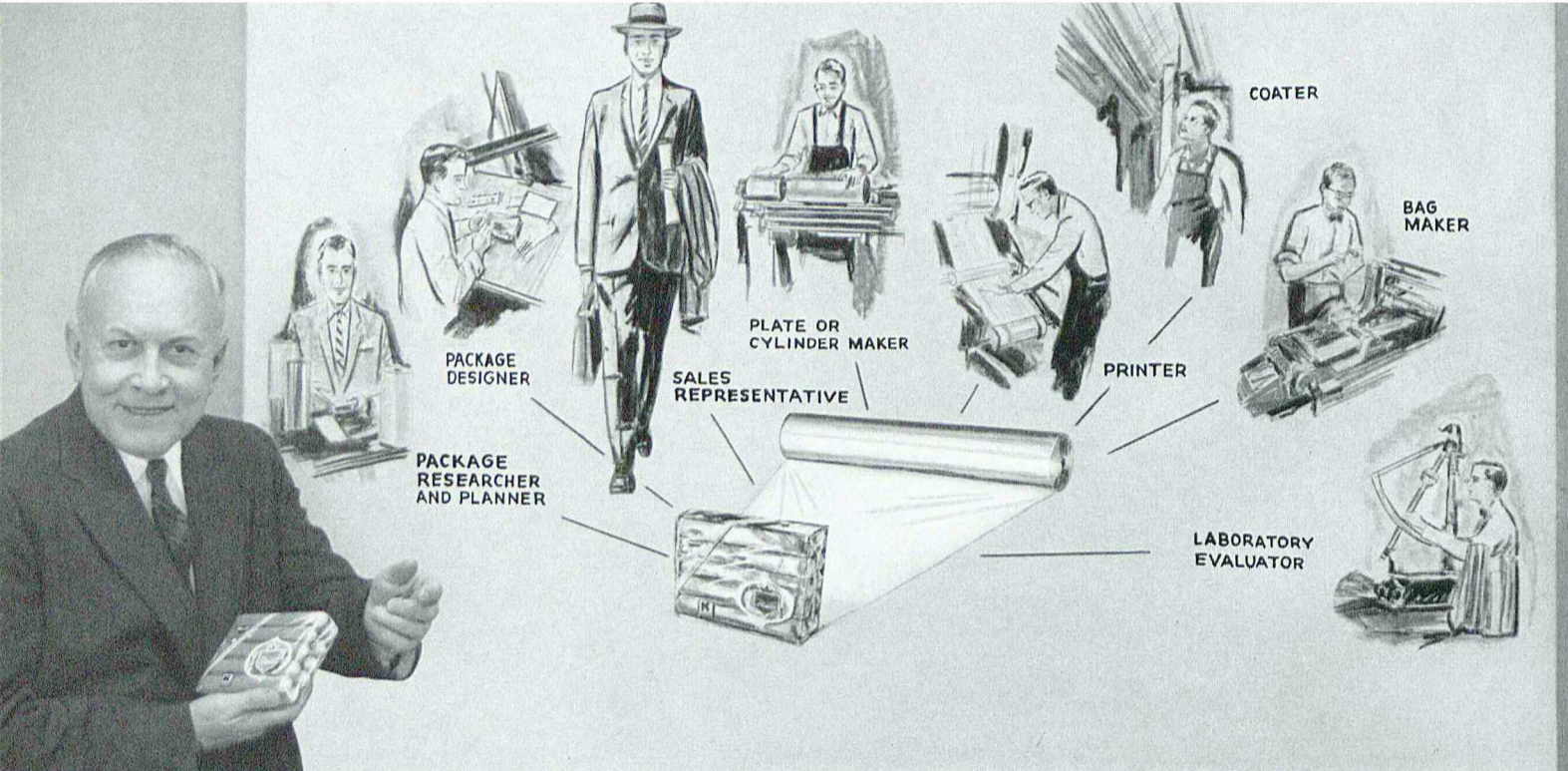




AMERICA AT WORK
PIONEERING AN IMPORTANT
NEW FIBER . . . see page 2



Team of Specialists in converter's firm includes management, design, sales and production functions, notes John Cowan, secretary

and managing director of the National Flexible Packaging Association. Most converters have a number of people in each function.

An industry spokesman reveals:

What Stimulates Packaging Progress

Last month in the executive offices of perhaps 10,000 business firms all across the nation, huddles were under way between top management men and a special group of salesmen representing Du Pont customers. Priority item on the agendas: What could or should be done, through package-design, to up-date the look of consumer products made by these firms—makers of food, tobacco, textile and other products.

The enterprising visitors, loaded with ideas on better packages, were companies known as flexible packaging suppliers or film converters. They ranged from 10-man outfits selling \$250,000 in packaging materials each year to 2,000-man firms selling \$40 million or more. So successful have they been that last year their industry produced \$500 million worth of packages.

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The essential role of the film converter in blending varied individual skills to produce protective, attractive, and appealing packages was summarized recently by John M. Cowan (above), managing director of the National Flexible Packaging Association, a 10-year-old trade association serving 90 converters. Said Cowan: "An inept package is a major handicap to sales; but a package with the right appeal brings sales volume to the manufacturer—plus a real measure of convenience and service to the consumer. The film converter provides tremendous leverage toward business success through his development of ever-better packages."

As self-service in retailing thrust major sales responsibility on the package—not the clerk—there has been an explosive growth in the need for packaging service. Film converters bring new ideas and continuing package-making service to all kinds of business. They handle a dozen different packaging materials (including Du Pont cellophane, polyethylene, acetate film and "Mylar" polyester film). They laminate and coat these flexible materials in half-a-dozen or more ways; and they use various printing methods to reproduce colorful illustrations, slogans, trademarks and product information on transparent bags, wrappers and pouches. All to motivate a consumer to select a particular item of merchandise from a retail shelf . . . to make a sale and to add to the satisfaction of using the product.

As a man who has spent essentially his entire business lifetime in packaging, Cowan has seen the film converter grow to ever-increasing stature in his special field of business.

"But no one in this field," observes Cowan, "owns a market or a customer. New materials, techniques and machinery are always turning up in packaging with resulting shifts and changes to competitive ideas and methods. It's only through the partnership of large suppliers such as Du Pont and the ever-important converters that U. S. business can meet the increasing challenges in marketing their products."

DUPONT

magazine

Leavitt S. White, *Editor*William C. Halley, *Associate Editor*Emily Heine, *Associate Editor*

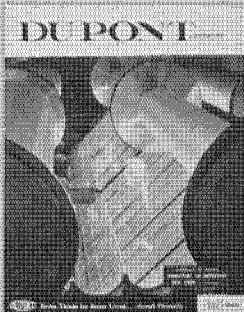
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THE COVER

Peering through 1,800 hair-like elastic strands of "Lycra" spandex fiber running from a huge beam on a flat-bed knitting machine at Warner Brothers' Ashaway, R.I., knitting and finishing plant are Gene Wheeler, plant manager, and Ed Berriman, Du Pont fibers representative. For the last several years Wheeler has been supervising knitting tests on Du Pont's newest synthetic fiber, in conjunction with Warner's major role as one of the country's leading firms engaged in the styling and manufacture of girdles and bras.

To Sales Representative Berriman the pioneering work on "Lycra" is a familiar yet ever-exciting experience. Now in his 34th year with Du Pont, he has already helped to establish Du Pont's six other major textile fibers. And living through months of heartaches and headaches on "Lycra" with Warner Brothers and his other customers, he has helped make a significant contribution to U. S. textile progress by aiding in the transfer of Du Pont's development know-how on "Lycra" to the important areas of the trade. Any product such as "Lycra" is but a laboratory curiosity until it has been successfully demonstrated to and evaluated by prospective customers. For the significance of Du Pont programs like the one at Warner Brothers, see "Stretch plus Strength" (pages 2-4) and "A Big Year . . . and Bright Prospects" (pages 14-16).



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CHANGE OF ADDRESS

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A Business Birthday

One spring morning in 1885, a German-born young man opened the doors of a small new importing and wholesale business in lower Manhattan, then the heart of New York City's business district. The main product Robert Reis had was two-piece wool underwear. It was as characteristic of the period as handle-bar mustaches and "the bicycle built for two."

If product development ended there, so would this story. Fortunately, hard work was blended with a continuing interest in new products. Branching into the one-piece unionsuit of woven fabric in the early 1900's, Robert Reis & Co. then proceeded to introduce many new styles in the ensuing years, including a forerunner of today's boxer shorts and an early adaptation of today's knitted briefs. Pioneering work was done in packaging underwear in cellophane. The first men's boxer short of Du Pont nylon appeared in 1948. And so Robert Reis & Co. grew to be a leader in its field.

Recently when Arthur Reis, Jr., grandson of the founder and now president, addressed 250 leading retailers at the company's annual business forum, he took occasion to note his firm's 75th Anniversary. It was also an appropriate moment, Mr. Reis felt, to recognize what one of his major suppliers—Du Pont—had contributed to the growth of the Reis Company. For during at least four decades (1920-60) Du Pont had been a principal supplier of bleaches, chemicals, dyes, fibers and packaging materials. Du Pont's pioneering in these same fields had helped its customer create new products as well as many quality improvements—all leading to additional sales.

Inviting Du Pont representatives to the forum, Mr. Reis held an informal pre-dinner cake ceremony (below) in which he used a dozen product pennants to symbolize the years of close association and service Robert Reis & Co. has experienced with Du Pont.

Later, responding to Mr. Reis' post-dinner tribute to this relationship, William A. Bours, III, Du Pont's director of sales of dyes and chemicals, summarized Du Pont's birthday wishes: "We in Du Pont have a strong interest in your corporate history and success, for you have helped us grow. But aside from the business we have enjoyed with you, we are particularly appreciative of the fact that you, through your 75 years of success, offer another proof that the American way of doing business is a sound one. It is especially gratifying to realize that you have grown healthier and stronger as a result of exposure to economic, social and political pitfalls that have foundered lesser organizations."

Anniversary Greetings are shared by President Arthur Reis, Jr., of Robert Reis & Co. (second from right) as he decorates birthday cake with product pennants. Looking on are Du Pont representatives (from left): A. R. Eanzel, R. A. Secord, E. H. Voorhees, B. L. Hutchinson, C. E. Mears, R. C. Schechinger, and (at right) William A. Bours, III.



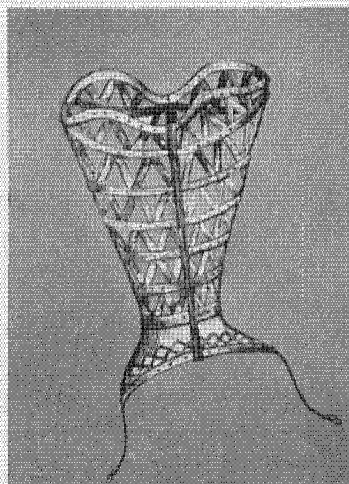


With a dramatic combination of elastic properties, Du Pont's new "Lycra" spandex fiber offers . . .

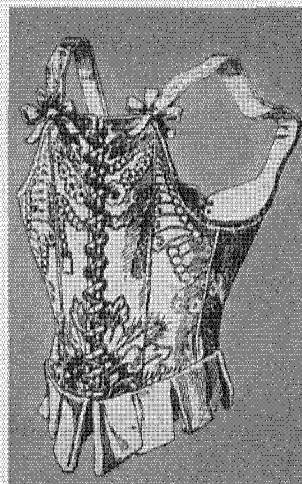
Stretch plus Strength

heralding a major advance in an age-old fashion problem of figure control

Stretch and Strength of "Lycra" are demonstrated in multiple exposure pictures of Betty Myrtle swinging from a diving board. Her swing, hung with strands of "Lycra" spandex fiber, provides elastic ride for Betty as fiber is stretched to more than double its original length. Then, swing snaps up out of reach—to its original length—as Betty grasps platform supports.



Iron Corset of 14th century was custom-made device, with no flex.



Harness Corset of 18th century was of canvas, plus stays.



Whalebone Corset of 1890's featured hard-to-reach back laces. For mate in figure control, help from sure-footed husband was one solu



When pert Betty Myrtle slipped into a swimsuit in Waynesboro, Va., recently and clambered onto a special swing suspended from a diving board, she helped dramatize the distinctive qualities of Du Pont's newest synthetic textile fiber. For both her test suit and the elastic lines for her swing were made of "Lycra" spandex fiber, a new fiber that stretches and snaps back into place like rubber.

The Du Pont fiber Betty was demonstrating is still only in limited laboratory-scale production, but already observers are anticipating that it may bring about as great a change in the women's foundation garment industry as nylon did in hosiery. "Lycra" is stronger and more durable than conventional elastic thread; it gives longer wear and has from two to three times the restraining power of the same weight of fabric of these conventional elastics.

