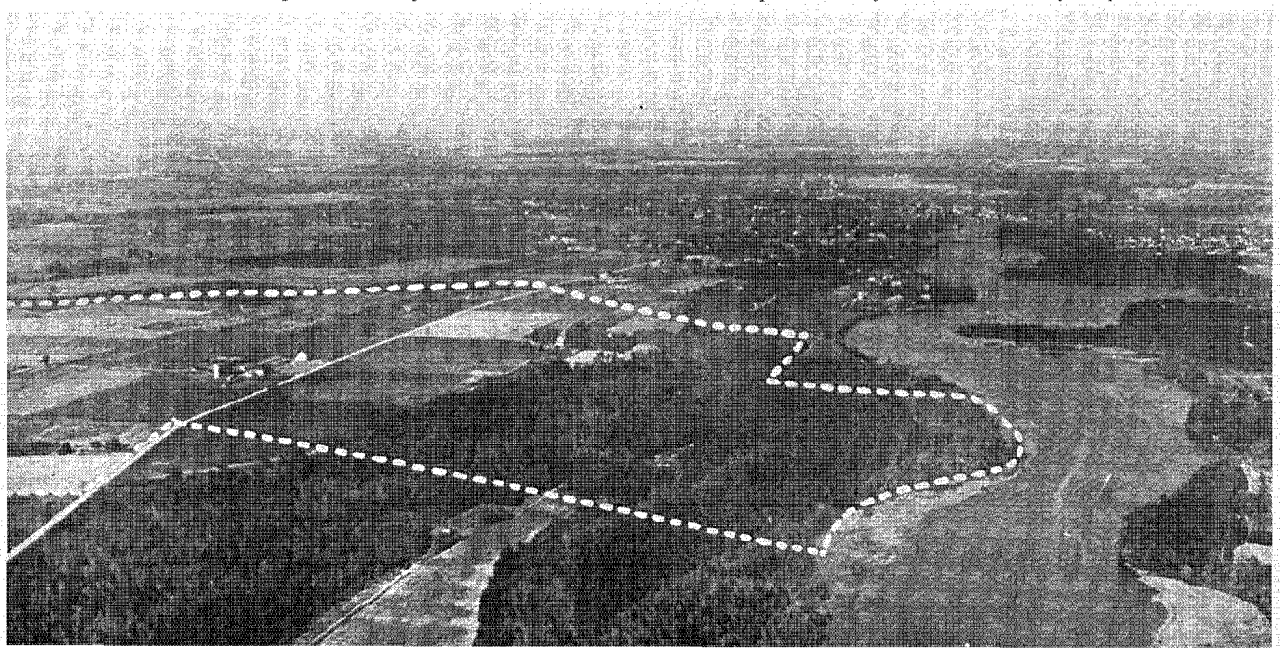
"Zerone" anti-rust anti-freeze to protect automobile radiators from freezing in winter . . . from rusting and corroding in summer.

"Dulux" enamels, the tough, long-lasting finishes now used on automobiles, trucks, streamlined trains, ships, bridges, home appliances, interior walls and refrigerators.

Others equally worthy might be cited, but readers of this publication already know about them and their applications. Nylon will take its place in the large group of du Pont chemical products as soon as the Seaford plant is in position to supply trade requirements. Meanwhile, this must be considered as only a progress report, which we shall hope to amplify in future issues.

COURTESY, WILMINGTON MORNING NEWS

A portion of the new du Pont plant site in lower Delaware where nylon will be produced on a large scale. Broken lines show roughly the 340-acre area to be developed. At the right is the Nanticoke River. A mile upstream may be seen the town of Seaford.



Personality in Christmas Gifts

By H. D. CHICKERING

Christmas approaches once again and gala plans are in order for the festive occasion. As the season swings into the last few pre-holiday weeks, Santa's magic pack slowly fills with gifts, as part of the traditional celebration.

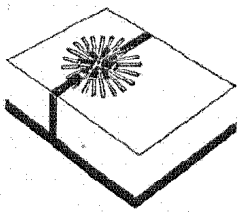
Beautiful gifts and simple ones, extravagant gifts and plain—all are expressive of love or friendship toward the recipient and may reflect the degree of interest and the personality of the donor. And much of the fun of gift-giving is in creating ingenious wrappings that will make each package outstanding and distinctive, no matter how humble its contents.

Those who wish to give their presents an individual touch are enthusiastically wrapping them in sparkling "Cellophane" cellulose film. This fascinating material expresses the very spirit of Christmas in richly-gleaming, gaily-colored sheets, ribbons, cord, tape and drinking straws, which may be employed in any number of interesting ways to create strikingly beautiful effects.

The accompanying illustrations show only a few of the unusual ways in which "Cellophane" may be used to "personalize" your gifts.







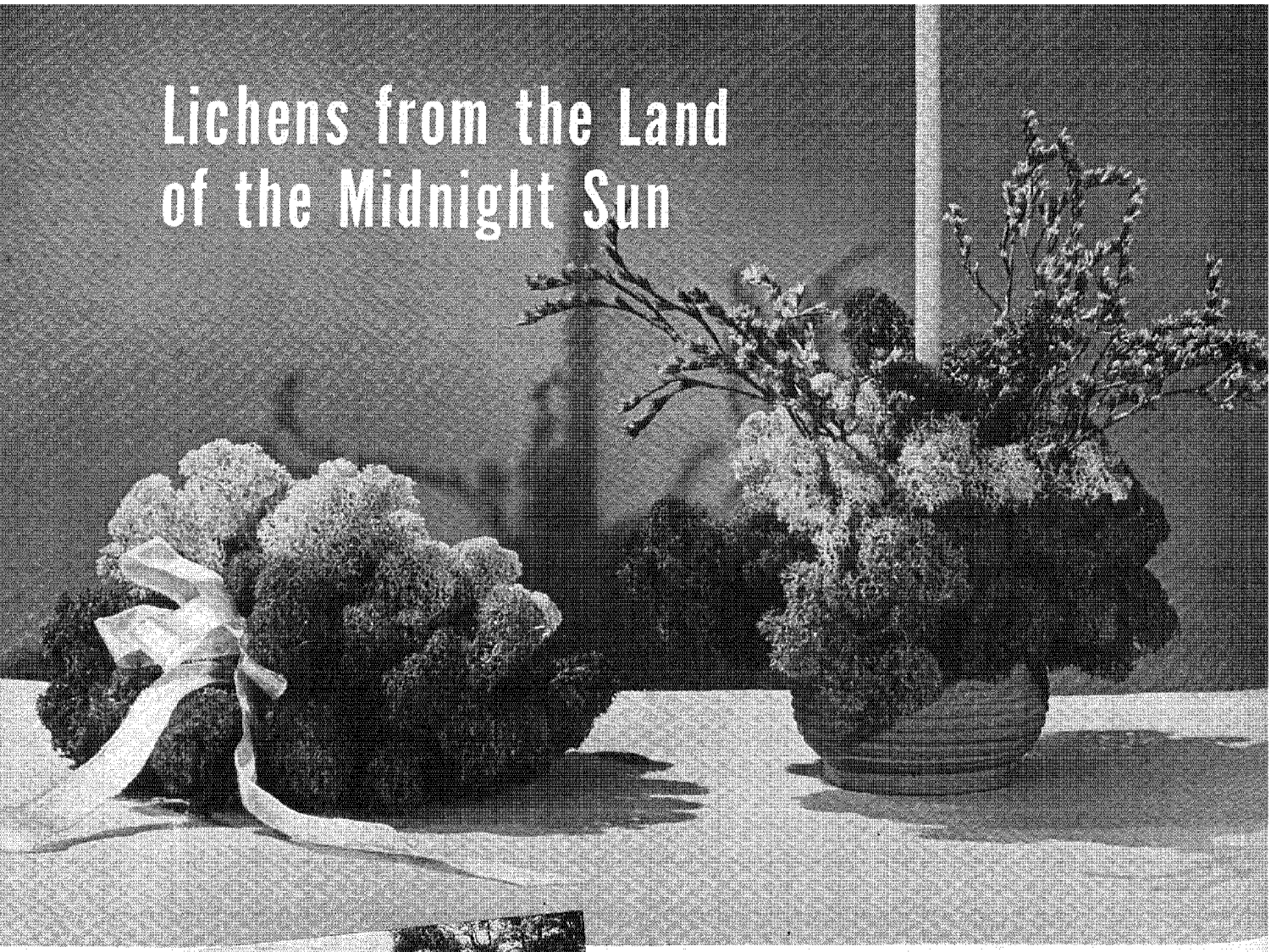
Here's for a colorful Christmas! Gifts of all descriptions can be gaily decorated with sheets, ribbons, cord, tape and drinking straws made of "Cellophane" cellulose film. Try your hand!

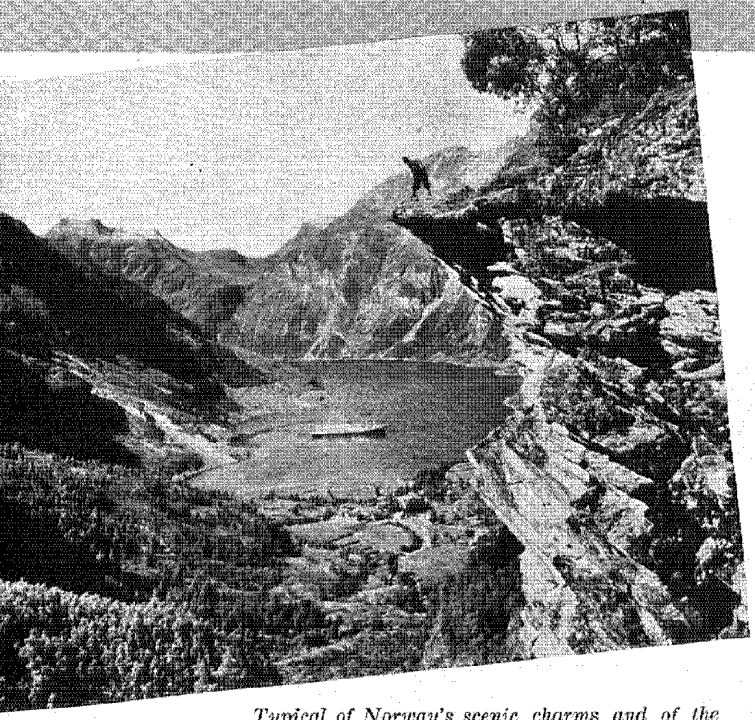


ABOVE: *Youngsters are thrilled to receive gifts that reflect the giver's individuality and skill. This snowman made of mint candies in a "Cellophane" bag is easy to make—and look at that radiant smile!*

UPPER RIGHT: *For the man in the family . . . this year the trend is toward the severely-styled package. Masculine eyes light up in appreciation of a personalized gift wrapped in "Cellophane."*

Lichens from the Land of the Midnight Sun





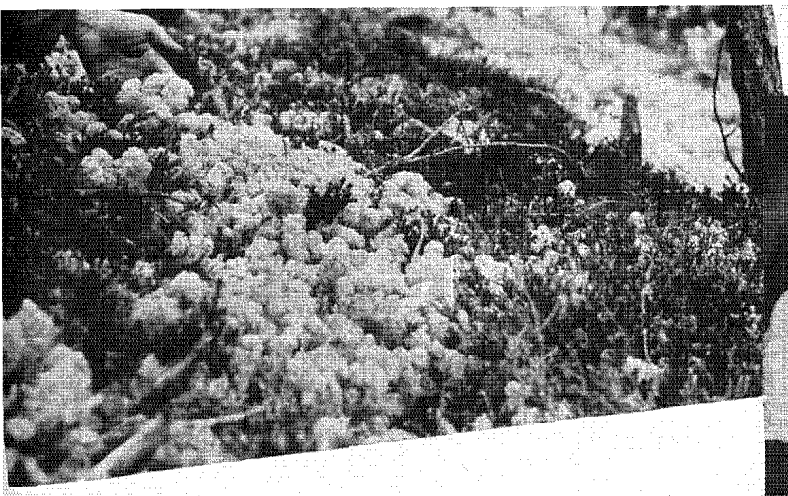
Typical of Norway's scenic charms and of the mountains where lichens grow is this view of Geiranger; from a photograph by Carl Normanns.