Manufacturers of girdles who have been evaluating the fiber for the past several years agree that it provides softer, lighter, and sheerer garments with the same kind of figure control heretofore confined to heavier, bulkier garments. These can be traced (as below) back to the time of Catherine de Medici and before. "Lycra" also makes possible brassieres and girdles that, with proper temperature settings, can be both machine-washed and machine-dried with complete safety. In addition, "Lycra" is dyeable and is highly resistant to perspiration and cosmetic oils and lotions.

Field research by the foundation garment industry, on top of a \$10 million research and development program by Du Pont, has confirmed the unusual promise of this new fiber. Hence, plans are now well advanced for a step-up in output of "Lycra" through new production facilities being installed at Du Pont's Waynesboro fibers plant. While hundreds of Du Pont people and outside suppliers are currently straining to bring these new facilities into production this year (see next page), "Lycra" will remain in limited supply until the full plant facilities are in production in late 1961. Present facilities are essentially no greater than laboratory equipment which produced the first bobbins for market evaluation.

Fiber specialists are convinced that foundation garments will comprise the major initial application for Du Pont's new spandex fiber. Nearly a dozen firms have been carrying out development programs on the fiber, paralleling that at Warner Brothers highlighted on the cover. But textile men also visualize an added potential for "Lycra". Swimwear and surgical stockings are among the most obvious added uses. In January, one firm (Catalina, Inc.

OF "LYCRA" SPANDEX FIBER

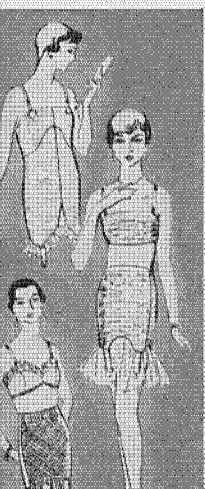
Deniers to be produced.....	70, 140, 280, 420, 560
Break Tenacity, g.p.d.....	0.6-0.8
Break Elongation, per cent.....	520-610
Power at 50% Elongation, g.p.d.....	0.03-0.04
Power at 200% Elongation, g.p.d.....	0.10-0.12
Stress Decay 1 min. at 50% Elongation....	6-8%
Tensile Recovery from 50% Elongation....	93.5-96%
Moisture Regain at 70°F., 65% RH.....	0.3%
Specific Gravity.....	Approx. 1.0
Abrasion Resistance.....	Good
Flex Life.....	Good
Color.....	White
Luster.....	Dull
Fume Oven Exposure—16 hrs.	
Color change.....	Slight—yellow
Physical property change.....	None
Fade-Ometer Exposure—16 hrs.	
Color change.....	Trace—yellow
Physical property change.....	None to slight
Resistance to heat.....	Yellows and degrades over 300°F.
Melting Point.....	482°F.
Sticking Temperature.....	347°F.

of Los Angeles) introduced in half a dozen big-city stores a "blue bather" form-fitting swimsuit made of 85 per cent Du Pont nylon and 15 per cent "Lycra". As for surgical hose, "Lycra" can be made up to resemble service-weight nylons. When development work can be started, thousands of women who should wear surgical hose but have avoided their heavy construction no longer may have a reason to shun them.

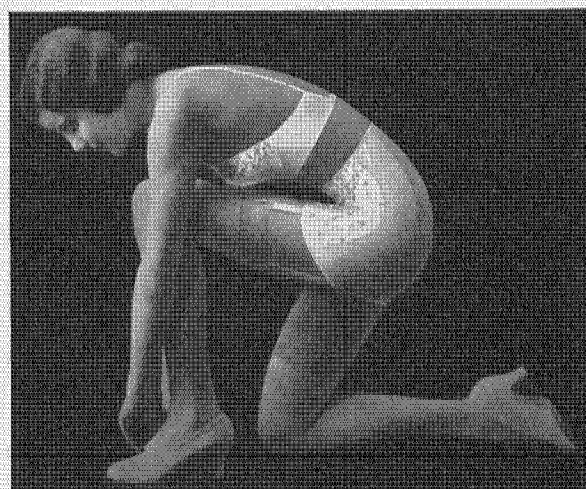
The physical properties of "Lycra" suggest other future possibilities for this spandex fiber, but active evaluation in such areas must await increased availability of yarn.

"Lycra" requires vastly more complex chemical reactions than any of Du Pont's six other synthetic fibers. Its scale-up, therefore, seems likely to present a continuing array of problems and frustrations for both Du Pont and its fiber customers. Ultimate benefits to consumers, however, offer the prospect of substantial new business opportunities that will be generated as this new product is pulled from laboratory to pilot plant and beyond.

Continued

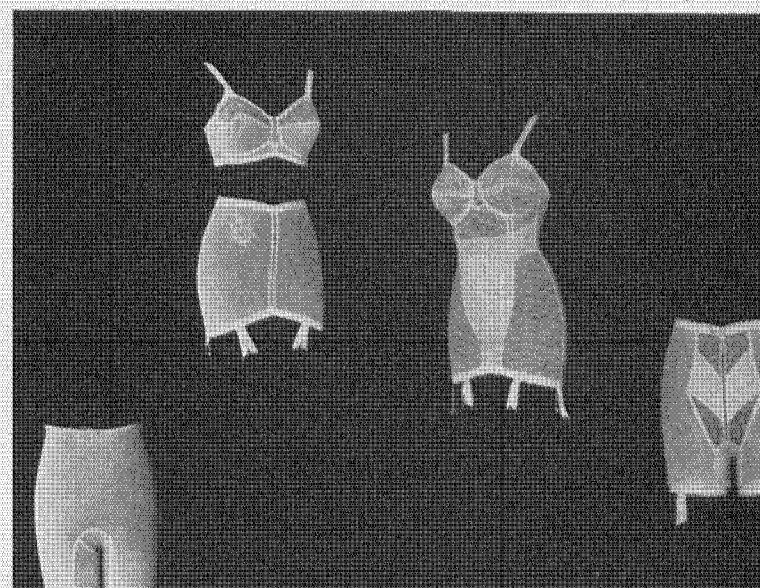


Girdles emerged in the 1920's.



Two-way stretch elastics were introduced in early '30's, making corsets more comfortable and better fitting.

New Fiber Girdle of 1960's will be of "Lycra". Lighter than other materials, it will provide equivalent figure control in a variety of styles.



TO ANTICIPATE TOMORROW

ENGINEERING SHOPS

LATE HOURS WITH THE T-SQUARE

SPECIAL MACHINERY ON SHORT ORDER

TOLERANCE: 1/500,000 OF AN INCH

SHOWING FOR THE PRESS WASH TESTS FOR YEARS OF WEAR MIDNIGHT OIL IN THE LABORATORY

launching "LYCRA"® spandex fiber in 1960

A Du Pont task force coaxes complex process in pilot plant, as first pounds of new fiber are channeled to limited textile areas. Meanwhile, others strain to build new capacity and meet increasing demand.

ENGINEERS AND CHEMISTS BY THE DOZEN—TRAINING AND TEACHING (AND MAKING FIBER)

ACRO MACHINE

EQUIPMENT VENDORS BUSTLING TOO

FIBER PILOT PLANT
WAYNESBORO, VIRGINIA

A DIFFICULT NEW PROCESS

PRECIOUS BULLION: "LYCRA" BY THE HANDFUL

WHAT'S THE STRETCH ON THIS BATCH?

OUTPUT'S UP!
7 POUNDS OVER LAST WEEK!

A BIT MORE "LYCRA", WHEN FIRST UNIT OF NEW PLANT IS UP

YARN ON ITS WAY TO CUSTOMERS:

SO MANY PEOPLE WANT SO MUCH

Jones Knitting Co.

SPLASH SWIM SUITS

NEW PRODUCTS COMPANY

PATIENCE

MUCH CUSTOMER INTEREST IN NEW FIBER (BUT LITTLE FIBER TO TRY OUT)

OUR NEW SUIT:
15% "LYCRA"—85% NYLON

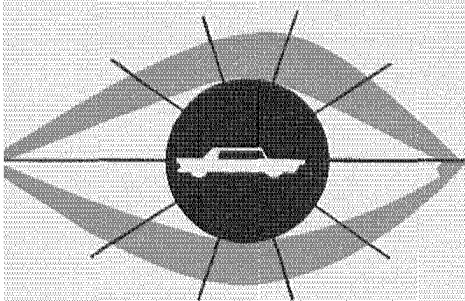
"ANOTHER CASE ALREADY!"

FORM GIRDLE CO.

La Jane Corsetiere

CONSUMER REPORT:
"IT'S SO LIGHT TO WEAR
YET CONTROLS SO WELL"

NEW CONCEPTS IN FIGURE CONTROL—PLUS A FEW GARMENTS FOR TEST MARKETS



WHY THE CROWD STOPS

New models focus public eye on product improvement, a hallmark of United States industry in which the supplier plays many roles

By RICHARD J. WOODWARD

Autumn street scene: A new car is parked on a busy block, a passer-by does a double-take, and 10 minutes later a crowd has gathered. A new model year begins, and the consumer jury is once again in session.

Nowadays, it's a regular event. The annual model change has become standard practice in U. S. industry, and as a mechanism of product improvement it is here to stay.

Few routes to progress demand so much of the manufacturer and his suppliers. The challenge to auto makers is evident—each year must bring a better product or market position will be lost. Countless components must be redesigned, old materials reevaluated, and shifting consumer tastes foretold.

The supplier's role is responsive. Auto engineering and design is neither his business nor necessarily his forte; his talents lie in the adaptation of old products to new requirements and the development of new products to fill predicted needs.

The supplier is researcher, vendor, and consultant, all in one. These are Du Pont's three roles in the automotive industry—part and parcel of the job of working today for tomorrow's better colors, waxes, windshields, or fuel lines. It is a job of staggering proportions: sales manuals in Du Pont list 84 products or product lines which are tailored directly to the needs of the auto maker.

To meet the challenge, Du Pont maintains a staff of technical experts in Detroit and backs them up with research and product development in laboratories across the country. (For one department's geography, see page 7.)

Taken as a whole, these activities involve Du Pont in virtually every facet of auto-making short of the creation and manufacture of the car itself. And they point up the vast reservoir of special skills which a large and diversified materials supplier can bring to the problems inherent in any model change regardless of the end-product—cars, appliances, television sets, office equipment, furniture or satellites. The ultimate gainer is John Public, whose taste and verdict, while often fickle, is always final.

Continued

Autos on Assembly Line include products of thousands of suppliers. Du Pont, alone, provides scores of items to automotive firms.



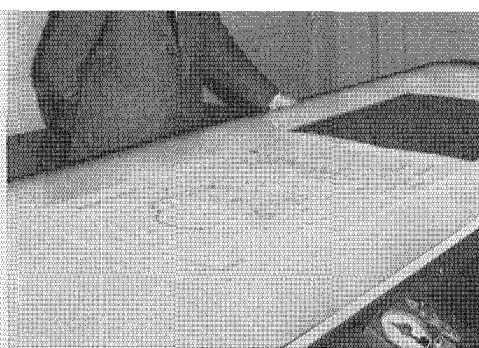
Planning

Engineering is paced by new films and techniques

The curbside juries and showroom debuts mark the final milepost of Detroit's annual odyssey to Main Street. Yet in the strictest sense it is not an annual thing; the first real steps are taken years before in such places as Ford's vast Engineering and Research Center at Dearborn, Mich., shown at right. Every new model starts on the drawing board, and among the first to "see" a new car are the personnel of the engineering reproduction departments.

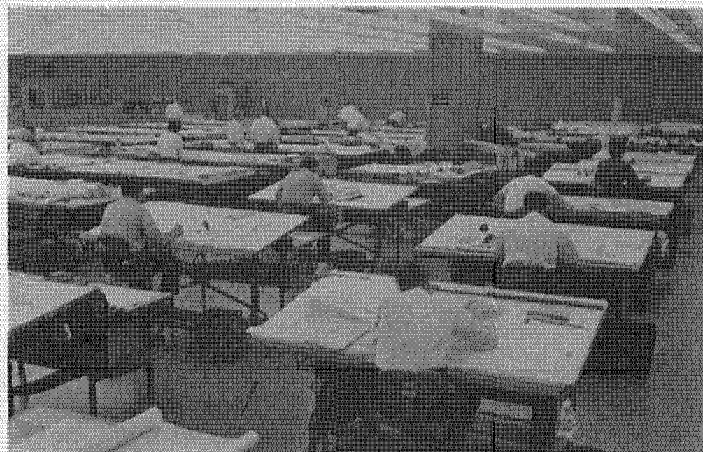
The first "pictures"—the countless engineering drawings which go into the creation of an automobile—are often reproduced on Du Pont materials.

The automotive industry has developed many new reproduction techniques made possible by "Cronaflex" engineering reproduction films. The photographic versatility of "Cronaflex" has advanced these techniques and has resulted in improved engineering drawings. The dimensional stability, durability and a fine drafting surface are the other important advantages that starts the story of Du Pont in Detroit with "Cronaflex".



Reproduction of engineering drawings is the specialty of Du Pont's Wray Hushebeck, left. He aids auto makers in use of new film products made by the Photo Products Department.

Thousands of drawings reproduced from Du Pont "Cronaflex", go into birth of new car. Design work involves hundreds of men.



Tooling

Plants gear lines to improved processes

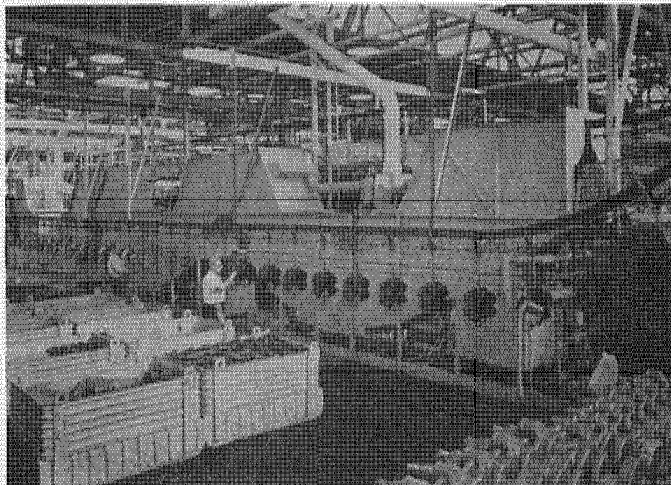
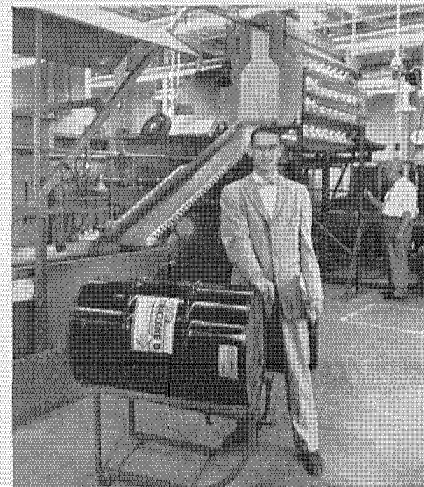
In January, 1959, Du Pont's Electrochemicals Department learned of a problem and an opportunity: An auto firm was tooling up for a new compact car. Part of one engine line was set aside to apply a flat black paint to steel engine parts in a one-coat, air-cure operation. Tests had shown the need for a phosphate coating step in addition to the normal finishing system to improve paint adhesion and corrosion resistance.

Phosphatizing is old hat to metals men—but phosphate coatings applied in a new way (via Du Pont trichlorethylene solvents, instead of the usual water solutions), would eliminate some 50 feet of conveyor line needed for drying. And when tied in with trichlorethylene degreasing and painting units, such a system could provide a fully integrated, one-solvent operation.

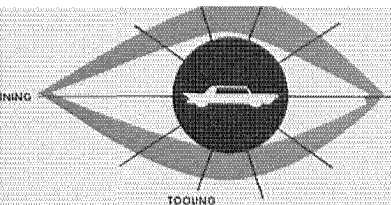
Electrochemicals technical men had made progress along this line during 1958. Word of the car maker's need was an added spur that put the program over the top in record time.

By April of 1959, an integrated three-stage unit using the new Du Pont process was installed for field evaluation. In operation on the compact car line, it has slashed finishing time on many parts by 50 per cent, reduced tooling investment, and saved valuable floor space.

Phosphatizing expert Marshall Baker handled development of one-solvent finishing system. "Triclene" trichlorethylene process will be commercial this year.



Savings in floor space, investment, and finishing cost are prime benefits of fully integrated 65-foot auto unit now in operation.



Beauty

Color specialists help industry meet consumers' changing tastes

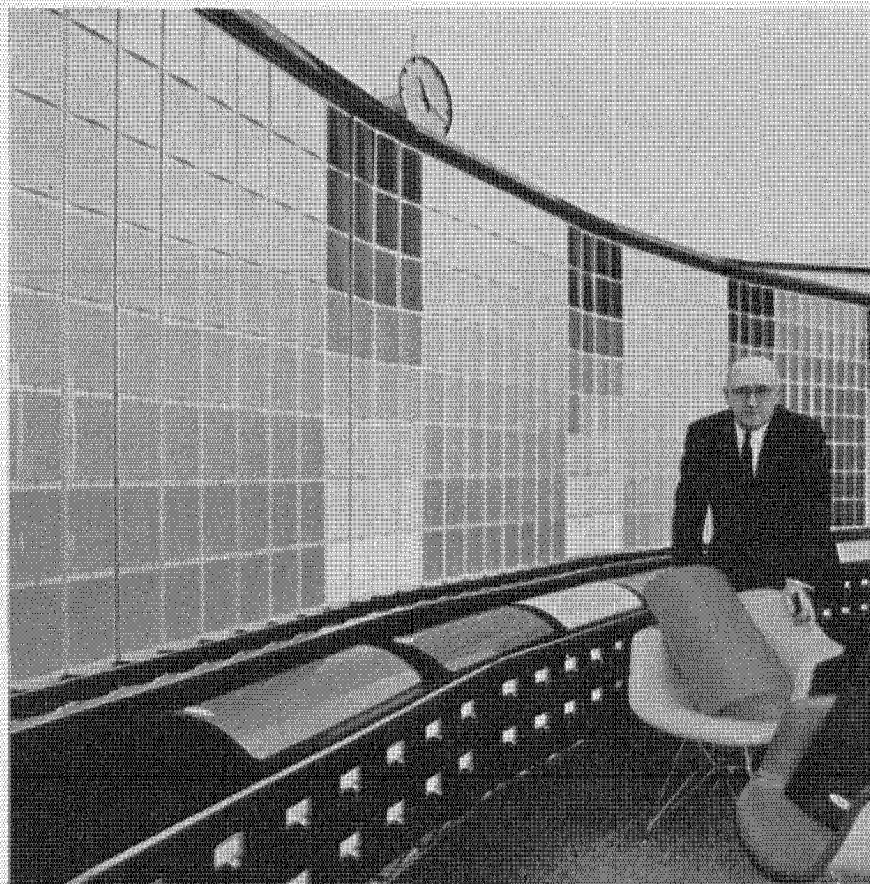
The crowd takes a look . . . and in the words of an East Coast car dealer, "If they don't like the colors, I'm dead."

Color receives never-ceasing attention from Detroit's experts. The paint and color committees of a typical auto firm work 18 to 20 months ahead of actual production, and more than 200 styling, production, and sales specialists have a say. The final selections must not only look right but must act right, both on the assembly line and on the road.

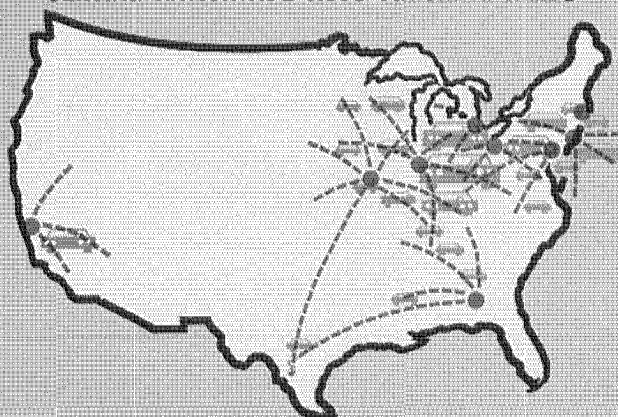
Du Pont has been a major supplier of auto finishes ever since "Duco" lacquers changed the industry in 1924,

and the search for improved finishes has never slackened. The latest development: the acrylics that are now in general use by auto manufacturers that use lacquers. Du Pont pioneered in the research that brought about this development. Du Pont's product in the field is "Lucite" acrylic lacquer. Many new services have also been added. They range from Norman Mooney's eye for color to a coast-to-coast network of strategically located plants and laboratories. In sum, those products and services help auto firms meet the ever-changing taste of the consumer.

Color Stylist Norman Mooney (right), Detroit member of Du Pont's Finishes Division, aids car manufacturers in the annual selection of exterior and interior colors for new models. The selections are made from the thousands of panels on file in Detroit color libraries. Final selections must combine sales appeal with ease of handling and application in plants (below).



SERVING NATIONWIDE AUTO FINISHING NEEDS



Auto Assembly and Parts Plants
Du Pont Finishes Plants

Nationwide service to the auto industry's assembly plants, dealers, and independent refinishers is a major function of widely scattered Du Pont plants, laboratories and warehouses. Nine Du Pont Finishes plant locations are shown on map. The U. S. is also covered by 15 technical representatives who call on auto firms and parts makers and by other representatives who help put latest car colors in dealers' and refinishers' hands at time of new model debuts. In addition, the Export Sales group, in Wilmington, ships lacquers to 92 foreign lands.

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Production

Neoprene launched an ever-widening stream of elastomer products that simplify assembly and improve performance

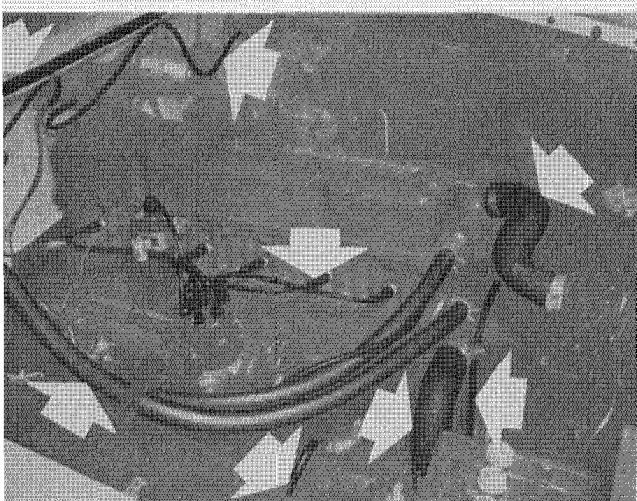
Synthetics combine the best of nature and the best of man; unlike natural materials, they can change with the times. Neoprene, of course, is the oldest and best-known of the synthetic rubbers. It has been widely used by auto makers for 25 years or more, and among some 550 rubber parts in a typical car one auto firm uses 340 different neoprene products. A cross section of current uses is pictured below.

Among countless current examples of how Du Pont research keeps abreast of auto makers' needs, here is a recent one from the Elastomer Chemicals Dept.:

In 1957, slabs of urethane foam brought added comfort and durability to auto seat pads, but their usefulness was limited when seat contours featuring crowns and

bolster effects became popular. The new designs were not compatible with slab construction; auto stylists needed foams which could be molded to a given shape.

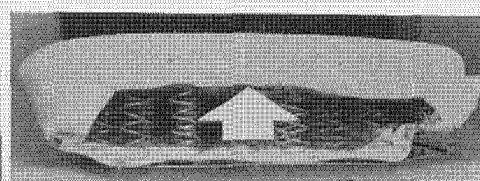
Working with foam makers who are Detroit's direct suppliers; (for Du Pont makes "Hylene" organic isocyanates, a basic foam ingredient) an Elastomers research team developed a molded cushion. This technique offers both design freedom and simplified seat construction. Pads molded to burlap can be attached directly to seat springs. General Motors introduced such pads in 1959; now 1960 lines, especially Chrysler's, use them extensively. Ford, too, has pioneered in urethane foams for arm rests now a standard item supplied by a rubber company.



Neoprene is widely used under the hood. In engine above, it shows up in V-belt, radiator and heater hoses, ignition wire, spark plug boots, vacuum tubing, flexible fuel line connection and hood gasket shown by arrows.