Brief notes about a natural product you may wish to use for Christmas decorations

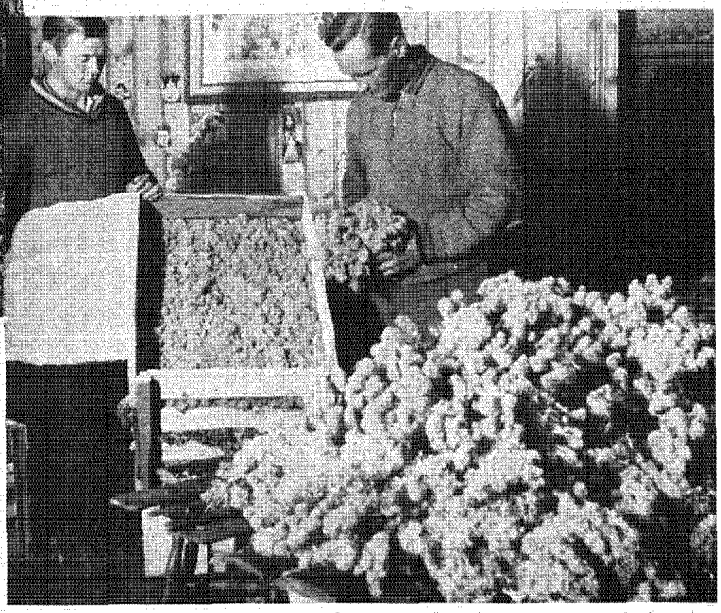
By Ansco G. Bruinier, Jr.

Not so long ago for the first time we made the acquaintance of a large family of plants by the name of Lichen, pronounced "liken" and of Greek derivation. Altogether the group consists of approximately 600 different species, well distributed throughout the world from the Equator to the Polar ice packs. No doubt in your travels you have walked by these plants many times without pausing for a close-up inspection.

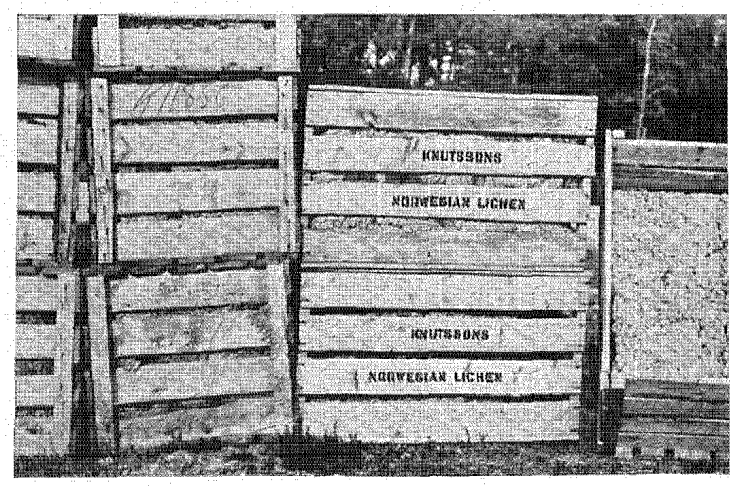
Lichens are air plants that obtain their nourishment directly from the atmosphere or indirectly from rain or dew. They are low-growing plant formations composed of certain fungi and algæ, wholly dissimilar organisms that live together in a close and mutually beneficial union. Botanists tell us that they probably furnish the most nearly



LEFT: *A representative bed of lichen clusters in a Norwegian setting.*



In a packing house where the choice specimens are prepared for shipment in crates of standard size and under Government supervision.



Here's the product approved and ready for export. Shown below are a few small packages wrapped in "Cellophane" cellulose film.



perfect example of symbiosis in the plant world. In appearance lichens resemble small, coral-like growths. Entirely devoid of leaves, flowers or roots, they are frequently mistaken for moss. Their colors are usually shades of gray, occasionally greens and browns, while some have brilliant red clusters of spores. Even though they cling to trees, fences and stones, they are not parasitic growths.

Lichens reproduce by spores as well as by bisection. In the earlier stages they develop with considerable rapidity but, on reaching a certain age, their growth is greatly retarded. They are hardy enough to endure the rigors of severe climates and for an indeterminate period. Apparently death comes to them only as a result of external injuries. One species, found on the summits of lofty mountains, possesses the longevity of the oldest living trees. However, lichens will not grow in an atmosphere that is contaminated with smoke or other deleterious substances. Wherever you find fully developed specimens you may be sure the air is pure.

The principal component of lichens is a substance known as lichenin, which is a form of gelatine intermediate between starch and dextrine, with the sponge-like property of absorbing water to a high degree. It is the lichenin that enables them to cling so tenaciously to life in both hot and cold climates and to survive alternating periods of drought and rain. When dry, lichens remain completely dormant. When dipped or sprinkled with water, all of their reproductive and vegetative functions are restored.

With these few facts in mind let us now take a boat trip to the land of the midnight sun where some of the most desirable species are found. Our route leads through one hundred miles of winding fjords amid scenes of breath-taking beauty. On either side are precipitous cliffs and banks. We shall leave the ship and go overland to the highland regions to see the Norwegian Lichen (Cladonia alpestris) covering the mountain tops with a beautiful silvery-gray carpet. Up there, growing among the heather and mosses, well above the timberline, this plant helps to conserve moisture, and thus to check the evil forces of soil erosion. The choicest pieces, however, are gathered further down below the tall fir and pine trees at an elevation of 2000 feet above sea level. These are the most desirable from the standpoint of size, color and length, and are much in demand for decorative work.

Farther north in the Polar regions other species furnish the main food supply for reindeer and other animals, particularly during the severe winter months. In certain

(*Continued on Page Twenty-Four*

Stars in Candlelight



Luxurious gowns of "Acele" acetate rayon lend glamour to Holiday festivities

TOP:
An extremely smart frock to create a glamorous effect on that "important" evening. In soft Crepe Sheeralu, of "Acele" acetate rayon.

LOWER LEFT:
A dramatically different dress in Maia Slipper Satin of "Acele" acetate rayon, designed by Howard Greer, and perfect for Holiday parties.

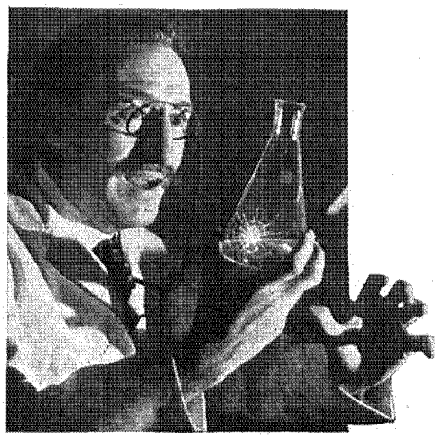
BELOW:
Travis Banton creates for the young matron a flattering dinner gown of a softly draping material called Crepe Intrigue.



. . . and now Safer Safety Glass

A new du Pont plastic trade-marked "Butacite" gives motorists greater security on the highways

By A. F. Randolph



Thirty-odd years ago a French chemist dropped a bottle in his laboratory. The glass "starred," but didn't shatter. Examination showed that the bottle had contained collodion, and the thin film inside held the pieces together. A few days later the chemist read of an automobile accident in which a girl had been badly cut by flying glass. He remembered the laboratory bottle and it gave him the idea of safety glass.

Laminated safety glass is made up of a sheet of plastic placed between two plates of glass and the whole "sandwiched" by heat and pressure. When broken by an impact, the pieces of glass adhere to the plastic instead of flying. Before its adoption by the automobile industry, many fatalities and disfigurements resulted from glass breakage. It was estimated by one authority that two out of three personal injuries suffered in automobile driving were caused by shattered glass.

Once laminated safety glass on cars was extra equipment at additional cost. The increasing number of cars and the greater speed of highway traffic with the accompanying dangers made safety glass a necessity. Early in the efforts to produce a satisfactory plastic "sandwich," du Pont perfected the continuous, endless-roll method in manufacturing the plastic interlayer which, because of reduced cost of manufacture, encouraged the wider use of this special glass in the automobile industry. Today, it is a standard protective feature in both windshield and windows on most every car, and is required by legislation in the majority of states.

Even though many improvements have been made in safety glass since its inception, the search for interlayers of even better characteristics is still continuing. In the past few years this search has been directed chiefly towards the synthetic resins, which, because of the diversity of their properties and the fact that their characteristics can be influenced in desired directions by proper selection of manufacturing conditions, have offered a field of study as promising as it is complex.

Research in this field by the du Pont Company has now reached fruition with the completion at Arlington, New Jersey, of a large new building wherein a maze of tremendous chemical equipment creates a new product named "Butacite" polyvinyl acetal resin. This plant carries out on a large manufacturing scale the carefully controlled processes first developed in laboratory research and subsequently verified, modified and expanded during months of operation of a semi-works or "pilot" plant which was itself housed in a good-sized four-story building.

"Butacite," in snowy white powdered flake form, is packed in steel drums at the new building and transferred to another section of the plant where the resin is mixed with other ingredients into a dough-like mass. The "dough" is then filtered through fine screens and squeezed through long, narrow slits, thus forming a continuous sheet. Finally, the "Butacite" sheeting is wound up on rolls ready for shipment to the safety glass manufacturer.

Satisfactory as have been the protective panes made with the interlayer plastics heretofore available, the safety glass with this new interlayer will excel them not only in appearance, but also in protective characteristics.

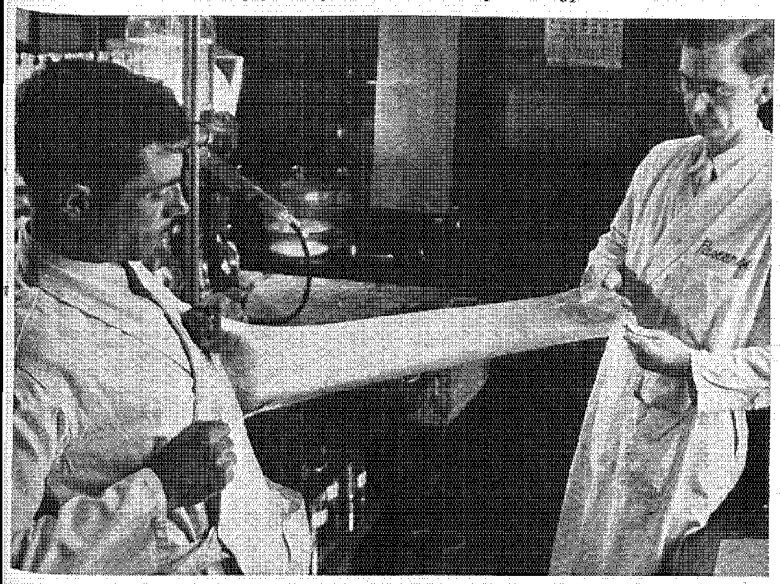
"Butacite" interlayer is of excellent clarity and color, and particularly resistant to the deteriorating influences of prolonged exposure to heat, light and moisture, so that the non-shatterable glass pane retains indefinitely its initially good appearance.

As regards protective characteristics, tests made by accepted methods have shown that the new product is to be preferred to any heretofore available. These tests, made by dropping metal weights from measured heights upon panes of standard dimensions, indicate not only the magnitude of the impact required to cause breakage, but also the behavior of the pane when broken, and have shown that safety glass containing the new interlayer is measurably superior, in both respects. Particularly valuable is the pronounced ability of this improved glass to yield under a destructive impact, so as to lessen the severity of the blow to a passenger thrown against it in an accident. The plastic interlayer in the broken pane is not itself broken, but stretches under the blow, at the same time holding the broken pieces of glass together.