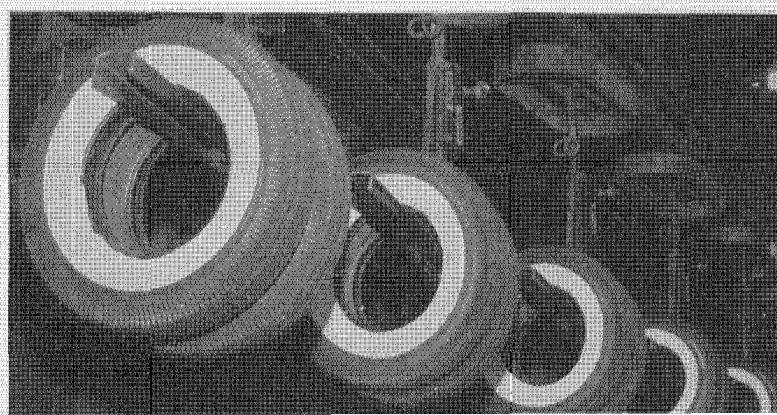
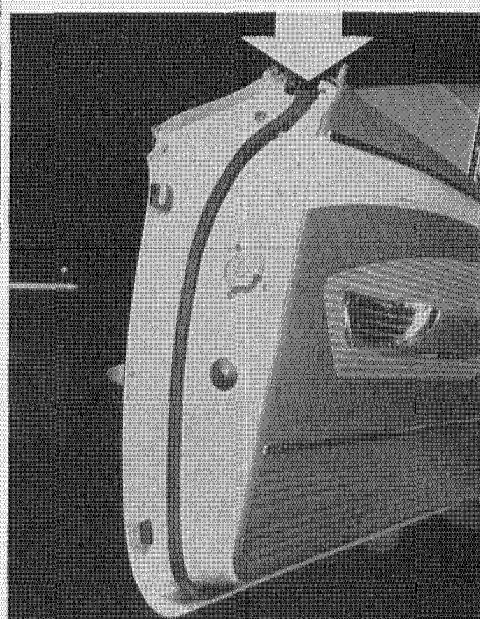


Elastomers Liaison is Detroit assignment for Richard Malcolmson of Elastomer Chemicals Department. He is holding an extruded strip of new closed cell neoprene, adopted by Chrysler Corporation for improved door seal introduced in the new Valiant. Over a 32-month period, strips extruded by Du Pont customers were extensively tested by Chrysler engineers. Malcolmson kept abreast of both the test results and the extruders' production problems, guided additional development work at Du Pont elastomer lab in Wilmington.

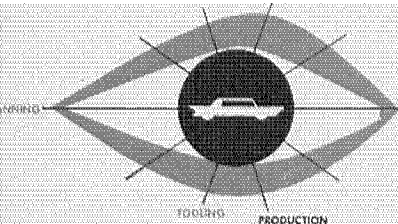


Urethane Foam has cut costs, brought new comfort to auto seats.

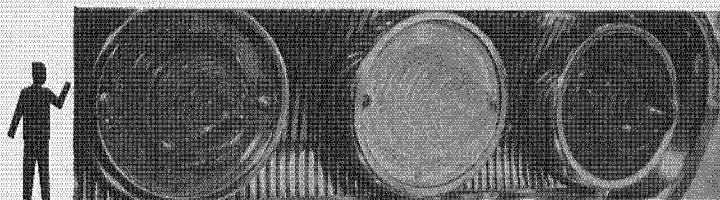
Sealed or gasketed by neoprene: doors, deck lids, hoods, tail lamps.



"Hypalon" synthetic rubber, a relatively new elastomer developed through Du Pont research, has brought longer service life to white-wall tires by virtue of its resistance to oils, greases, ozone, and weathering. Blended with neoprene and other rubbers at tire firm, it provides a tire which resists cracking and deterioration long past the endurance limit of conventional white-walls.



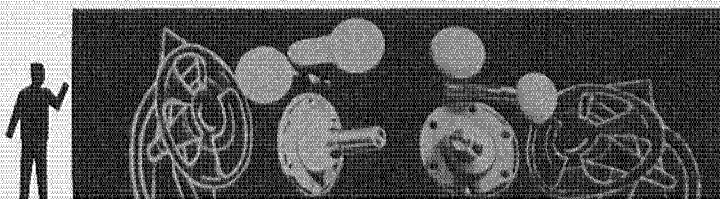
Plastics bring new horizons in auto fabrication and value



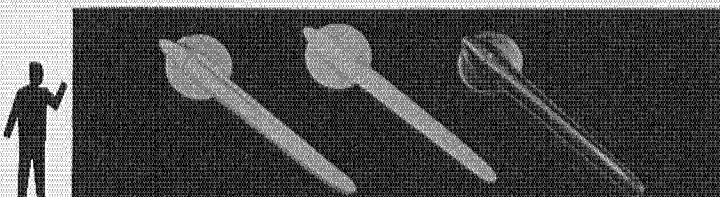
Reflectors and lenses molded of "Lucite" acrylic resin are optically superior to glass, but cost 70 per cent less.



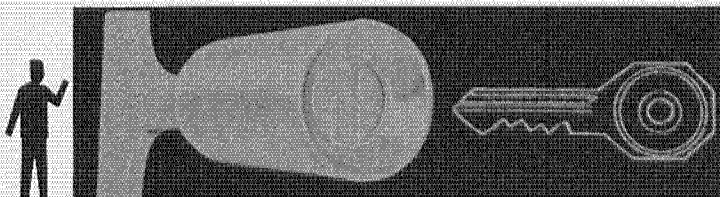
Speedometer gears of "Zytel" cost eight cents, give longer and quieter service than 23-cent gears made of steel.



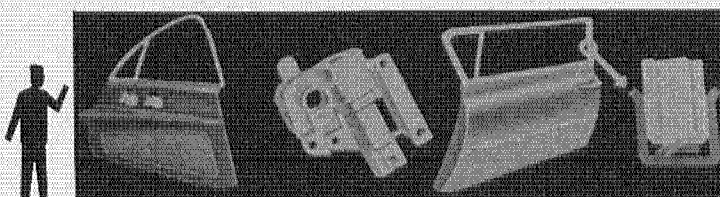
Moral: Seek new plastics applications, such as "grease-less" ball joint suspensions of "Delrin" and "Teflon"...



Or door handles integrally colored in "Delrin", which would reduce costs as much as 30 cents per car...



Or locks of "Delrin" which would operate smoothly under all temperature conditions and would not corrode...



Or door panels, and window channels. In five years, such innovations could save auto makers \$45 million.

Industrial maxim: A new material can rightly replace an older one only when 1) it does the same job at lower cost, or 2) does such a superior job that cost becomes secondary.

On one count or the other, each of Du Pont's plastic engineering materials seems a likely winner. "Zytel" nylon resin is a case in point. Its properties (strength, toughness, lubricity) have opened the door to some 250 automotive uses. The economies of injection molding have done the rest—use of nylon parts results in savings of 50 cents for the average car.

A five-man Du Pont consulting staff works full-time with auto designers and engineers. For their view of the future potential of plastics in cars, see left.



Plastics Consultants—the first group of such specialists ever assigned by a plastics supplier to full time duty in Detroit—are (l. to r.): John McAllister, Harris Goodman, Ralph Richardson, William Scarborough, John Young. Representing Du Pont's Polychemicals Department, they work with auto engineers and molders on all phases of plastics design and technology. Goodman and Scarborough hold test moldings of instrument cluster housings made from "Delrin" acetal resin, a new Du Pont thermoplastic with many metal-like properties. Automotive firms began evaluating "Delrin" three full years before it became available in regular commercial quantities.

Interior Styling

*Nylon upholstery ideas flow to
fabric stylists and automotive designers*

In 10 model years, nylon has surged to a place of eminence in a car's interior: three out of four new cars wear upholstery of Du Pont nylon. This fiber is well suited to Detroit's specifications and needs—it is strong, durable, and abrasion-resistant, and it cleans readily. It can also be dyed to any shade with extreme light-fastness—an important element as many new models have been designed with greatly increased glass area.

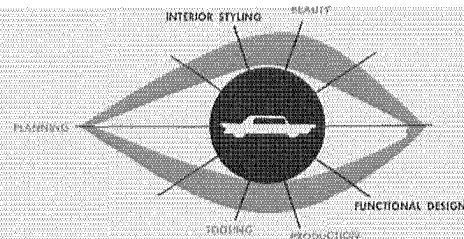
In meeting automotive needs, Du Pont devotes prime

attention to development work carried on at the nylon textile mills that supply automotive upholstery. Fabric stylists at these mills provide suggestions that help automotive designers create attractive interiors. Du Pont's concern is to see automotive styling through the eyes of a fiber producer, planning ahead so as to have the right product at the right time. Prototype fabrics demonstrate styling ideas, but career designers in the mills and at Detroit studios are the innovators and creators of style.

In the 1960 Mercury shown left, the lively colors and textures of nylon upholstery are engineered to combine both beauty and utility. Nylon is used as a warp component; 70 to 100 per cent of the face of the fabric (the sitting surface) is nylon. But decorative effects and added styling appeal is often added through such materials as metalized "Mylar" polyester film. Other yarns are used with nylon to give the fabric bulk without major increases in cost.

Auto designers live two years or more in the future. Living and working in the same way are the fabric stylists in a major supply area, the textile mill. By supporting the creative efforts of both, Du Pont merchandising and technical men help the industry meet its design requirements.

Upholstery Specialist Bob Dugger, Du Pont Fibers merchandising man, visits mills to present latest nylon styling concepts of the Du Pont fabric development group. They may lead to new styles for 1962 or 1963 models. Dugger's "well of ideas" is fed by two Du Pont sources: textile fibers specialists and also the Dyes & Chemicals Division.

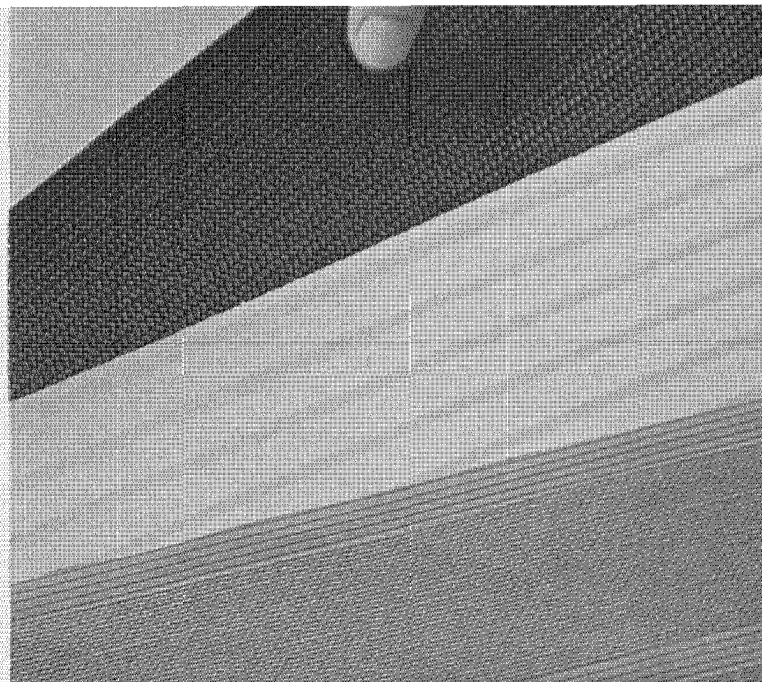


New vinyl fabric designs become creative tools for automotive style studios

Automotive styling follows a definite and logical pattern. The decisions on paint and color come first, then those on body cloth (upholstery), and finally those on upholstery trim. In the last of these areas, Du Pont's Fabrics Division is engaged in a competitive (23 active suppliers) and demanding business in which the key words are Imagination, Durability, and Choice.

Du Pont's pioneering ventures include the use of metallics in vinyl-coated trim; the development of "unit seats," in which one-piece panels are embossed with contrasting grains (eliminating the stitching together of different panels to obtain the same effect); and the creation of special surface textures ranging from simulated cowhide grain to brushed aluminum effects.

Fabric Designer J. Robert Ellefson of Du Pont Fabrics Division, based in Newburgh, N.Y., creates new patterns and embossing techniques for evaluation by auto stylists. They look to coated fabrics for half-a-dozen elements of interior trim as well as seat cushions—especially on station wagons. Designer Ellefson developed the unit design idea for vinyl seat upholstery, in which a single low-pressure roller embosses vinyl in a manner which simulates inlays. It has been adopted by two major truck manufacturers and may appear in passenger cars soon. Recent trend in upholstery trim has been toward combinations of established textures. Example: leather grain plus geometric design.



Styles in "Fabrilit" from Du Pont in 1960 models include this variety used in Ford, Plymouth, Pontiac and Chevrolet models.



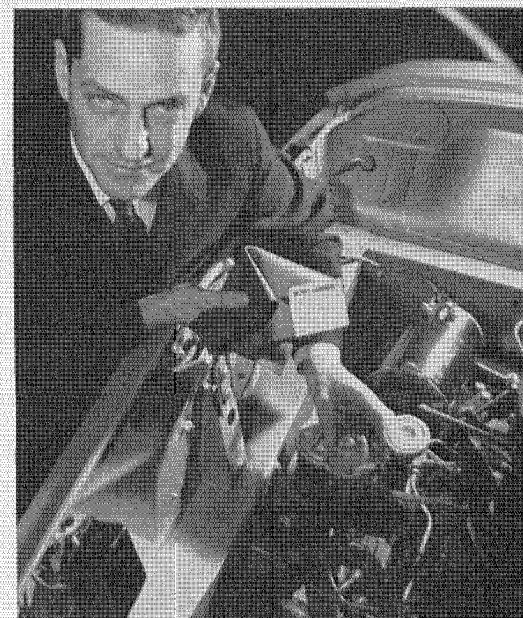
...and **Functional Design**

Du Pont introduced neoprene, the first general purpose synthetic rubber, in 1932. Its weather- and oil-resistance did not go unnoticed by those whose interests lay in coated fabrics.