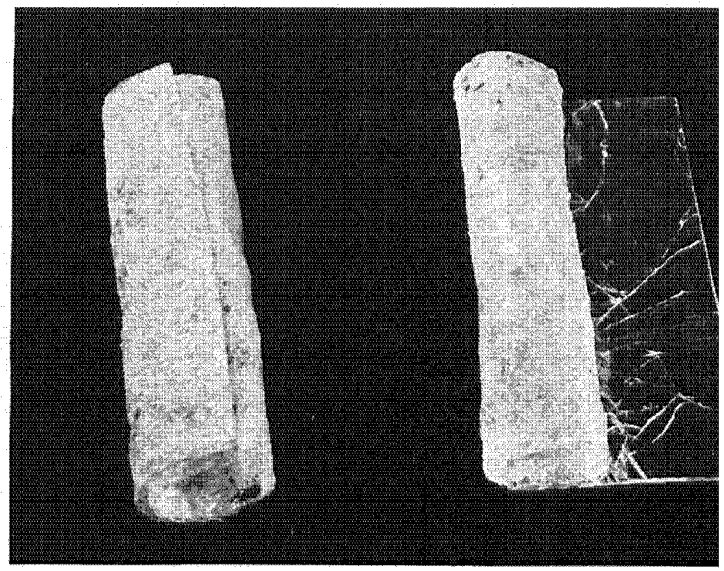
Although the new du Pont plant for making "Butacite" has gone into production only recently, this product of quality is now moving

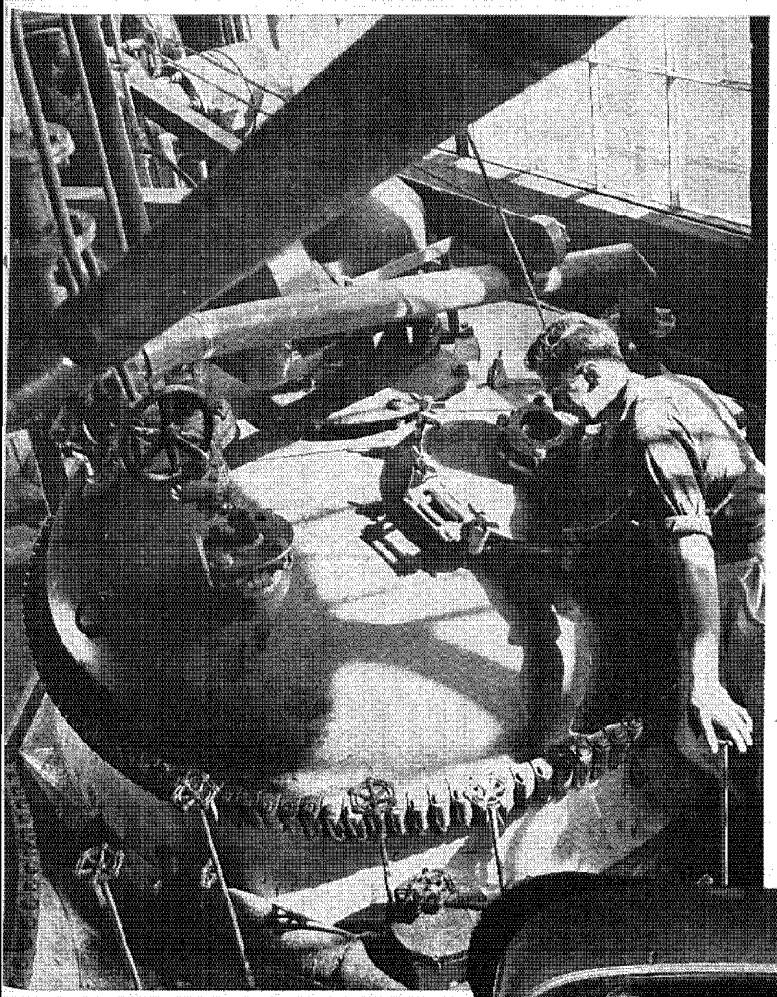
(Continued on Page Twenty-Four

Chemists at the du Pont laboratory, Arlington, New Jersey, demonstrate the "stretchability" of "Butacite" polyvinyl acetal plastic in a tug-of-war. This sturdy product has what it takes to make safety glass of the new and improved type.

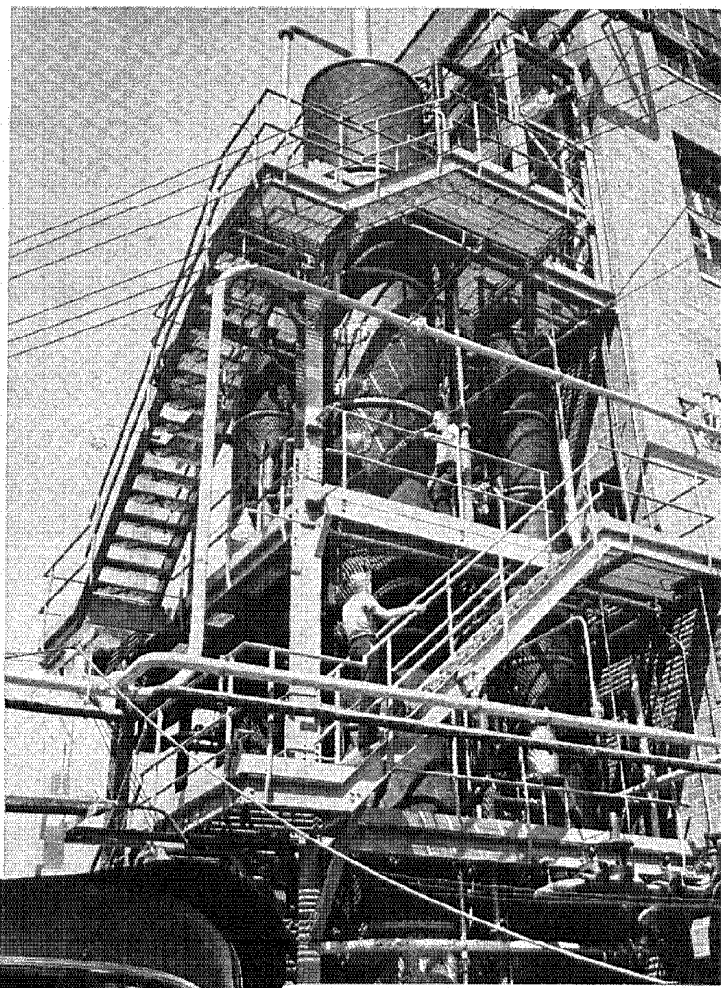


Two panes of safety glass so thoroughly crushed that they can be rolled up like rugs. But the plastic innerlayer, made of "Butacite," continues to hold the broken pieces of glass in place. The roll, right, shows part of one pane still unbroken.





Reaction kettles are used at one stage in the manufacture of "Butacite" polyvinyl acetal resin. Here you see one of them at the new du Pont plant, Arlington, New Jersey, where the transparent sheets are made.



A striking view of one end of the new plant. Through a maze of wires, pipes and stairways you get a glimpse of the solvent recovery stills. At the left is a less confusing picture. This family is well protected from flying glass.



THE DU PONT MAGAZINE

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Vol. XXXII Holiday Number 1938 No. 12

Our Greeting Card

HALLOWED associations cluster around the first Christmas when the Wise Men followed the guiding star, found the place of Nativity, and presented the Babe of Bethlehem with gifts of gold, frankincense and myrrh. And ever since, the custom of gift giving has grown throughout the world.

Sentiment, whether inspired by religious or other motives, is a beautiful quality of life. And Christmas, with all its sacred and secular traditions, encourages it.

The Wise Men presented the choicest offerings of their day. They chose from a limited group of products that were treasured because of their scarcity. Today, we have many more things from which to make selections, many products of modern chemistry. One of them in particular, "Cellophane" cellulose film, adds a festive touch at Christmas time, and so we make it serve this month in designing the cover illustration, which may be interpreted by readers as our seasonal greeting card.

Secular tradition links the Yuletide with Santa Claus and with Christmas trees, which, in our picture, are unusual enough to evoke a "surprised but pleased" expression from the benevolent old saint. For the snow-covered, forested slope is "Cellophane" sheeting, and the sky and trees are made of the same material in its colored form.

May this picture give you an emotional lift and a chuckle as we say again: "Merry Christmas and a Happy New Year to you all!"

"Cavalcade of America" comes back on the Air!

NEW STARS · NEW FEATURES
VIVID DRAMA · FINE MUSIC

It's bigger, faster moving, and even better than ever—this fourth consecutive year of *The Cavalcade of America*. Into millions of American homes where listening to the Cavalcade has been a regular weekly habit for the past three years—Du Pont again brings vivid, colorful, absorbing, and little-known stories of real Americans. Packed with action—proving that truth is ever more exciting than fiction, the Cavalcade covers the whole sweep of American life, past and present. Heroes, humorists, kings of sport, statesmen, scientists, explorers—all come to life for radio listeners, to make people thrill with pride for the American cavalcade!

JAMES TRUSLOW ADAMS



This outstanding American scholar, and best-selling author, will act as historical consultant in the selection of story material. Mr. Adams will help carry Cavalcade to new heights of informative radio entertainment.

THOMAS CHALMERS

Millions of movie fans acclaimed Mr. Chalmers' stirring narration in the film hit, "The River." To Cavalcade, Mr. Chalmers brings that same fine voice, plus a wealth of dramatic experience.



GABRIEL HEATTER



Epic of news commentating was the job recently done by Mr. Heatter during the European crisis. Each week he now takes Cavalcade listeners on a trip through the wonder world of chemistry.

DON VOORHEES

This brilliant young conductor, with his skilled symphonic orchestra, will once more treat Cavalcade fans to a feast of fine music—creating the perfect background for The Cavalcade of America!



BROADCAST EVERY MONDAY COAST-TO-COAST
ON COLUMBIA NETWORK
BEGINNING DECEMBER 5

Eastern Time Zone
8 P.M.

STATION	CITY
WADC	*Akron*
WOKO	*Albany*
WCAO	*Baltimore*
WLBZ	*Bangor*
WEEI	*Boston*
WGR	*Buffalo*
WCHS	*Charleston, W. Va.*
WBT	*Charlotte*
WKRC	*Cincinnati*
WGAR	*Cleveland*
WJR	*Detroit*
WDRC	*Hartford*
WMBR	*Jacksonville*
WQAM	*Miami*
WABC	*New York*
WDBO	*Orlando*
WCAU	*Philadelphia*
WJAS	*Pittsburgh*
WPRO	*Providence*
WRVA	*Richmond*
WHEC	*Rochester*
WTOC	*Savannah*
WMAS	*Springfield*
WFBL	*Syracuse*
WDAE	*Tampa*
WJSV	*Washington*
WORC	*Worcester*
WJNO	*W. Palm Beach*

Central Time Zone
7 P.M.

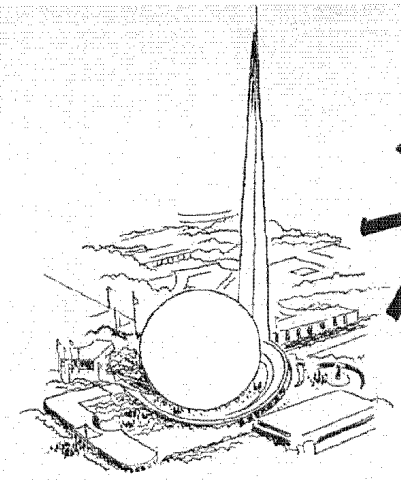
STATION	CITY
WGST	*Atlanta*
WAPI	*Birmingham*
WDOD	*Chattanooga*
WBBM	*Chicago*
KRLD	*Dallas*
KRNT	*Des Moines*
KTRH	*Houston*
WFBM	*Indianapolis*
KMBC	*Kansas City*
WHAS	*Louisville*
WREC	*Memphis*
WCCO	*Minneapolis*
WLAC	*Nashville*
WWL	*New Orleans*
KOMA	*Oklahoma City*
KFAB	*Omaha-Lincoln*
KTSA	*San Antonio*
KMOX	*St. Louis*
KTUL	*Tulsa*

REBROADCAST
Mountain Time Zone
10 P.M.

STATION	CITY
KLZ	*Denver*
KSL	*Salt Lake City*

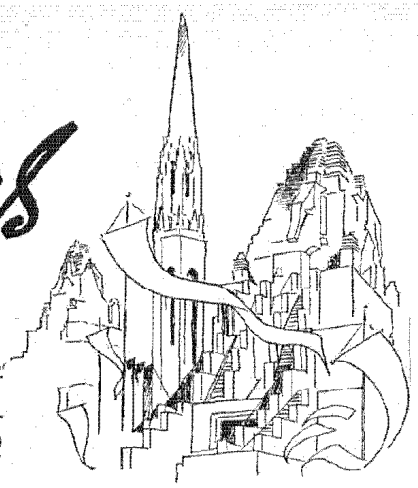
Pacific Time Zone
9 P.M.

STATION	CITY
KARM	*Fresno*
KNX	*Los Angeles*
KOIN	*Portland*
KSFO	*San Francisco*
KIRO	*Seattle*
KFPY	*Spokane*
KVI	*Tacoma*



Fair Doings

JOTTINGS ON THE PROGRESS
OF DU PONT EXHIBITS
AT NEW YORK AND SAN FRANCISCO



AT NEW YORK

The Du Pont "Wonder World of Chemistry" Building, designed by Walter Dorwin Teague, now stands as one of the most challenging structures on the Fair Gounds. You will recall a picture of it in the November number showing prominently the 70-foot semi-circular shell, and in the center a giant assembly of chemical apparatus rising 100 feet in the air, the "Tower of Research."

The original intention was to clothe the shell in stucco and paint a large mural on it. But as Fair plans developed it became apparent that too many other exhibitors were adopting the same decorative technique. The steel work itself presented an interesting design, so it was decided to let the tower be seen from all sides through the intriguing network. Thus a happy combination of good planning and circumstance has resulted in a shell that is distinctive and at the same time adequately decorative. So far as we know it will be the only structure of the kind to be so treated.

A fishing scene carved intaglio fashion in a huge panel of linoleum, with lacquered figures and scenery, achieves a bold, sculptured quality that definitely places this material as a new and interesting medium of art expression for Fair murals. Our own building will have an attractive three-dimensional mural done entirely in plastics of variegated colors, and it will be illuminated.

Night sticks for traffic direction and reflectors for parking spaces, both made of "Lucite" plastic, may lessen traffic and parking difficulties on the Fair Grounds, if we succeed in having them officially adopted. An interesting suggestion was offered us by the Fair architect: "Why not a 'Lucite' reflector around headlamps, so that a lamp's burning out will not make a one-eyed menace of the car?"

Visitors will walk airily in the "Cavalcade of Chemistry Hall," for on the hard-surfaced floor will be laid a "Velvetex" rug cushion, and a good friend it is to tired feet. Many of the leading exhibitors at the Fair, such as United States Steel, are now testing this product in small exhibits or in their plants to get a user's reaction to it. We note, too, that Mr. Teague has recommended "Velvetex" for use in the Consolidated Edison and Eastman Kodak buildings and halls.

Acetate rayon will actually be made in a glass-enclosed cell, so that you can clearly see each step in the process—the spinning solution forced through a spinneret; the solvent removed by an air stream, converting the liquid to a solid, and the filaments gathered to form the yarn, which is wound on a bobbin. This feature display will be one well worth seeing.

AT SAN FRANCISCO

The most complete picture the West Coast has had of science working with industry to transform Nature's raw materials into "Better Things for Better Living" will mark the first meeting between du Pont as a whole and the Great West. "Treasure Island," man-made site of the Golden Gate International Exposition in San Francisco Bay, will make a fitting background for the Company's exhibit of what it makes from such raw materials as coal, cotton and wood, salt, ores and inorganic materials, and vegetable oils. Visitors from home and abroad will have an opportunity to observe how chemical research has stimulated the operations of our Company, opening new outlets for products of the soil and mine, creating jobs in new industries, and providing countless new and improved products to add to the comforts and conveniences of living.

International Notes: France will spend $380,000 on a French building to supplement the Indo-China Exhibit. Many other countries bordering the Pacific are making elaborate preparations to dramatize their particular sections of the Western Empire. British Columbia will be the 12th exhibitor in the Hall of Western States.

Fair Highspot: The giant trans-Pacific clipper planes will have a base at "Treasure Island," taking off and landing there on their trips between America, the Pacific Islands and the Orient, thus bringing the glamour of far horizons even closer to our western shore.

Dwarfed streamlined trains, motor-driven caravans, man-powered rickshas and wheel chairs will convey the weary visitor about the San Francisco Fair Grounds, so you can check your walking shoes.

Style FOR EVERYBODY

Early Bird Prints in Giana Crepe are gay in the holiday spirit. Cheerful under a heavy coat, they can be laundered and kept fresh for warm weather.



LEFT: *Good Line looks French, but has all-round pleats for America's swing.*



Anyone would love this buttoned-up-the-front dress that has white loops and bright dots on navy, teal or black background.



The Suzy Dot is trim as a pin. It is practical for street or sports, with its conservative lines and two-way collar.



Bavarian Sweet, a dainty little dirndl in flower-painted print, with cerise slide fastener.

Border Beauty is a slim frock with white and bright flowers on black, navy or saddle-color ground.



Georgiana frocks, made with Du Pont Spun Rayon, are inexpensive, but woven and styled with the precision of higher-priced dresses

IN the Georgiana factory in Chicago, approximately 14,500 dresses are produced every day. First the fabrics are selected, with the help of leading textile weavers; then a staff of designers creates up-to-the-minute and even advance styles; patterns are cut with meticulous attention to detail; expert workmen assemble the dresses and give them the finishing touches.

American volume production is well represented by Georgiana, who furnishes millions of women with frocks that are smart and flattering as well as inexpensive.



RIGHT: *The designers looked at the dots and called this dress Good Penny. It buttons to the hem and has a contrasting ascot.*

For several seasons fabrics of the Barashan family have been successful in the more expensively designed dresses. Now Georgiana presents this fabric of Du Pont Rayon Thick and Thin in a collection of moderately priced cruise and resort styles. They are heaven-sent gifts for travelers, or for those who get their sunshine at home.



Clever dressmaking details compliment this frock of Feather Spun. Woven of Du Pont Spun Rayon, the fabric resembles heather flannel, is slim-fitting and long-wearing.



The smart collarbone neckline distinguishes this frock. It takes its name, Singing Sea Shells, from the design



Little Jade Leaf is named for its buttons. Note the tricky hip yoke— it makes the dress so slim.



Pastel colors, skirt with a slow flare and half-circle pockets give Sunshine Sweet a charming softness.

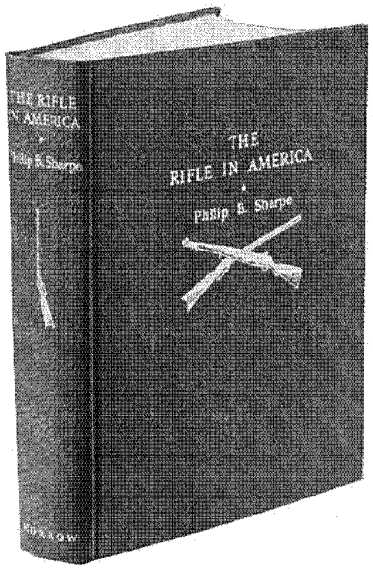
"Let's make this a Practical Christmas"



Useful things will have a year-round significance, and so we suggest a few items which may help you in rounding out that ever-troublesome gift list.



Homestead is the name of this most recent addition to the line of Du Pont Lacquered Fabrics. Basically, an old familiar design, modernized by the intricate shading of leaves in various depths of half-tones. Washable and color-fast, *of course. Available in most department stores.*



Your sporting friends will enjoy reading Philip B. Sharpe's "The Rifle in America." A "necessary" in any gun lover's library. Bound to last in "Fabrikoid." Available at most book stores or from William Morrow Publishers, New York.



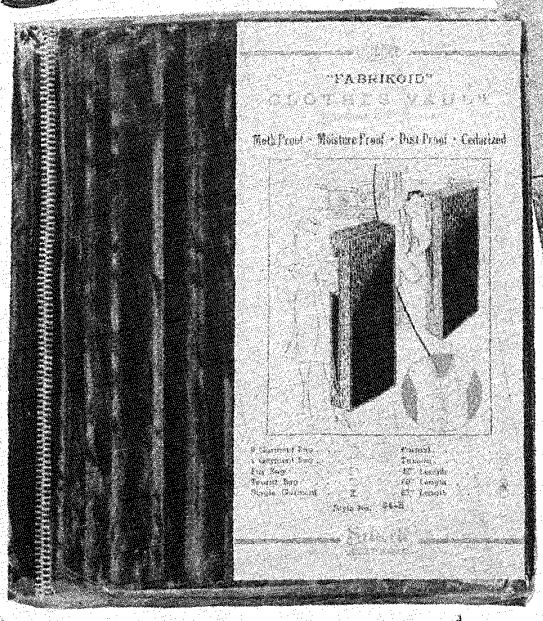
Chrome steel furniture by Howell of St. Charles, Illinois. Dinette pieces, compact, easily cleaned, with chair seats and backs of "Fabrikoid" coated textiles. Modern and high styled. Available in most large department and furniture stores.

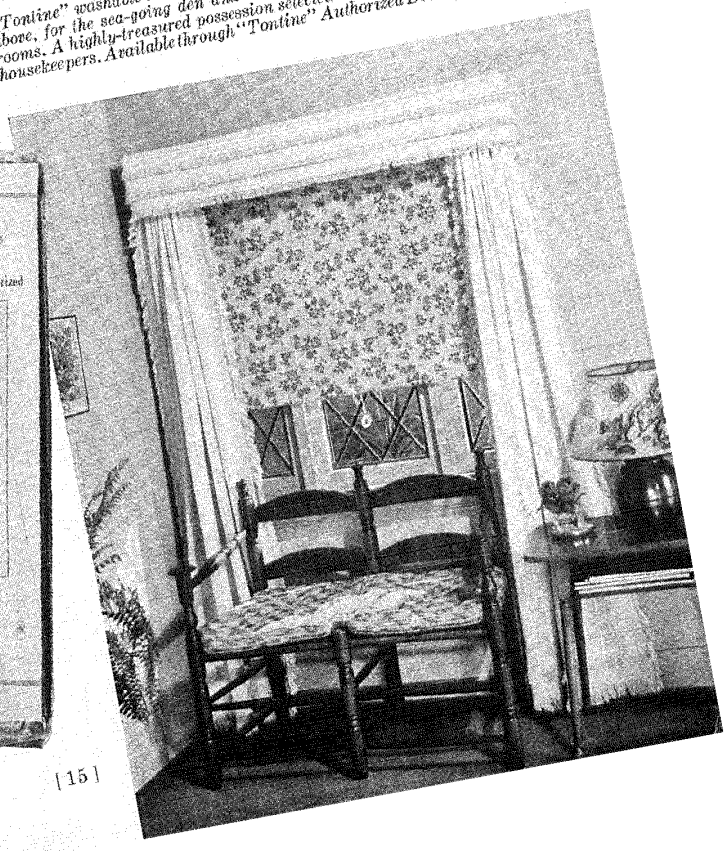
High Visibility is the color name of this rubberized, sheep-lined jacket, because it makes the wearer more visible to motorists day or night in foggy, rainy weather. This attractive, protective garment is made by the United Sheeplined Clothing Company of New York City.





"Tontine" washable window shades in gay printed designs. The Nautical, above, for the sea-going den and the Rose, below, for daintily appointed rooms. A highly-treasured possession selected as "tops" by discriminating housekeepers. Available through "Tontine" Authorized Dealers everywhere.





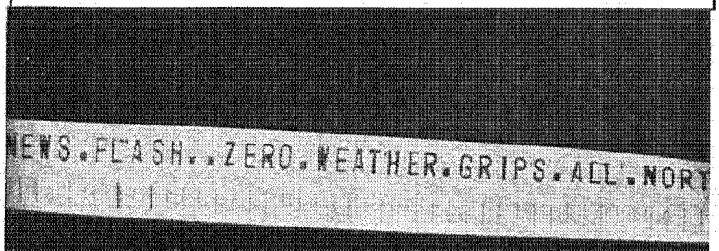
A single member of a complete line of garment bags and dressing-room accessories made by Selwell Manufacturing Co. of Los Angeles. This one in black moire grain is full-length size. Mothproof, dustproof and washable. Available in several colors and sizes. Talon slide fasteners on every model make opening and closing easy.

"COOL HEADS"

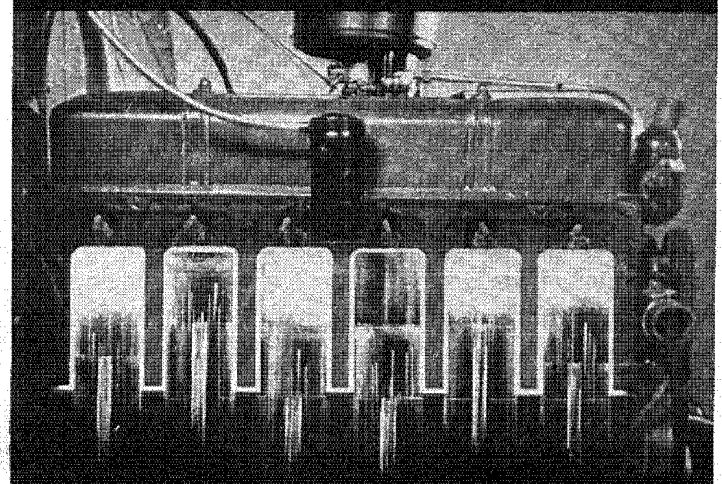
A picture story of the control of heat in one of the hottest things on earth . . . . the engine of your car

By VIRGIL L. SIMPSON

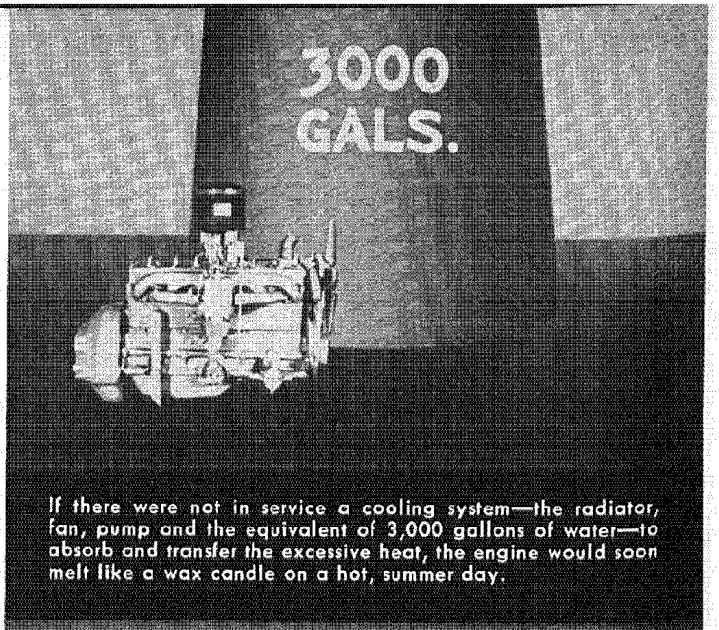
The sound film, "Cool Heads," prepared at the Du Pont Research Laboratories and Eastern Service Studios for the "Zerone" Division, tells a complete story of the development and functions of the all-important automotive cooling system and the part "Zerone" Anti-Rust, Anti-Freeze plays in cooling system conditioning. The few pictures here, with legends adapted from the script, are presented for their timely interest, for with real winter weather just about here your car will soon need the protection of a dependable product such as "Zerone."