The resulting product: "Fairprene". These synthetic elastic compositions have proved unique for gaskets and diaphragms in carburetors, fuel pumps, power brakes, and other auto parts.

As changes in fuels, oils, and general driving conditions required modification of the original product line, it became Du Pont's policy to "engineer for the job." For example, the current trend to highly aromatic fuels, and increased problems with ozone caused deterioration of rubber products, led to "Fairprene" FO materials, which swell very little in the new gasolines and show seven times the ozone resistance of previous products, even after long service.

Engineering Specialist in elastomer-coated fabrics is Jerry Gatcomb, a Fabrics Division man in Detroit concerned with applications of "Fairprene" coated fabric in pump and carburetor diaphragms, especially in new engines like Corvair's (right).



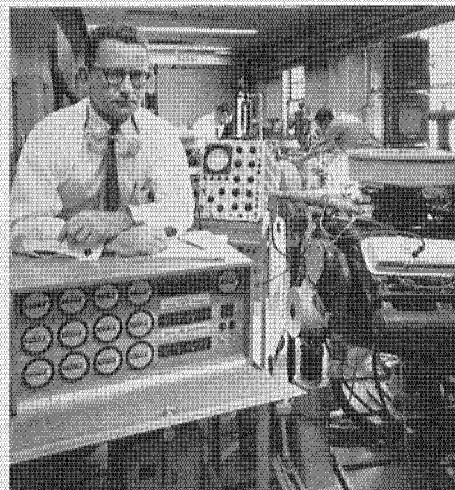
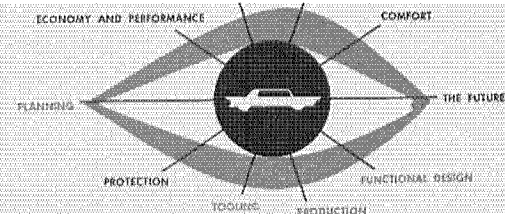
Economy and Performance

Fuel research opens hidden doors

New model development in the auto field (and elsewhere, too) often thrusts a host of new problems at major suppliers. In fuels, where Du Pont's tetraethyl lead and other petroleum additives have helped the oil industry improve engine performance, changes spurred by the swing to high compression engines have been both drastic and subtle.

One aspect of Du Pont's search for new information on fuels is represented by the instrument displayed below,

by Engineer C. Allen Mellinger. It is Du Pont's driving habit recorder, a new electronic device which measures and records the speed and power required of a car. Instruments like this, installed on cars that are driven in heavy city traffic, in mountainous and open country, provide helpful new data. Widely published by Du Pont, such data aids in the development of better auto fuels and more efficient high compression engines.



Laboratory Studies under Engineer Mellinger (left) of Petroleum Chemicals Laboratory take on added significance when extended to the field. Trunk of stock model Corvair (far left) holds driving habit recorder for typical tests. Driving habits—and fuel needs—of 50 different drivers can be studied in a year with each instrument like this installed in cars.

Protection

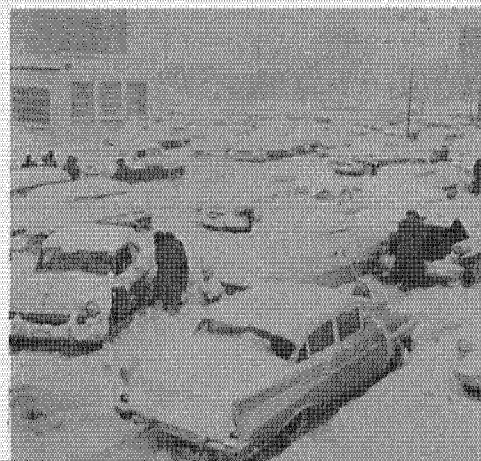
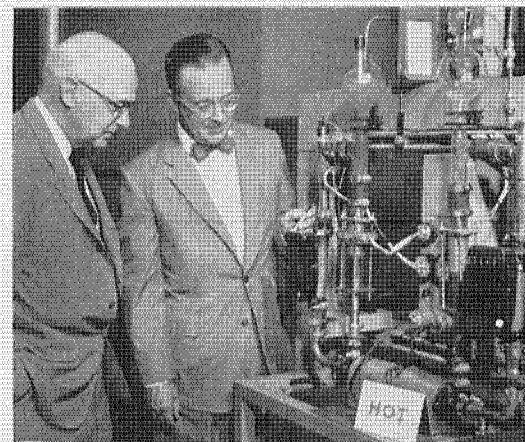
Chemical improvements meet changing needs in anti-freeze

Anticipating Detroit is the stock-in-trade of Du Pont's anti-freeze section. New engine designs (and materials) require new chemicals for protection against rust, corrosion, and cold weather—and an average of three years is needed to develop and test them.

No surprise, then, that Du Pont's "Zerone" and "Zerex" anti-freeze experts began speculating about aluminum engines as long ago as 1945. The possible substitution of aluminum for cast iron presented new problems. For example, chloride in water attacks aluminum faster than it does most other metals. A special inhibitor would be needed.

A suitable compound went on test four years ago and reached the market well in advance of aluminum engines. With speculation beginning on magnesium engines and cooling systems with plastic parts, research is underway on still newer compounds.

Bench Tests give anti-freeze liaison men Frank Keenen (l.) and Edward Harford (r.) valuable performance data. Unique test units above were developed by Du Pont researchers.



Comfort

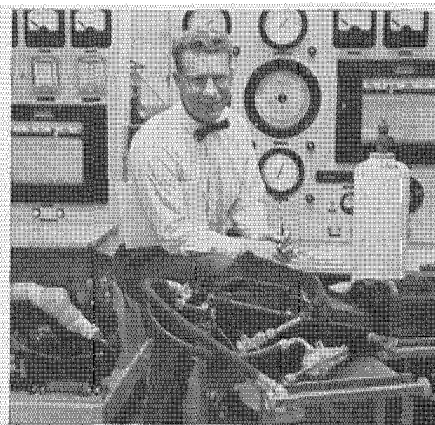
A new dimension is added for year-round driving

This year nearly one out of three new luxury cars and almost one out of five of the "low-priced three" will be air-conditioned. An essential ingredient—"Freon" refrigerants, which link compressor, evaporator, and condenser in the air-conditioning system and produces the cooling.

Though "Freon" is now more than 30 years old, new automotive problems require a continuing pattern of technical service. At Du Pont's Chestnut Run Laboratories, "Freon" refrigerants and lubricating oil undergo 1,000-hour tests in standard new model air conditioners to help develop data for auto designers, manufacturers, service engineers, and custom applicators (those who install cooling systems after car has been built). The effort is geared to defining the chemical and thermodynamic properties of "Freon" and oil, seeking the most stable operating condition that will assure trouble-free performance for the life of a car.

Du Pont development work supports technical programs of the three leading makers of automobile air-conditioning systems as they add a new dimension in passenger comfort not only for the summer months, but also for year-round driving.

Cooling Counsel is function of Don Bar-day, "Freon" Products Div., who conducts auto air conditioning program at Chestnut Run Laboratory. He also advises firms on performance problems involving air conditioning.

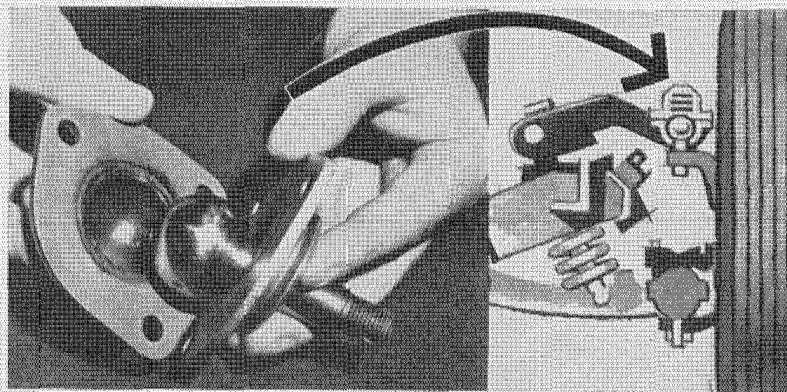


...and as for THE FUTURE

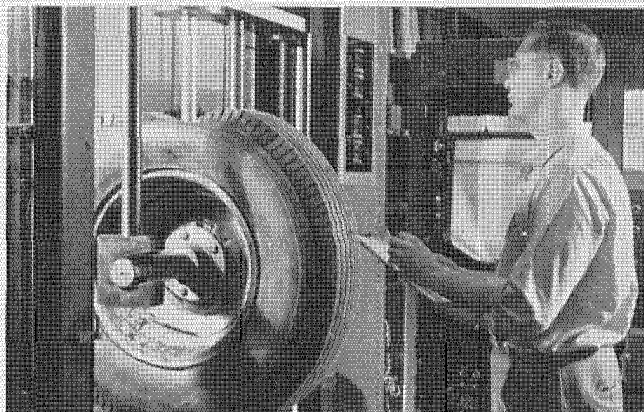
Harbinger for reduced maintenance

A typical passenger car of 1950 carried about 25 grease fittings; today's new models have less than 10. Detroit's development of ball-joint front suspensions accounted for most of this drop, and a low-friction fabric invented by Du Pont may bring the total down to zero. Cups of "Teflon" TFE fiber, bonded in the bearing sockets, would eliminate the need for grease in ball-joint suspensions. Annual potential saving to average motorist: about \$15.

High Loads at low speeds are taken in stride by low-friction auto bearings of "Teflon" fiber. They need no lube and give improved riding comfort.



Laboratory Tests, as well as consumer experience, show tires made with nylon cord have great strength and impact resistance.

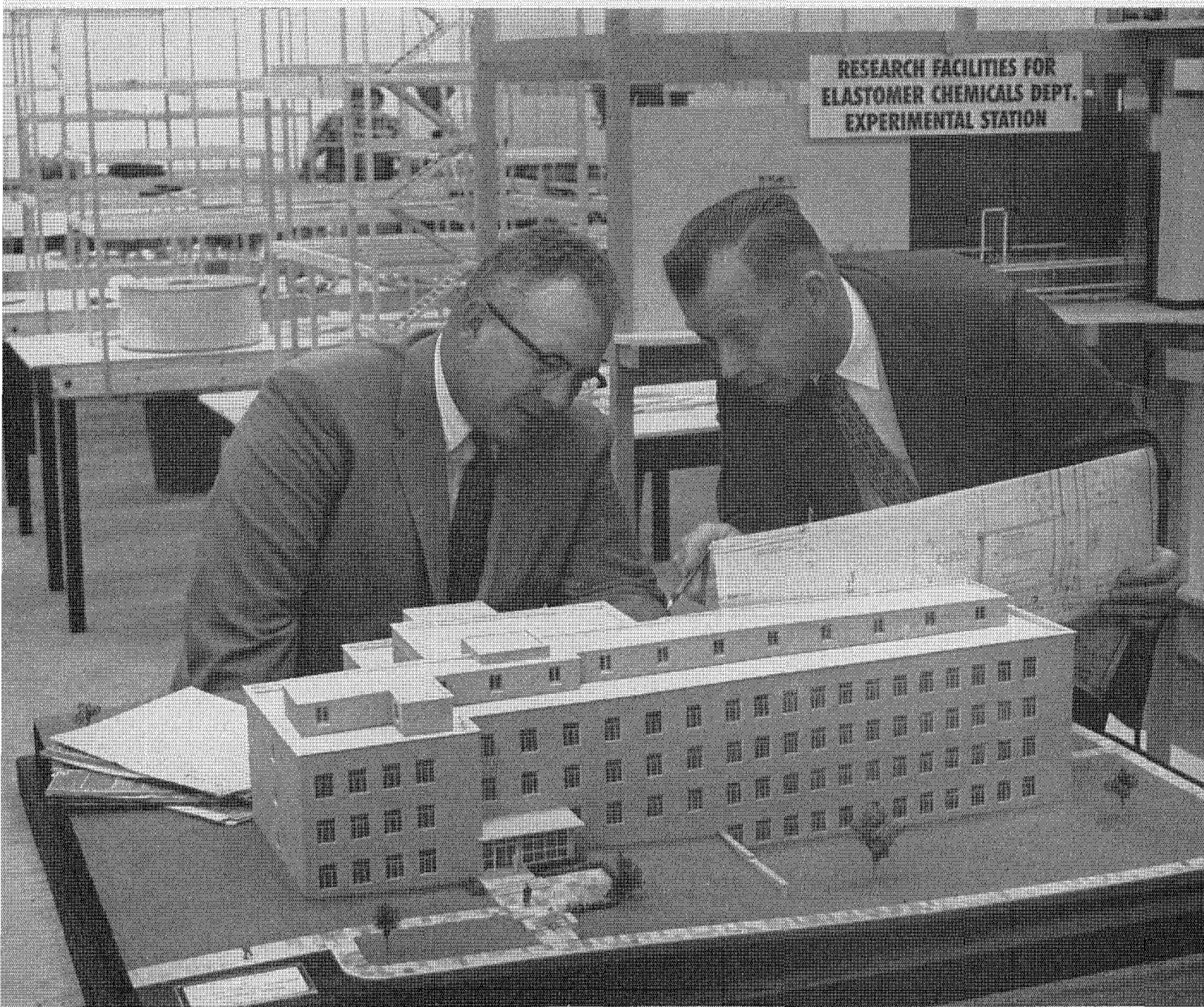


New standard of safety: nylon tires

Du Pont pioneered in the development of nylon cord, now broadly accepted in the replacement passenger tire market and as original equipment for trucks. Nylon cord tires offer an important safety advantage. Day by day this use grows on passenger cars. Because of superior performance in resisting heat, moisture, impacts and flexing, nylons now are used across the board by aircraft manufacturers and race drivers.