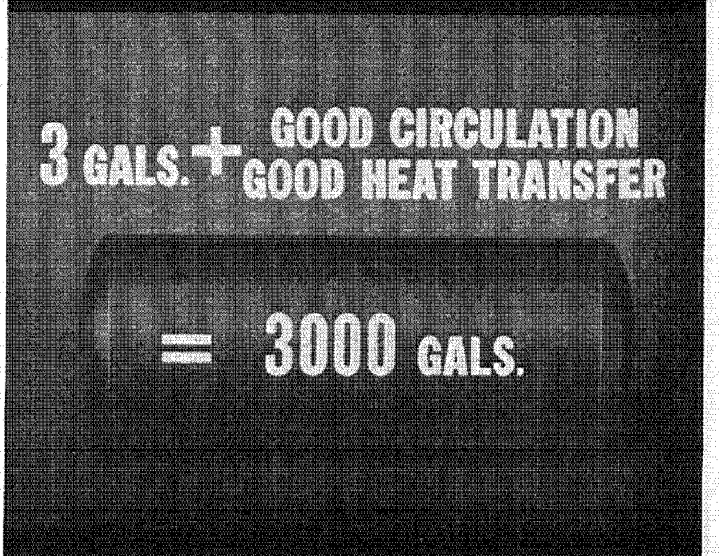
Before news reports like this come over the wire, you will do well to make sure that the engine-cooling system of your car is operating efficiently. Temperature control is all important in the grim battle between heat and cold, which goes on constantly under the hood of your automobile.



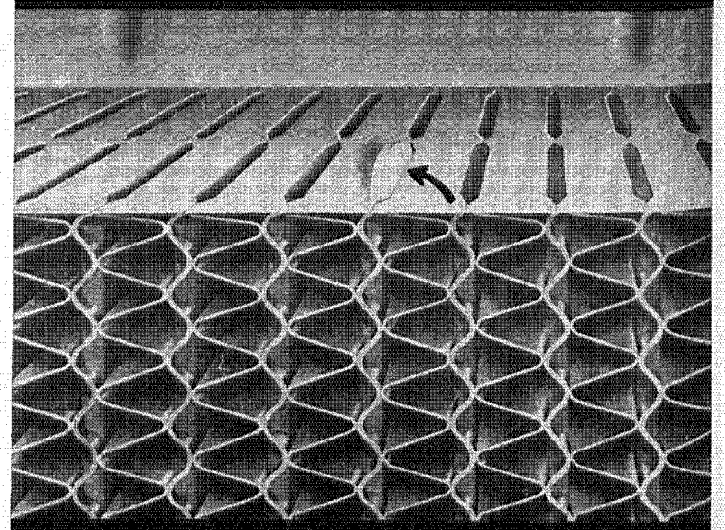
Gas explosions . . . 4,500 per minute . . . are required to keep this six-cylinder automobile in operation at 30 miles an hour. That's 75 fires kindled and extinguished every second. The build-up of heat at 60 miles an hour is enough



If there were not in service a cooling system—the radiator, fan, pump and the equivalent of 3,000 gallons of water—to absorb and transfer the excessive heat, the engine would soon melt like a wax candle on a hot, summer day.



Water approaches the ideal liquid for cooling . . . it's cheap, flows freely and has the greatest capacity to absorb heat. A huge tank like this would occupy too much space, so engineers make three gallons and a carefully-designed cooling system do the work of 3,000 gallons of water per hour. But the trouble with water is that it freezes and causes metals to rust.



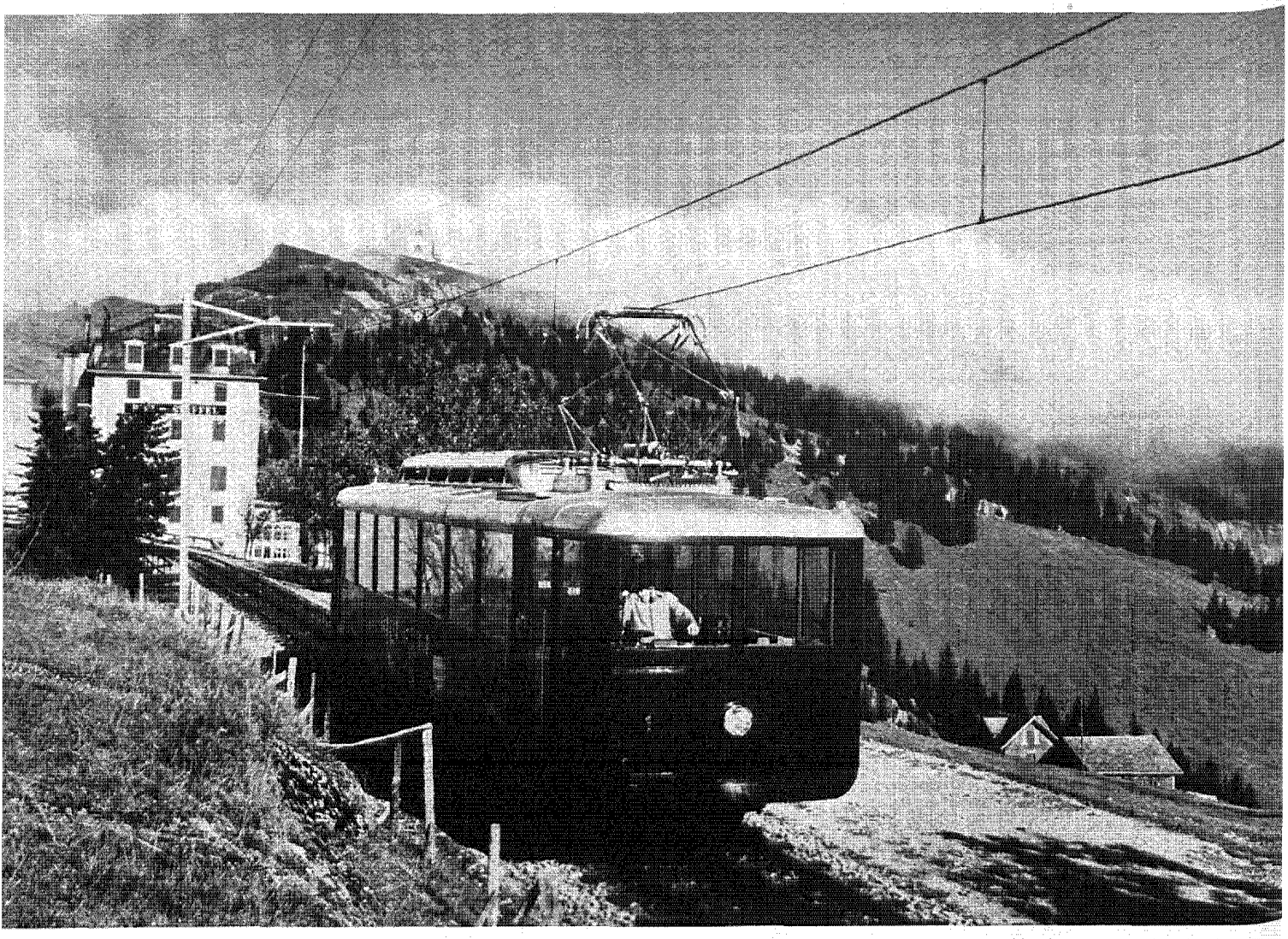
And rust not only reduces the flow of water through the radiator and water jackets, but also insulates them, making it difficult for the heat to pass from the cylinder into the water and from the water through the radiator walls to the air. It wouldn't take much rust to clog the fine passages, as thin as two dimes, in this typical radiator section.

Riding High

"Dulux" finishes scale the Swiss Alps on de luxe trains

By A. B. SHAW

A Chinese Red "Dulux" finish enhances the appearance of the cars of the Vitznau-Rigibahn.

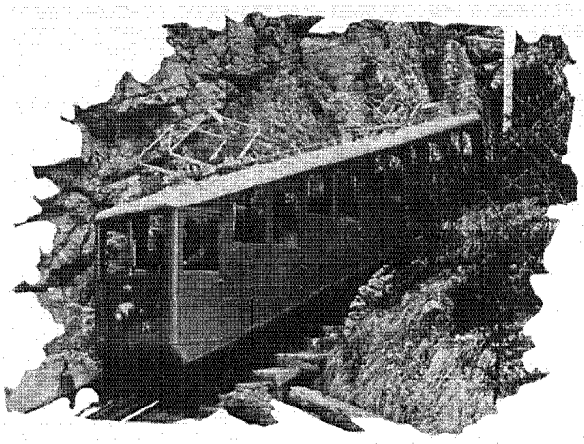


THE TRAIN, perhaps more than any other mode of transportation, holds for men of all ages the greatest fascination, a fascination that is never outgrown. To a child, it is his most cherished toy. To the adult, a means of livelihood, a convenient method of travel, an important factor in commerce. Socially and economically, then, the train is vital to human progress.

Switzerland, in the heart of the Alps, has become the scenic mecca for travelers from every corner of the earth. Developed to a high degree, her railways are numbered among the best in existence. A land of great mountains, much of it blanketed in snow, this Alpine country presents difficult construction and operating problems, for its trains must climb to lofty heights.

General improvement in conditions within the past two years has brought about immense strides in railway development. Several companies have begun the ultra-modernization of already modern equipment, the addition of new trains, and electrification programs, as the accompanying illustrations show.

Appearance, hitherto a secondary consideration in maintenance work, became much more important. Swiss engineers realized that finishes should provide not only rust-protection for the metal cars, but a beautiful



One of eight new cars of the electrified Pilatus-Bahn at Lucerne. All of the rolling stock is finished in "Dulux."

appearance as well. After prolonged tests of various materials the finish selected as having best met all requirements was "Dulux."

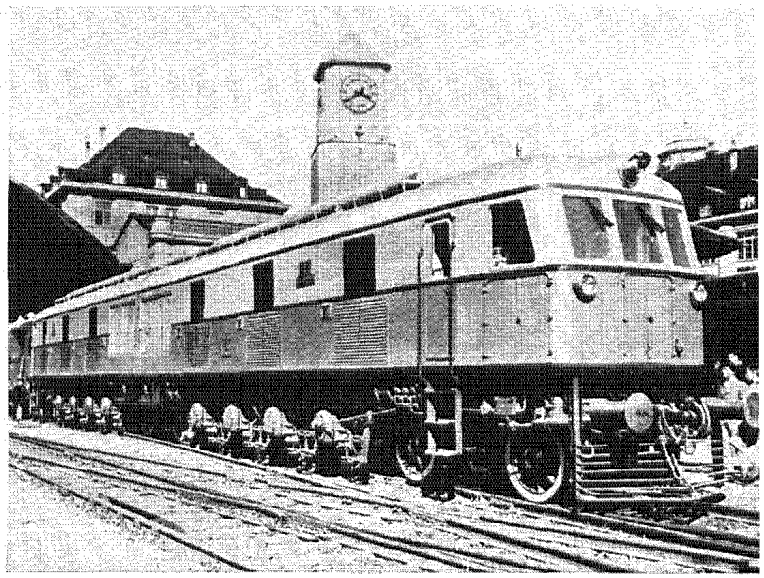
The *Neue Zurcher Zeitung,* one of Switzerland's leading newspapers, describes it this way:

> "For many decades, railway cars have been outwardly finished with oil paint. This paint proved very useful in protection against rust, but soon caused certain difficulties, for the original shade of the paint changed very rapidly. In 1927 some railway construction engineers specified the use of nitrocellulose lacquers applied by spraying. However, this method of finishing involved certain difficulties, too, partly due to the construction of the cars and to the necessity for polishing.
>
> "In 1929, after many years of trials and research, the new Du Pont 'Dulux' synthetic resin finish was placed on the market and suggested as suitable for the railway car industry. 'Dulux' dries with a high luster in a short time and does not require polishing. Furthermore, it is an elastic finish. After a large number of tramway and railway cars of private companies had been finished with 'Dulux,' the Swiss Federal Railways took interest in this product and finished the 'Red Arrow,' in 1935, and the 'Red Stadteschnellzug,' 502, in 1937."