A Big Year...and Bright Prospects

For the economy—and for makers and users of chemical products—most curves turned upward in 1959. Du Pont's newly released Annual Report barometers the general pattern: rising sales—plus a steady scientific probe for the new and the better



Model of New Research Building (part of new facilities in 1959) is studied by Laboratory Director Madison Hunt, left, and Design Engineer Fred Maiwurm. When completed in 1960, the new facility will be one of 14 laboratory buildings reared in past decade

at Du Pont's Experimental Station. Exclusive of construction, company research and development expenditures totaled \$90 million in 1959, and utilized talents of 2300 technically trained people helping to find and launch new products for chemical users.

Like a seasoned distance runner, the American economy last year bounded back from its 1957-58 business lag, and set a torrid pace that left few prior records intact. Despite a 116-day steel strike, which at its close was beginning to bite deeply into allied industries, economic indicators nearly all turned upward. Gross National Product—value of goods and services produced—rose to \$479 billion, up 8 per cent over 1958. Industrial production was up 13 per cent; business earnings were high; and personal income climbed 6 per cent to \$380 billion. Most important, 1959 saw more Americans at work than ever before: an average of 65.6 million, up 1.6 million over 1958.

Du Pont's record for 1959, its recently released Annual Report shows, was a miniature of the economy. Company sales reached an all-time high of \$2,114 million, 8 per cent over the previous record of 1957, and 16 per cent greater than 1958. High sales reflected customer vigor, for demand increased in practically all of the company's product lines—and particularly in elastomers, fibers and plastics.

Earnings from Du Pont sources after taxes were \$6.38 per share, only 13 cents under the record set in 1955, and \$1.67 per share over the \$4.71 of 1958. As night follows day, higher taxes followed higher earnings: the 1959 estimated Federal taxes on income were \$294 million, or \$6.43 per share of common stock.

Most important to Du Pont's 80,000 customers: the rising volume of sales combined with technological improvements to reduce production costs and Du Pont prices. The selling prices of company products on the average dropped below the level of 1949 at year-end (see chart, right). Du Pont's index of selling prices was 104 in 1949 (the customary base of 1947-49 equaling 100). By 1951, it had risen to 112; beginning in 1954, however, came a downturn which saw the index at 105 in 1958 and at 103.4 by year-end 1959.

Investment Undergirds Growth

Key factor in bringing down prices was the increasing volume of production; this in turn was made possible by the company's steadily rising operating investment. Since the war, Du Pont has spent close to two billion dollars for new plant capacity, plant modernization and laboratory and service facilities. For this purpose in 1959, expenditures totaled \$174 million, down from the record \$231 million of 1958, but expected to rise to about \$220 million in 1960. Projects in 1959 covered a broad spectrum of products including nylon and "Dacron" polyester fiber; "Delrin" acetal resin, "Teflon" fluorocarbon resin and "Alathon" polyethylene resin; "Mylar" polyester film and polyethylene films; neoprene synthetic rubber; hydrogen peroxide and titanium pigments.

Five new manufacturing units were completed and began operations during the year. Products and sites: sodium and chlorine, and "Oxone" monopersulfate compound, both at Memphis; titanium pigments, New Johnsonville, Tenn.; "Delrin" acetal resin and "Teflon" fluorocarbon resin, both at Parkersburg, W. Va.

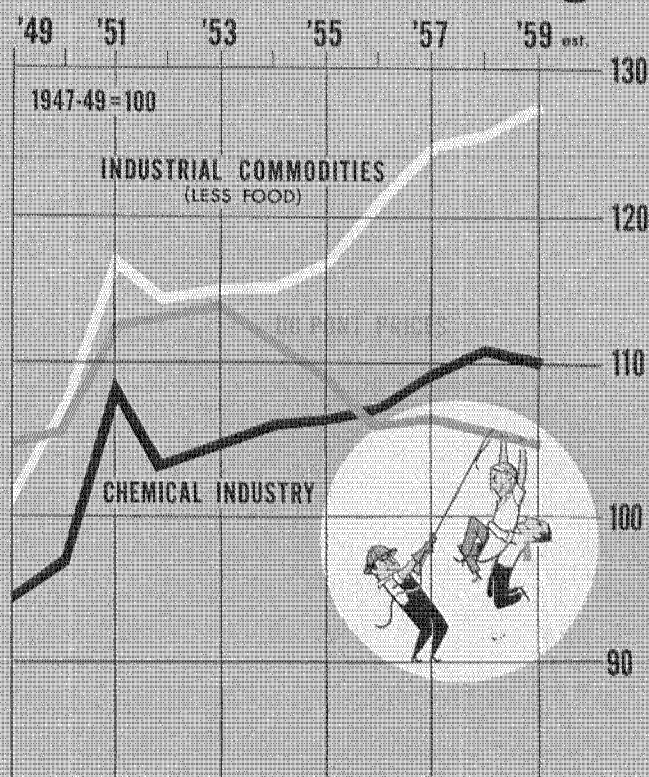
Commenting on the vigorous U. S. business activity, Du Pont President Crawford H. Greenewalt observed at year-end: "In few earlier years has the real strength of our economy been so apparent or so widely recognized." And prospects for 1960 seem similarly bright. In Du Pont's case, Mr. Greenewalt said, "We expect a good year in 1960 with sales increasing perhaps 5 per cent over 1959."

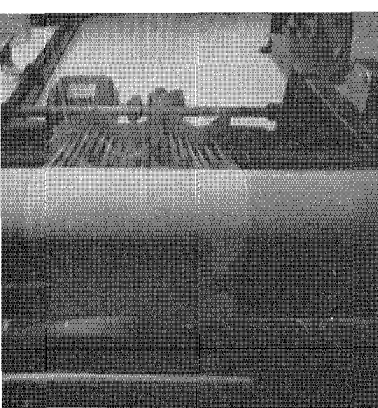
BIG YEAR IN BRIEF

In 1959, Du Pont:

Sales were	\$2,114 million
Paid suppliers	742 million
Spent for new and improved plants	174 million
Spent for research and development	90 million
Paid total taxes of	342 million
Paid dividends of	331 million
Average Operating Investment was	2,745 million
Employees numbered (year-end)	86,265
Stockholders numbered (year-end)	217,571

DU PONT PRICES: They buck a rising trend

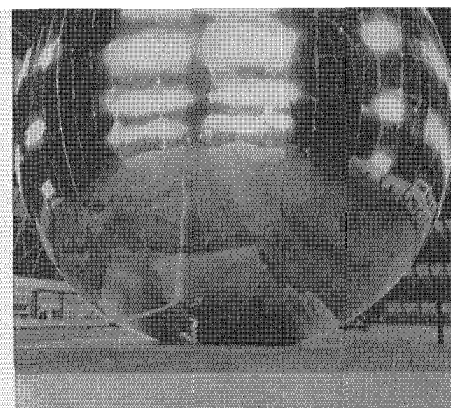




"Lycra" spandex fiber, seen in warping operation at Warner Brothers Co., Ashaway, R.I., was announced in 1959, will find first uses in foundation garments, as reported on pages 2-4.



Hyperpure Silicon, so highly refined that impurities are measured in parts per billion, is finding fast-growing markets. Brevard, N.C., plant, only two years old, is being expanded to produce single crystals. Among major product uses to date: in automotive electrical systems, solar cells giving power to satellite transmitters.



100-Foot Space Balloon of "Mylar" polyester film dramatizes properties of toughness, flexibility, resistance to temperature extremes. So thin it folded into a 30-inch package for rocket, potential satellite was launched, inflated at altitude of 250 miles.

DU PONT REPORTS:

Product Progress, Overseas Expansion Highlighted 1959

A number of potential bellringers were heard among Du Pont's new product announcements of 1959. Typical of youngsters whose plant is complete and introductory sales begun was "Delrin" acetal resin; this new thermoplastic's properties fit it for countless engineering applications in industries ranging from machinery to automotive.

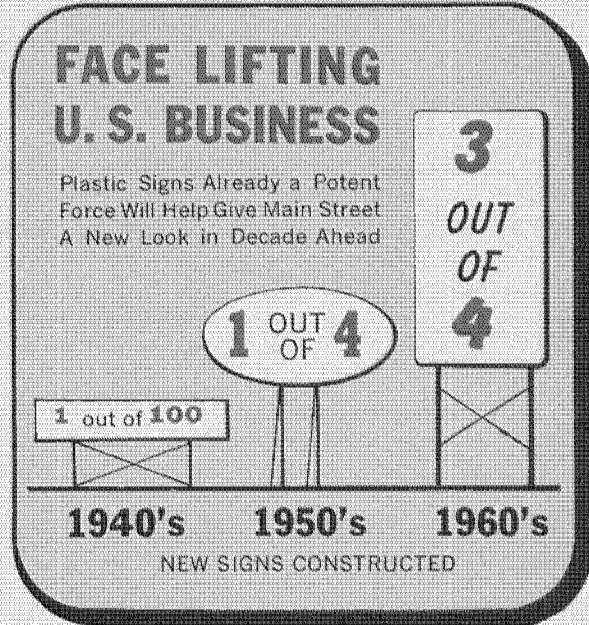
But 1959 business, and 1960 prospects, were also good for older, established products. Sales of Du Pont nylon, "Orlon" acrylic fiber and "Dacron" polyester fiber all were up. In films, continued growth of cellophane is expected, and new plants are under way to make polyethylene film and "Mylar" polyester film.

Inflatable Neoprene Tube performs spectacular feat of damming Los Angeles River. The 150-foot tube of nylon fabric coated with neoprene is inflated in 25 minutes, diverts water to settling basins. In storm, when full stream capacity is needed, dam col-

lapses automatically. Neoprene resists sun, weather, ozone and damage from flood debris. In addition to expanded production of neoprene, 1959 also saw progress in three newer Du Pont elastomers: "Hypalon", "Adiprene" and "Viton" synthetic rubbers.

In plastics, expanding markets for "Alathon" polyethylene resin spurred construction both on expanded facilities, and on Du Pont's first commercial plant to make high density polyethylene. In metallics, Pigments Department's hyperpure silicon multiplied its uses; and in the belief that such metals as titanium and columbium hold much promise in modern technological applications, a metallurgical research center is being built at Baltimore. Most important of the elastomers marketed by Du Pont is neoprene. Domestic and export sales have expanded to such an extent that Du Pont Company (United Kingdom) Limited, a subsidiary, has been building a plant in Northern Ireland which will soon begin production. This plant is part of a major expansion of Du Pont overseas operations to serve the economic upsurge of the European Economic Community. Among other ventures in the program are a new "Orlon" acrylic fiber plant at Dordrecht in the Netherlands, and a new finishes plant that started production in Malines, Belgium, in late 1959.





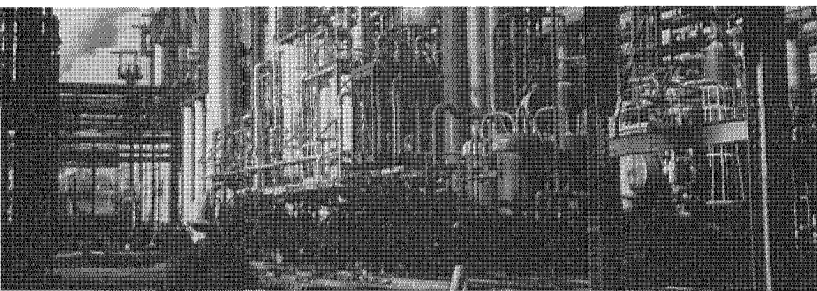
BRIGHT NEW FACES for U.S. Shoppers

To U.S. businessmen few things are more fundamental than strong product identification. Shopping center and city street are widely recognized as a stage set for American enterprise—a place where product and business can be displayed tastefully and effectively.

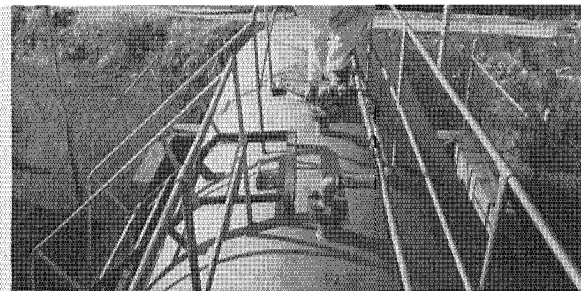
Some bright new faces are gleaming for U.S. shoppers, as the sample (left) suggests. The reason: widespread use by the nation's sign industry of a plastic product—cast acrylic resin sheeting. Sign companies use three types of signs (other than billboards) in outdoor advertising: metal, metal with neon, and acrylic resin. Of these, cast acrylic resin is fastest growing. It is light in weight (needs less support); it resists breakage and does not corrode. In addition, with internal lighting, a plastic sign creates startling visual impact—a prime requirement in outdoor advertising.

Already over 25 per cent of signs now being made incorporate plastic. The proportion is growing year by year. For as the raw-bulb era of the '20's and the neon-age of the '30's and '40's fade into the past, new plastic signs of cast acrylic resin are building an ever more attractive product and business image. The picture report on the following two pages shows how Du Pont customers help to bring this about.

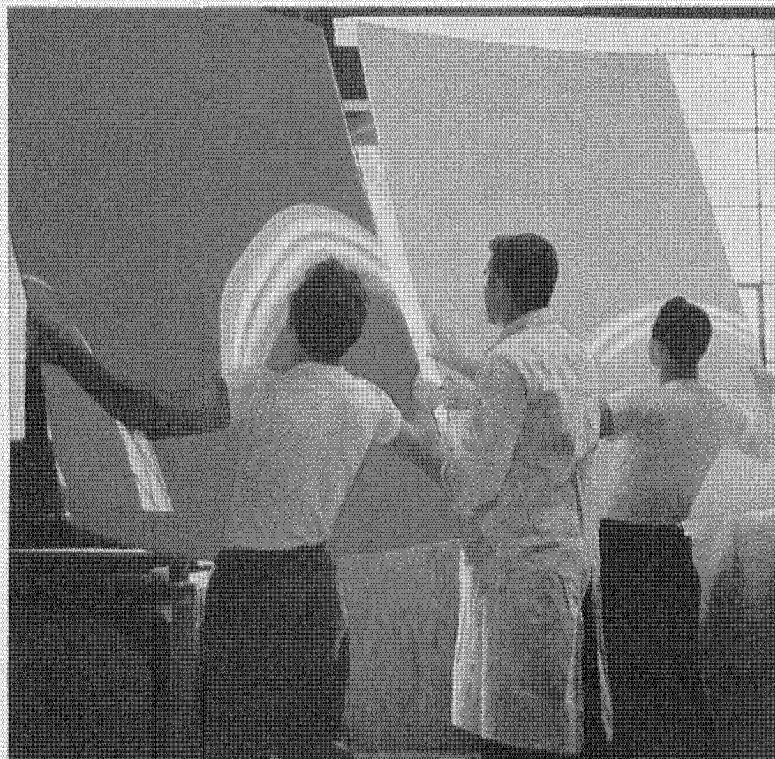
Continued



1 Methyl Methacrylate Monomer is produced by Du Pont at its Belle Works in Charleston, W. Va. Output is geared to needs of diverse customers, including those in automotive, aircraft, building, sign and other industries. Sign use of acrylic monomer has been increasing rapidly in last decade.

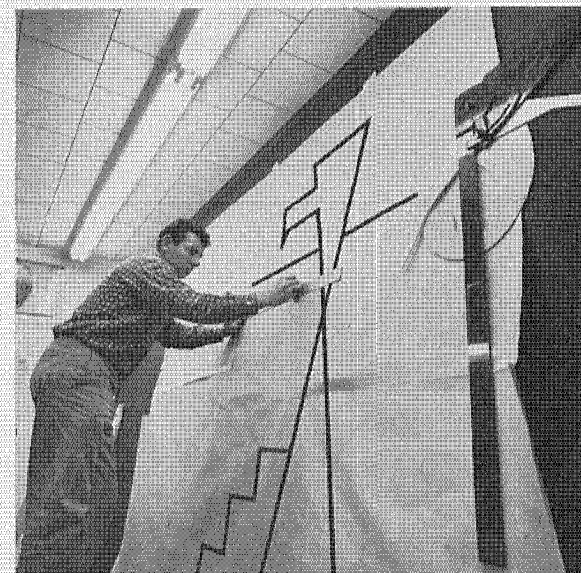


2 Tank Truck brings 4,000 gallons of acrylic monomer from Charleston to Cast Optics plant in Hackensack, N. J. where Joseph Fridella (foreground) opens valve on storage tank. Truck carries enough monomer to make cast acrylic resin sheeting for 5,000 average-size signs.



4 Sheet Inspection is final step at Cast Optics prior to wrapping and shipping. Curved pattern on sheets held by Pedro Ufret and Milan Segarra is reflection of overhead fluorescent lights. Cast Optics employees are now making 900 sheets of acrylic resin a day under Shop Superintendent Irwin Gold (center). About one-third of their production goes to sign industry.

HOW BRIGHT N



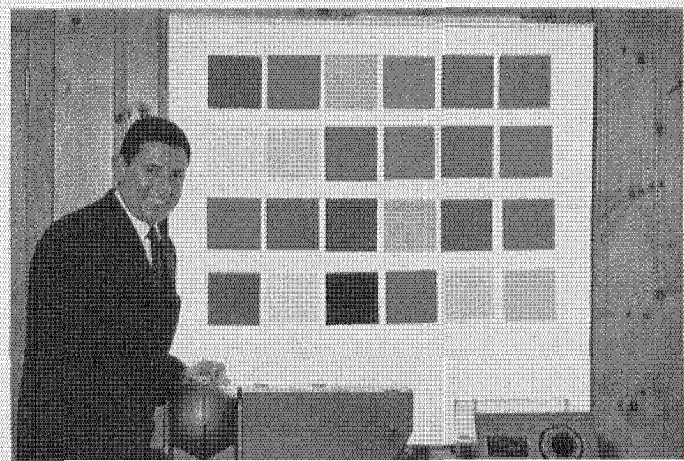
5 Sign Planning at one of Cast Optics' 500 customers shows Layout Specialist Ed Leonard of Cutler Electrical Products in Philadelphia scaling up design. He takes architect's sketch of Thunderbird up to full scale size on paper for use in the Cutler shop as a sign pattern.

What's new with a maker of acrylic sheeting

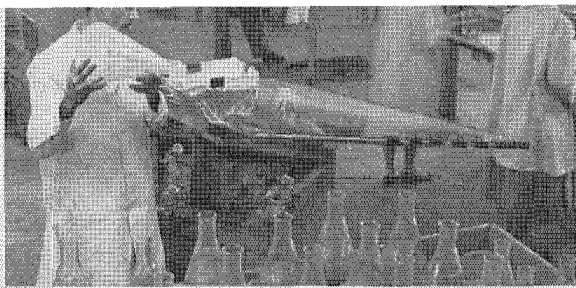
The seven-step sign sequence pictured above shows how a Du Pont customer (Cast Optics of Hackensack, N. J.) links raw material supplier with sign fabricator to help create a distinctive new plastic sign of Du Pont acrylic monomer.

Like many plastics customers, Cast Optics is a relatively new business.* It was started in 1946 in a two-car Long Island garage. In 1947 it rang up only \$12,000 in sales; but today, with over 125 employees and six tons of capacity, Cast Optics' cast acrylic resin sheeting has dozens of uses ranging from airplane canopies to shock-proof watch crystals and skin divers' masks. New ideas (right) continue to help Cast Optics grow.

Color Sheeting made by Cast Optics includes 45 standard shades (20 are shown here) by Norman Germanow, vice president. Cast Optics have recently added a new California line of five pastel shades to help give their customers' signs a new look.

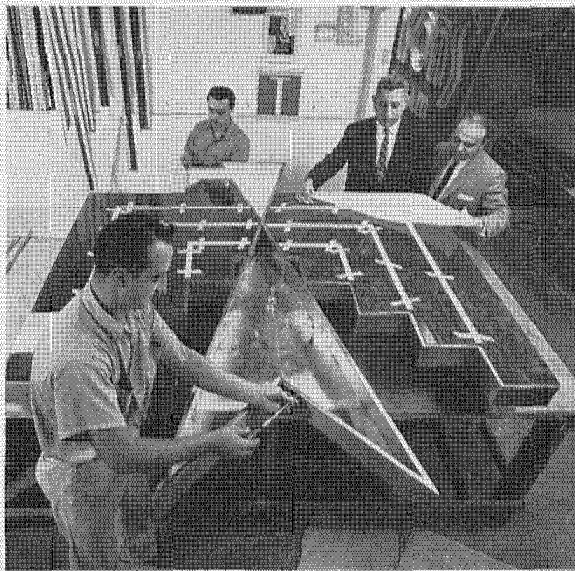


* Other post-war newcomers in cast acrylic sheeting for signs, lighting, and glazing—all Du Pont tank-truck acrylic monomer customers—include: Polycast Corp., Stamford, Conn.; Wasco Chemical Co., Cambridge, Mass.

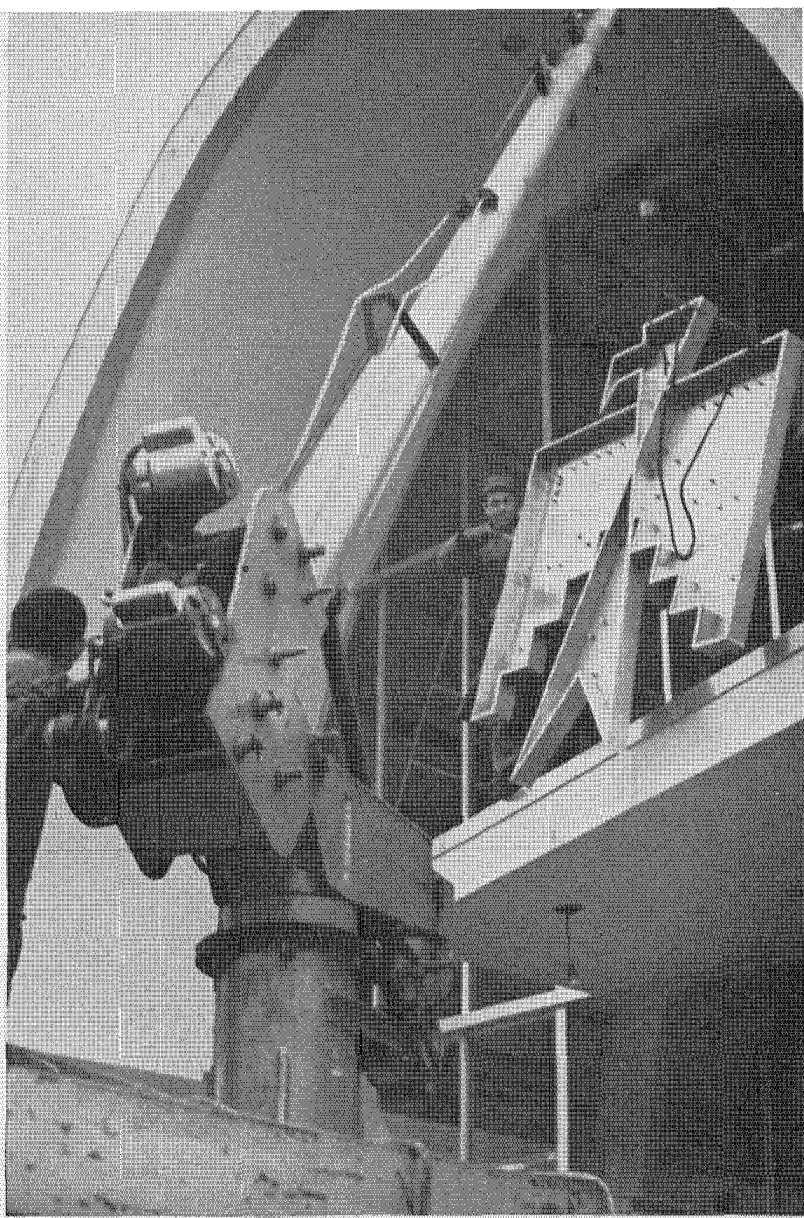


3 Sheet Casting in Cast Optics plant is key manufacturing step, before curing in ovens. Cast Optics makes sheets up to 72" x 96" in size. Carlos Cupelez uses four flasks of monomer for sheet this size as he pours thickened monomer between sheets of polished glass.