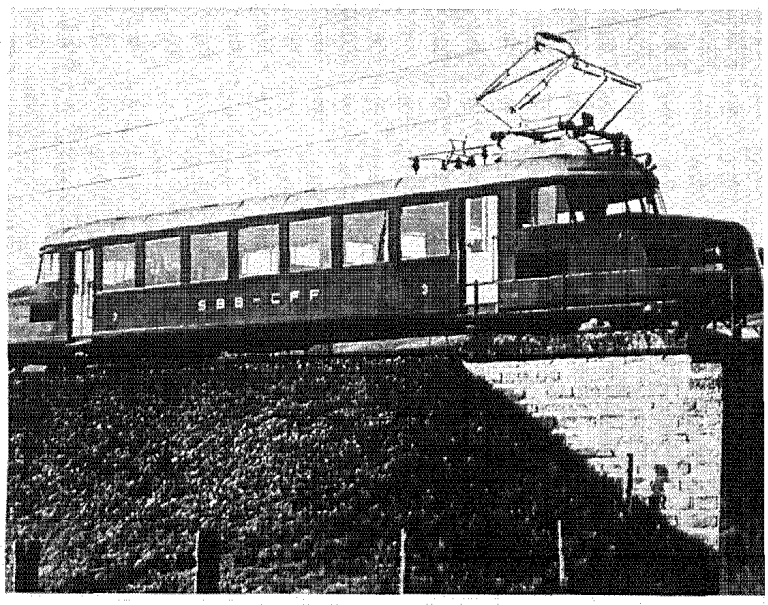
The last-named train, designed, built and finished by Schweizerische Lokomotivund Maschinenfabrik in Winterthur, is a masterpiece of design and construction. Its trial runs were witnessed by admiring officials and railway construction engineers from all the surrounding countries. Consisting of two locomotive cars, this train has an overall length of 230 feet. New principles in design accomplished a reduction in weight which allows a top speed of 95 miles an hour.

Swiss engineers do not confine their skill and craftsmanship to the railroads of their country alone. Exports are an important part of Switzerland's railway industry, and this year they reached a high peak, notably with the production, for the Roumanian Government Railways, of Europe's strongest Diesel Electric Sulzer, a a 4400 horse-power locomotive. It was designed for service on the Bucarest-Brasov line, which is so mountainous from Campina to Brasov that three or four locomotives are required to pull the heavy international express and freight trains. Trial trips over the Winterthur-St. Gall run proved that this unit will do the work on the Roumanian line and thus proclaim the quality of Swiss engineering.

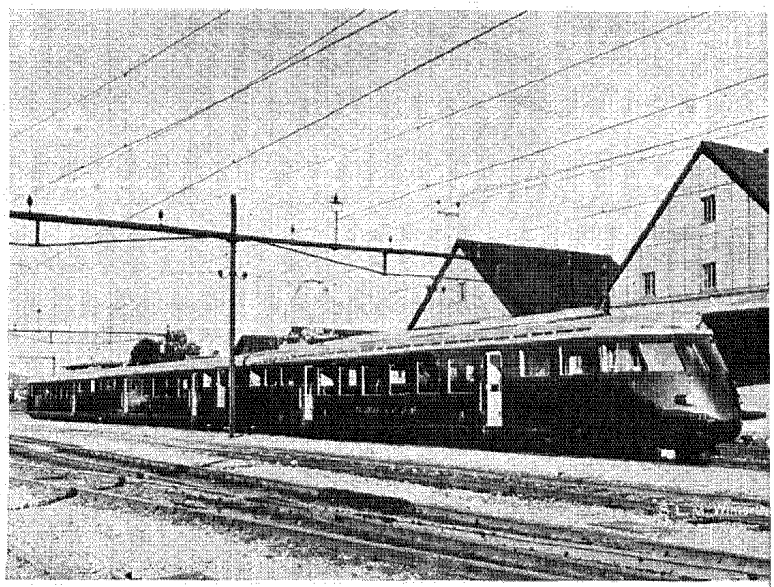
As the new trains flash through the picturesque mountains, their coats of gleaming "Dulux" will also bear witness to the beauty of du Pont finishes.



The new Diesel Electric Sulzer locomotive built for the Roumanian Government Railways, shown in the St. Gall Station.



The "Red Arrow," handsome electric car of the Swiss Federal Railways, was finished in 1935 with red "Dulux."



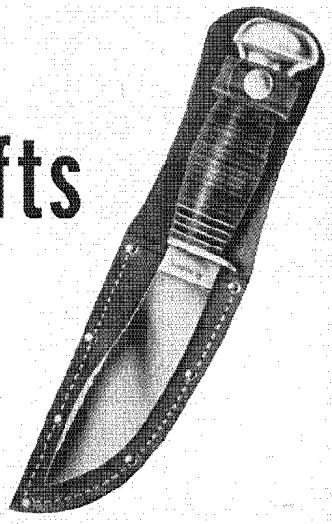
The Swiss Federal Railways applied "Dulux" finish, in maroon, on its new streamlined express train, the "Stadteschnellzug."



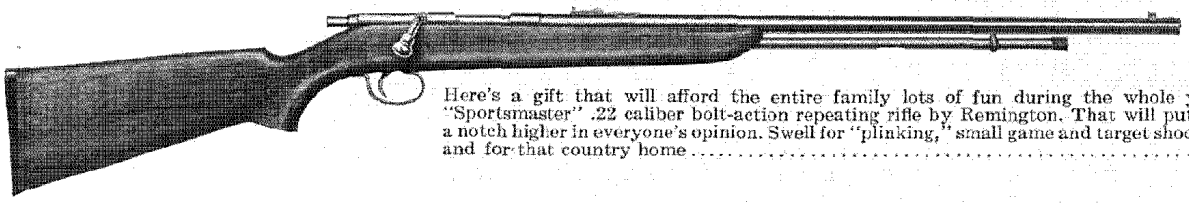
Remington gives Santa Claus a lift on Gifts

When that Scout friend of yours starts off on a hike, he'll be proud as a peacock to carry with him the Official Boy Scout Knife Set. He may want to carve a juicy steak broiled over the campfire, cut some twigs for a blaze or just do some whittling. This gift will please him. Slip one into his stocking and watch his smile on Christmas morning! Remington makes an Official Girl Scout Set, too. Both are priced at..... $2.85

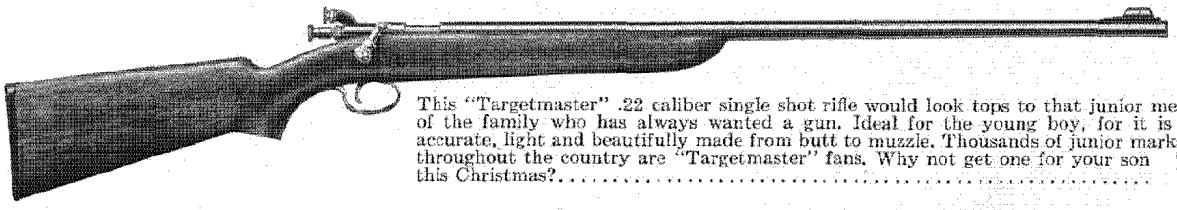




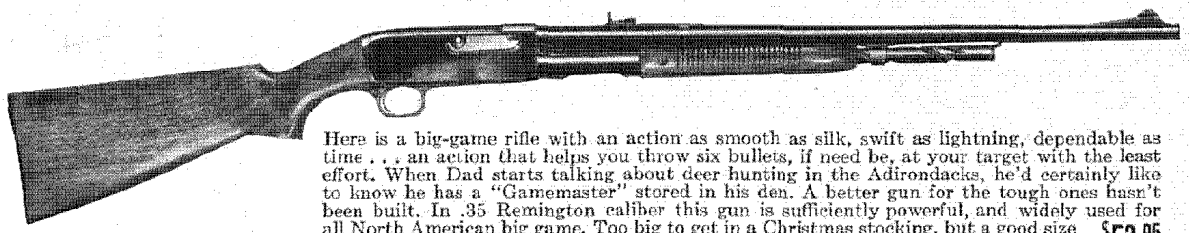
He may "have everything" except one of Remington's famous hunting knives. It's as sharp as a razor and a mighty important item in the hunter's equipment. The blade, 4½ inches long, is mirror-finished. The sheath is of tanned leather with a snap-fastener loop. Why not select one for friend husband or for that boy friend who tells tall stories about his prowess as a nimrod?..... $1.90



Here's a gift that will afford the entire family lots of fun during the whole year. It's the "Sportsmaster" .22 caliber bolt-action repeating rifle by Remington. That will put Santa Claus a notch higher in everyone's opinion. Swell for "plinking," small game and target shooting, and for that country home..... $14.45

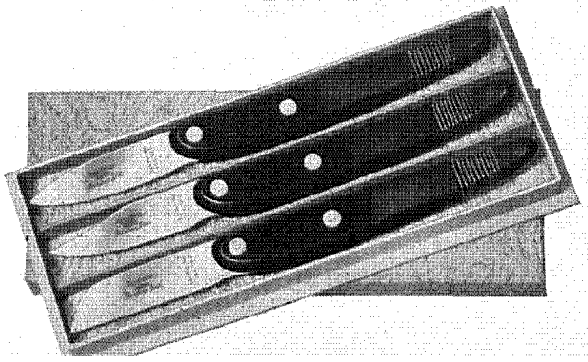


This "Targetmaster" .22 caliber single shot rifle would look tops to that junior member of the family who has always wanted a gun. Ideal for the young boy, for it is fast, accurate, light and beautifully made from butt to muzzle. Thousands of junior marksmen throughout the country are "Targetmaster" fans. Why not get one for your son this Christmas?..... $6.50

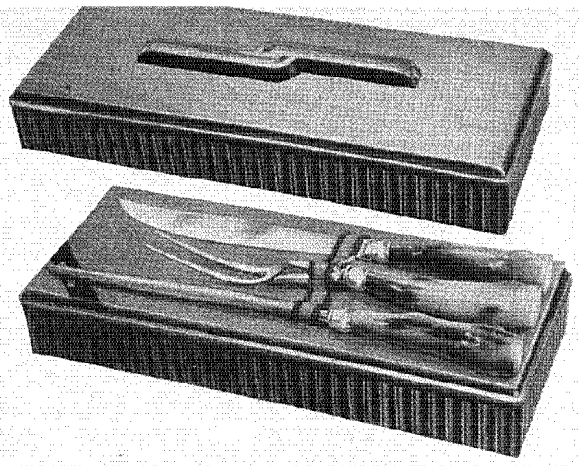


Here is a big-game rifle with an action as smooth as silk, swift as lightning, dependable as time . . . an action that helps you throw six bullets, if need be, at your target with the least effort. When Dad starts talking about deer hunting in the Adirondacks, he'd certainly like to know he has a "Gamemaster" stored in his den. A better gun for the tough ones hasn't been built. In .35 Remington caliber this gun is sufficiently powerful, and widely used for all North American big game. Too big to get in a Christmas stocking, but a good size for under the tree!..... $53.95

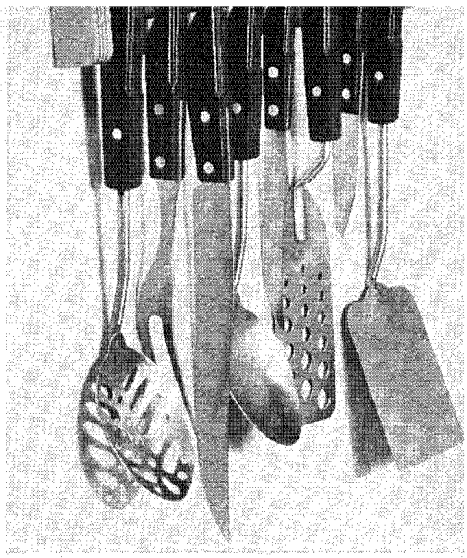
In the years to come these gifts will continue to reflect the joy of a "Merry Christmas." If your dealer does not have on hand a gift of your selection, or should you want additional information about the various items shown, write to the Advertising and Sales Promotion Department, Remington Arms Company, Inc., Bridgeport, Conn.



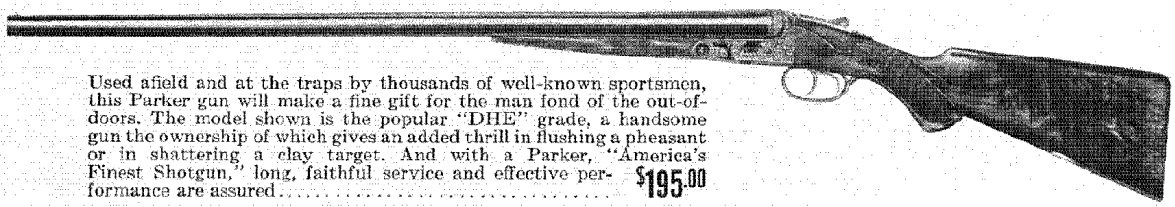
Here's a set of paring knives designed to really fit the hand. Made with hard-rubber handles and stainless-steel blades, they are streamlined for greater efficiency. John Vassos, well-known artist, spent over a year perfecting the design for Remington. Thousands of women find these knives indispensable and will surely consider them acceptable Christmas stocking gifts. Price per set..... $1.25



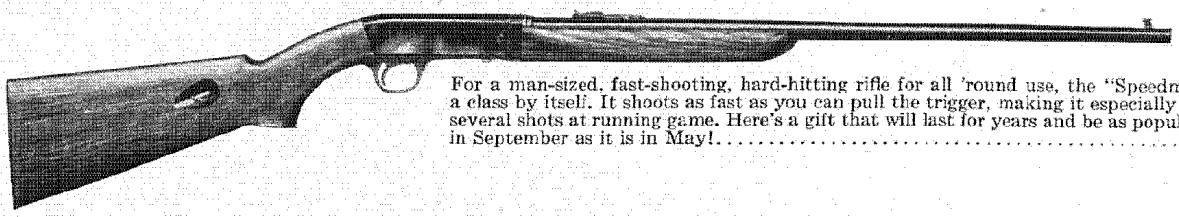
They won't laugh when you stand up to carve the Christmas turkey, if you're equipped with a Remington set such as the one pictured above. With a fine, sharp blade, and fork with guard, carving is made easy. The handles are of genuine horn, ferrules of Sterling silver, and there's a sharpening steel to match. A Christmas gift that will last a lifetime..... $11.50



Why not drop Santa Claus a hint about one of the new Remington "No Fumble" Racks for the modern kitchen? This newly-designed and useful rack holds a set of eight necessary kitchen helps familiar to every housekeeper. The new feature of the set is that each utensil has a no-slip, no-fumble handle. What a break for women whose special pride is a planned kitchen!..... $4.95



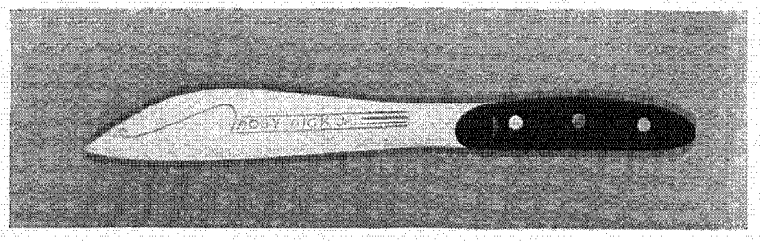
Used afield and at the traps by thousands of well-known sportsmen, this Parker gun will make a fine gift for the man fond of the out-of-doors. The model shown is the popular "DHE" grade, a handsome gun the ownership of which gives an added thrill in flushing a pheasant or in shattering a clay target. And with a Parker, "America's Finest Shotgun," long, faithful service and effective performance are assured..... $195.00



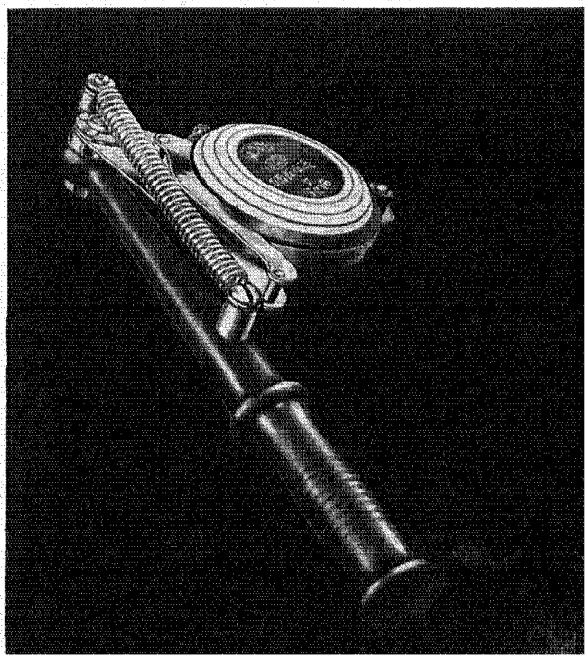
For a man-sized, fast-shooting, hard-hitting rifle for all 'round use, the "Speedmaster" is in a class by itself. It shoots as fast as you can pull the trigger, making it especially suitable for several shots at running game. Here's a gift that will last for years and be as popular in September as it is in May!..... $32.95



The "Sportsman" Standard Grade is one of America's most popular guns. In a century and more of fine gun-making Remington has never turned out a better value than this aristocrat of autoloading shotguns. For that member of the family who has the "skeet bug," no more suitable Christmas gift can be found. This gun, too, is light enough to carry afield all day; easy to swing on game that bursts almost underfoot or that comes down the wind like lightning. $49.95



A whale of a knife is Moby Dick, Jr. Because the shape of the blade resembles a whale it has been named after Melville's famous monster of the deep. And that shape helps the knife to cut quickly and accurately fruit, vegetables, bread and meats. "It's the fin that guides the cutting." This knife—another Remington contribution—will fill a space in a stocking, and a want in the kitchen. As an inexpensive gift it can't be topped..... $.98



Lots of fun, easy to operate, fine practice for hunting is the Remington Automatic Handtrap. Used with Remington "Blue Rock" targets, it improves your wing shooting. Popular with all members of the family, the handtrap may be used almost anywhere you go and is swell for entertaining, for yachting, and at the shore. Get one of these inexpensive handtraps this Christmas and introduce members of the family to the new game of "Scoot"..... $2.95

Aboard Ship with "Dulux"

Why the scientifically-formulated marine finish of this name is so popular with shipowners, operators and their crews

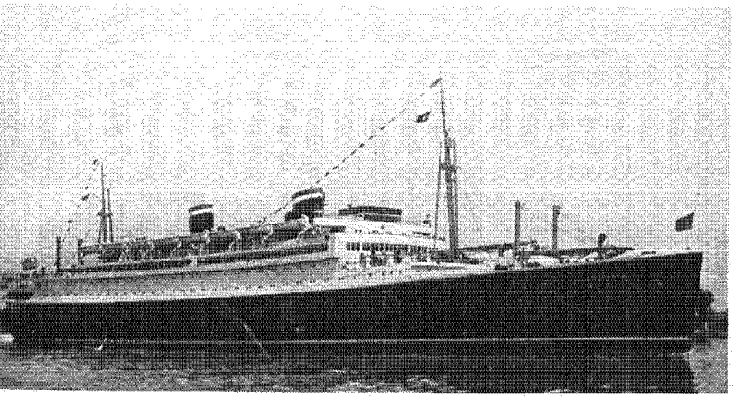
By ROBERT P. MILLER

A SAILOR at sea has plenty of time to think. While carrying on routine duties as the ship moves on for days on end, presumably his mind turns to many a subject that is as expansive as the waters on which he travels. The open sky above, with stars and planets reaching out to infinity, the ocean below, deep, mysterious, unexplored, the things he comes in contact with on the ship itself, all encourage speculations even by those who perform such commonplace tasks as painting or swabbing the decks.

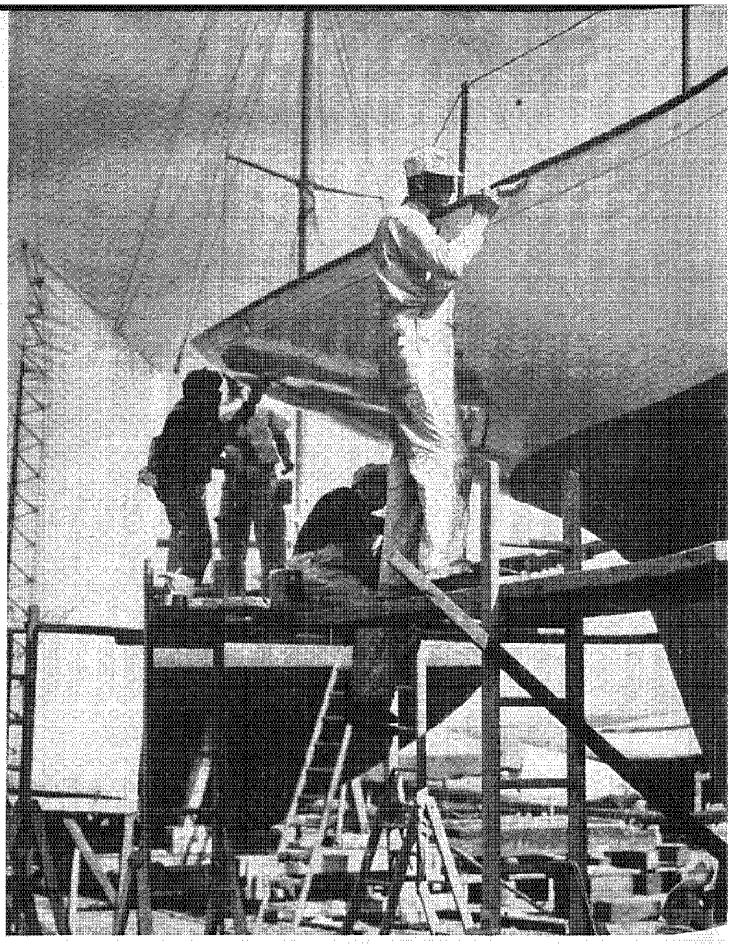
One may suppose that he gives some thought to science and its practical applications, particularly to things that help to make his work less onerous; how chemical science, for example, has developed better marine finishes. They have been improved, as many a jolly tar will tell you—and he knows why.

A little more than ten years ago it was standard practice among many ship operators to repaint their equipment every few months; for this purpose they used the old orthodox finishes of the so-called oil type, applying coat after coat to secure the necessary protection. And to keep these finishes clean, a lot of "soogeeing"—cleaning and washing—and plenty of "elbow grease" were required. Even then sometimes it was not possible to remove all the embedded dirt particles that hastened deterioration of the paint film and dulled its appearance.

But science changed all that. Out of the du Pont laboratories came a new product, "Dulux" finish, which



On many ocean liners like this, "Dulux" is giving long service in spite of severe exposures to salt spray and harbor gases.



For yachts and smaller craft, too, "Dulux" finishes are widely used to protect and beautify interior and exterior surfaces.

was soon to revolutionize the painting of ships and marine equipment. Chemists had developed special resin-compounds embodying characteristics not found in ordinary marine finishes. Shipbuilders and operators were quick to sense the superiority of "Dulux" in ease of application, speed of drying, excellent color and gloss retention, impermeability to water, and resistance to the deteriorating effects of salt spray and harbor gases. And this new finish was exceptionally durable; it withstood the assaults of the sea and salt air far longer than its prototype, thus eliminating the need for frequent refinishing, which made possible a saving in paint maintenance costs. When "Dulux" demonstrated these special points of merit in service, it was quickly adopted.

But this product also won favor with sailormen for another reason. They liked the ease with which it could be cleaned, its ability to withstand frequent scrubbings, the fact that "Dulux," with its smooth, hard film, collected less dirt and moreover could be cleaned easily and quickly with soap solutions without applying so much "elbow grease." In short, Jack Tar's routine work was made easier for him.

That, in brief, is why more and more ship operators and builders have been specifying this durable finish for their equipment, and why all down the line "Dulux" Marine Finishes stand in such high repute in the shipping industry. They have "what it takes" to provide satisfactory service on passenger ships, freighters, oil tankers, river and harbor steamers, tugs and other types

(Continued on Page Twenty-Four

WHAT'S NEW

A NEW high-speed process for plating of copper, four times as fast as the ordinary cyanide processes, was recently announced by the Electroplating Division of the du Pont Company. Heavy coatings from 0.001 inch to 0.003 inch can be obtained in from ten to thirty minutes, leaving excellent surfaces for direct depositions of bright or dull nickel, in the usual cyanide plating equipment. One requirement is the use of high-purity copper anodes which remain bright and clean throughout the operation. The deposits are shown to be uniformly bright, free from pits, and can be easily buffed.

This development is expected to have a marked significance in large-scale operations, such as nickel electroplating in the automobile hardware and accessory fields.

THIN strips of rare wood veneers, closely woven into sheets and laminated with a protective coating of "Plastacele" cellulose acetate plastic give originality and freshness to the compacts and cigarette cases shown below. Wearable flowers, too, can be formed by this process which has been developed by the Parkwood Corporation of Leominster, Mass.



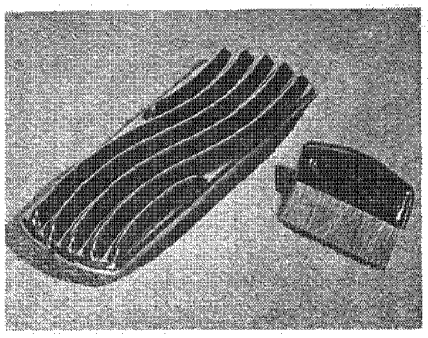
A "MERIT AWARD" for the development of "Exton" bristling filaments was received on behalf of the Company by President Lammot du Pont, banquet guest of honor and principal speaker at the twenty-third annual meeting of the Associated Industries of Massachusetts, recently held in Boston.

A NEW line of clear finishes for industrial use was recently announced by the Finishes Division of the du Pont Company. Known as the RC-900 Line, these new products are based on clear methacrylate resins and, as a result, deposit a glossy, water-white film.

Unlike ordinary clear finishes, these methacrylate products afford unusual adhesion and flexibility over bare, non-ferrous metals such as aluminum, chromium, brass and others. They may be applied by any of the usual methods such as spray, brush or dip. They dry rapidly by evaporation, leaving a hard, non-yellowing film which is resistant to acids, alkalies and alcohol, and they show exceptional durability under outdoor exposure.

A NEW black oxide, offering certain advantages in the manufacture of enamel for graining, sheet steel and cast iron, has been announced by the R. & H. Chemicals Department. Known as Black 4490, it reduces the tendency to blister on refiring, is economical in use and produces required results over a wide range of operating conditions.

A TWELVE-PAGE illustrated booklet describing an improved method for treating lumber to resist termites and rot, offering the most effective clean lumber treatment known to date, may be had by writing to the Grasselli Chemicals Department. This booklet entitled "What the Expert Knows About the Building Bogies—Termites and Rot," discusses in non-technical language the practical angles of this subject, covering the exaggerated as well as the real loss due to termites, and the place of the new development, known as chromated zinc chloride, in combating termites and dry rot.



A "BRUSH without bristles," known as the Vacuo-Static Cleaner, is now being manufactured by the Fuller Brush Company of Hartford, Connecticut. This cleaning tool has curved ribs covered with black "Pyralin" cellulose nitrate plastic. When rubbed briskly over cloth, with sideways motion, the plastic develops static electricity, picks up the dirt and holds it in the grooves between the ribs for subsequent removal with the small brush which is supplied for that purpose.

This device is intended for use on upholstery, automobile cushions, rugs and mattresses. Clothing and curtains may also be cleaned, provided they are laid on a flat supporting surface.

AN INFORMATIVE booklet entitled "What's What in Rayon" has been issued by the Rayon Division of the du Pont Company. Following the foreword, an appraisal of rayon's place in the fashion world today, the body of the text takes the form of questions and answers about viscose rayon and acetate rayon—their manufacture, characteristics and uses. Copies may be obtained from the Wilmington office.

A NEW color for use in the printing-ink, lake and allied industries, trade-marked "Monastral" Fast Green GS, has been announced by the Dyestuffs Division. It is a straight, unshaded pigment which produces bright emerald shades of green, possesses outstanding fastness to light, alkali, acids and lime, and is non-bleeding in oil, water and alcohol. Its general washing and fastness properties are similar to those of the older product, "Monastral" Fast Blue BSN.

Lichens from the Land of the Midnight Sun

(Continued from Page Five)

parts of Scandinavia, farmers also store lichens for cattle feed. During years of famine the dried plants, when ground and mixed with flour, have even been used as food for humans. Perhaps the most nutritious variety is one of grayish-white color that grows unattached to the ground in layers from three to six inches thick and in small irregular lumps. This variety is found principally in the Arctic regions or on arid steppes where grain crops are unknown and other foods are either very scarce or entirely lacking. In stormy weather this type of lichen, picked up by strong winds, is carried for great distances, only to come down to earth and start growing again.

Among other interesting species, we must mention the Island Lichen, which serves as food for humans and also is said to possess medicinal properties. At least four varieties have been used as a basis for powders by cosmetic manufacturers, others yield a substance which takes the place of gum arabic, while in Siberia still another is used in place of hops.

Norwegian Lichen is used extensively as a decorative material in Europe, and since its introduction in this country about two years ago, exports have increased rapidly, which is indicative of the popular acceptance of the product on this side of the Atlantic.

The product is hand-picked and packed by peasants who have formed a coöperative association to look after their mutual interests. Wasteful practices and indiscriminate picking are not permitted. Only the large, choice pieces, about three inches long—and perhaps thirty years old or more—are picked; the smaller ones are left to grow and thus insure future crops. The producing areas are further protected by the Royal Norwegian Department of Agriculture and Forestry, and a Government agency exercises rigid control over all exportations.

The regulations forbid picking this lichen except in Government-approved territories, and not before September first each year when the plants have attained their most attractive color. Shipping crates for export needs are required to be a standard size holding about fifty pounds, net weight, of lichens when packed in a moist state. And all packed crates and their contents are subject to Government inspection and must bear an official stamp of approval before they can be shipped. It is this strict quality control that has helped to build up a preference for this product in the international markets.

The distribution of Norwegian Lichen is handled exclusively by Knutssons Specialty Agencies, with headquarters at Oslo, Norway, and with branch offices at Charlottenlund, Denmark, and Detroit, Michigan. Wholesale lots only are sold to the trade, chiefly to florists who combine this "all-purpose decorative" in many ways, with fresh flowers in making wreaths, centerpieces, table and window decorations for all occasions, besides supplying it for use in Chinese gardens, terrariums, and the like.

In recent years the phrase just quoted has become more significant than ever before. Nature dressed this lichen in a beautiful gray; now it also goes to market in gayer colors. Initial attempts at dyeing lichen were not particularly successful. Following a series of experiments in the du Pont dyestuffs laboratories, a complete range of colors was selected which would be satisfactory for the purpose. The colors are bright, attractive and resist bleeding to a high degree, and their application is so simple that most supply houses are now equipped to do the work.

Visitors to the New York World's Fair will have an opportunity to see a collection of both the dyed and natural product at the Norwegian Pavilion. Meanwhile, perhaps you'll agree that some wreaths or bells made of this lichen in Christmas colors might introduce a new note of charm to your home during the Yuletide. At any rate we offer it as a suggestion you may wish to discuss with your florist.

. . . and now Safer Safety Glass

(Continued from Page Eight)

through the usual trade channels into the service field. Just as the laminated "sandwich" marked a new era in safety from flying glass, so is this new product already recognized as another forward stride in the effort to increase the safety of the motoring public.

Aboard Ship with "Dulux"

(Continued from Page Twenty-Two)

of work boats, to say nothing about piers and harbor equipment. Owners of pleasure boats, too, have proved the merits of these finishes on palatial yachts as well as the more numerous, if less distinguished, smaller craft, of which there are more types than can be mentioned in this brief article.

"Dulux" and Du Pont Marine Finishes are used on many ships that sail the seas, as will be noted from the following representative roster of names linked with shipping services:

A. G. W. I.
Alaska Steamship Company
American-Hawaiian Steamship Co.
American President Lines
American-South African Line
Atlantic Refining Company
Colonial Navigation Company
Eastern Steamship Lines
Furness-Withy
Grace Lines
Great Lakes Dredge & Dock Co.
Isthmian Steamship Lines
Kerr Steamship Company
Luckenbach Steamship Co.
Matson Navigation Company
McCormick Steamship Co.
Merritt, Chapman & Scott
Moore & McCormick
Ore-Calmar Lines
Shepard Steamship Company
Swayne & Hoyt, Ltd.
Tidewater Associated Oil Co.
Union Oil Company
United Fruit Company
U. S. Lines

In developing better finishes for transport needs on land and in the air, du Pont has made important contributions which are well known the world over. Its marine finishes are equally well adapted for service on ships that plow the seas. That these scientifically-formulated products are protecting our nation's merchant marine is perhaps not so well known, but it is a pleasing fact to contemplate, and not without pride.



BRINGS OLD FRIENDS TOGETHER

FOLKS seem to agree that nothing patches things up so perfectly . . . and permanently . . . as this handy household cement made by Du Pont.

Naturally! For Duco Household Cement is the cement which holds tightly on just about every material there is. It's transparent . . . which means it's ideal for repairing china, glassware, lamp shades. It's flexible . . . bends like a pretzel without cracking . . . so it's just the thing for mending torn auto tops or upholstery, dolls or awnings, and for emergency treatment of runs in silk stockings. And Duco Household Cement is waterproof . . . even boiling water won't melt it or loosen it.

Be sure to keep a tube of Duco Cement handy. In fact, better keep two or three. Junior will want one to help him build sturdy model boats and planes. And it's a smart idea to have one just for those occasional odd jobs out in the garage.

Get your supply of Duco Household Cement today, so you'll surely have this fine little maker and mender when you need it. You can get Duco Household Cement at good drug, stationery, hardware and variety chain stores everywhere. Made by Du Pont, your assurance of top quality in *any* product. E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware.



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DUCO
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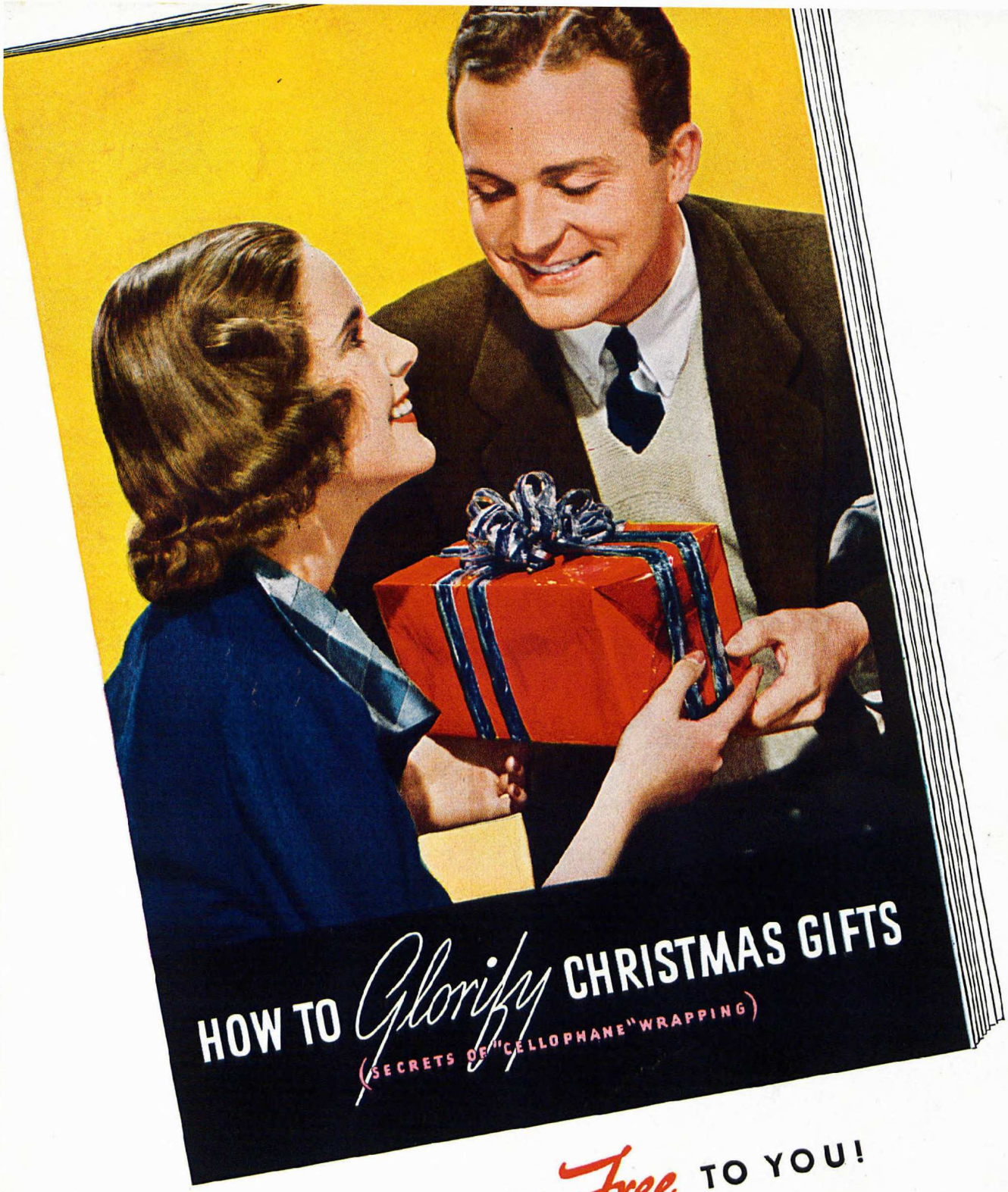
HOUSEHOLD CEMENT



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