FACES ARE BUILT



6 Sign Building involves range of skills, including engineering, metalworking and electrical. Eight-foot Thunderbird sign is assembled by Fabricators Anselmo Spano and Ted Pacitti at Cutler Electric as President David Cutler and Vice President Sal Caniglia check sketch.

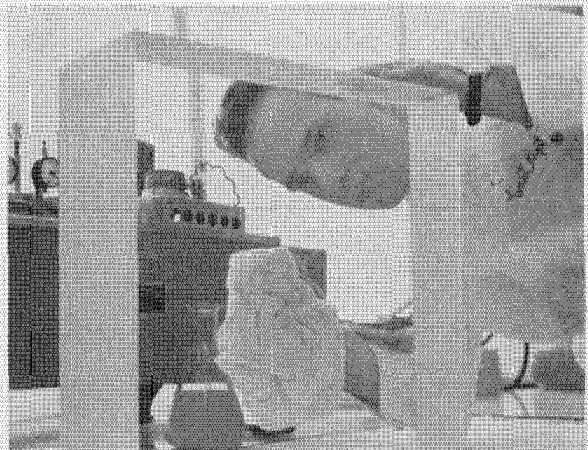


7 Sign Erection by Cutler crew completes service of large and small firms to shopping center customer, the new Thunderbird Bowlerama near Fort Dix, N. J. Only a few dollars of acrylic monomer go into sign like this. Work of sheeting firm and design and construction of sign manufacturer yield real value for retailer.

nd Plant, inspected here by William Chap-
president, and Germanow adds 32,000
re feet of production space. It will be used
ast Optics for casting larger sheet sizes.

Product Improvements include cor-
rugated sheeting supplied to sign firms.
Du Pont Salesman Jack Gay (right) dis-
cusses improvement recently introduced.

Large Blocks of acrylic resin, measuring up to 24 inches
thick, are new for atomic energy field. As shield in
atomic reactors, they protect against neutron radiation in
viewing area. Michael Kahn, sales manager, checks block.





Paint Check by TV star June Allyson and producer-husband Dick Powell precedes complete boat overhaul of the new family yacht, the "Caprice," with Du Pont finishes.

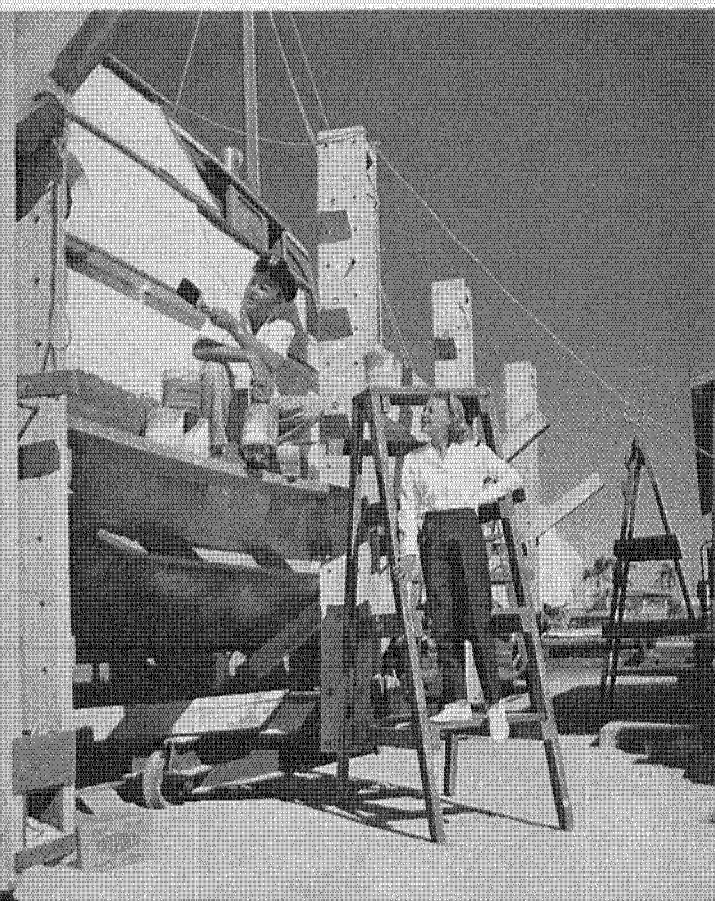
Boat Refinishing

Hollywood stars June Allyson and Dick Powell

explore this fine art as "Dulux" marine finishes

help to ready their yacht for spring

Paint Job Under Way brings Dick and June to California boatyard for inspection. Dick found moments to do a little painting himself.



Sanding both above and below the waterline is first step in hull refinishing. Where finish has been badly neglected sanding should go to bare wood. Hull should be checked for nicks, gouges and open seams. These should be sealed with "Dulux" Natural Paste Wood Filler after priming.

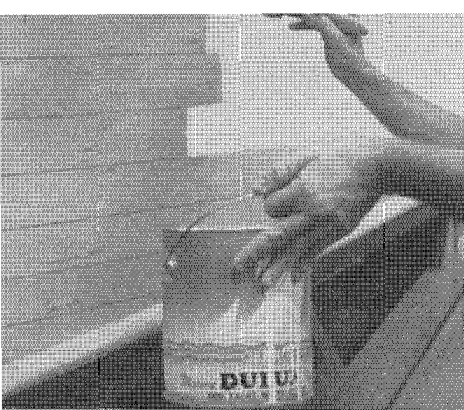
If you're a yachting enthusiast, there's no question but what you've been exposed to the painstaking art of refinishing a boat—a nautical effort that more and more Americans undertake each year as they prepare for a season of fun on the nation's coastal waters, lakes, rivers and streams. More than likely you know the time it takes to ready a boat for launching and the difference good paints and finishing materials make in a boat's appearance. This year, as some 8.5 million skippers get their boats set for the biggest yachting season on record, refinishing will be a familiar sight in the boatyards, backyards and garages of America.

One family that's put weeks of thought and time into boat refinishing is the Powells of Hollywood, California—namely TV and movie producer-director Dick Powell, his wife, June, who is hostess-narrator of the "Du Pont Show with June Allyson," and their youngsters Ricky and Pamela. In recent weeks, as pictures at the left indicate, the Powells have been refinishing and outfitting their new cabin-cruiser, the "Caprice," fitting her out—with the aid of their skipper—for a season off California.

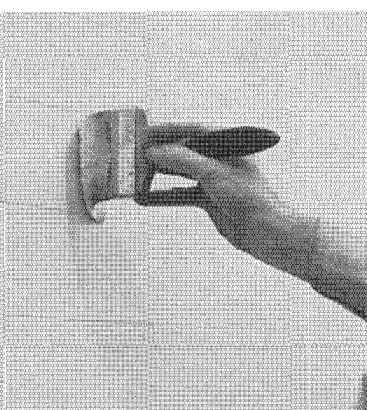
The "Caprice" is a metal-hulled boat, 55½ feet



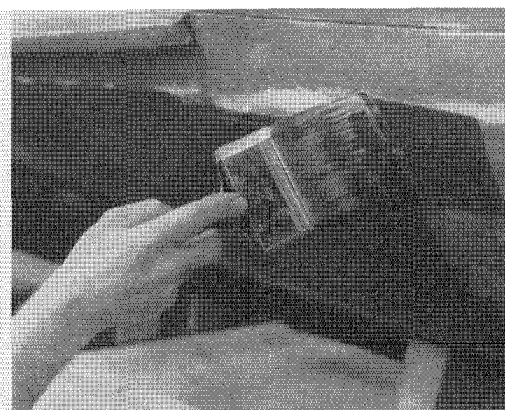
Brightwork (spars and natural wood surfaces) should be sanded thoroughly and finished with "Dulux" Ultra V Spar Varnish. This varnish is one of the newest products of Du Pont research, and lasts from two to three times longer than spar varnishes previously available. Neglected wood turns black, even rots.



Primer or undercoat of "Dulux" Yacht White is applied to topside (area above the waterline) after sealed areas have been sanded. Bottomside (area below waterline) is not painted until final coat is applied to topside of boat.



Final topside coat may be either "Dulux" Yacht White, Flat, Semi-Gloss or Gloss depending on finish desired. Here the second and final coat of Gloss is applied. A wide variety of colors is also available in the "Dulux" marine line.



Bottomside gets two coats of "Dulux" Anti-Fouling Bottom Paint. First coat is reduced one pint per gallon with "Dulux" Marine Thinner. Final stage is painting boottop (line between top and bottomside) with Boottopping Enamel.

ing, built in Holland in 1952. It is powered by twin 127 Diesel engines. This winter, she's had the works in new paint. Products used were from Du Pont's "Dulux" line of marine finishes.

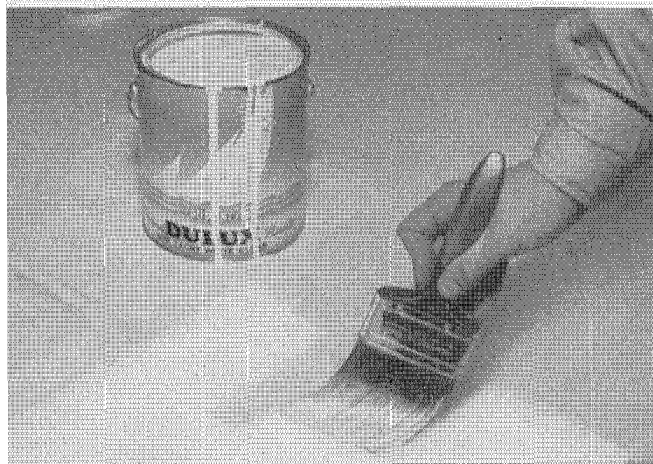
Other yachtsmen today are getting away from the traditional white hull and are combining two-tone greens and blues. The "Dulux" marine line (pictured below) includes nearly twenty-five different colors for the hull or deck. Dozens of new, distinctive colors are available through the use of Du Pont Custom Tinting Colors combined with Ship and Deck Enamel and "Dulux" Yacht Tinting White Gloss.

This year Du Pont's expanded line of marine paints is to be found in leading yards, marine stores and boat manufacturers from the Atlantic to the Pacific—wherever there is water. Summarized in a marine booklet, too, are some tips on boat finishing, a number of which are illustrated here for yachting enthusiasts.

Complete information on products and procedures is contained in Du Pont's "Painting Handbook for Boat Owners." Copies are available by writing Editor, Du Pont Magazine, Du Pont Company, Wilmington, Delaware.



Recaulking of deck is done with Du Pont All Purpose Caulking Compound. Above, deck has been masked with tape and compound is being applied. Caulking gun helps seal seams quickly.



Various Decks should be well covered with a good deck paint. Care should be taken so as not to apply too much. Excessive paint will crack, make decks slippery in wet weather. Above, deck gets second and final coat of "Dulux" Yacht White Enamel.

Marine Line of Du Pont finishes and other products shown against a "Pacemaker" cruiser includes "Dulux" paints, brushes made with "Tynex", "7" Seas specialties.



PAPERMAKERS TRIM PIGMENT WASTE

*A reducing plan made possible by new "Ti-Pure" HR titanium dioxide
is saving mills as much as 15 per cent in pigment costs*

"This solution is milky because dispersed particles of titanium dioxide have run right through the filter paper," explained the Du Pont man, as he held up two test tubes for examination.

Dr. Harold L. Brill, paper section manager at the Pigments Dept.'s sales service laboratory, has gone through this simple demonstration more than 50 times as he and other Pigments men showed U. S. papermakers the first titanium dioxide pigment ever tailored especially for them. It's called "Ti-Pure" HR (for high retention).

The prospect of improving pigment retention brings gleams to the eyes of cost-conscious papermakers. They have liked titanium dioxide for the effective way it adds opacity and brightness to printing papers. But they have been less happy about the amount that is lost during papermaking.

Large quantities of conventional titanium dioxide slip through the mat of pulp fiber at the wet end of the paper machine, just as they run through the demonstration filter, and run off in the effluent. Now "Ti-Pure" HR promises significant

cost savings because less of it gets away, as the clear solution in the test tube dramatically shows.

Key to the staying power of "Ti-Pure" HR is its resistance to starch, which often is present with other materials and the paper pulp. To make fine particles of titanium dioxide clump together into bigger ones so that they won't slip through the pulp mat, papermakers add alum or other flocculation agents. Starch sizes and improves the strength of paper but, unfortunately, it is also a powerful dispersant, capable of breaking up the more fragile flocculates.

So common is starch in paper mills that it's almost impossible to keep it out of the wet end, even when direct addition is stopped. Most existing retention aids lose much of their effectiveness in the presence of starch and agitation. Therefore, it seemed to Harold Brill and Pigments Dept. research men that a new approach in the form of a modified titanium dioxide might do a still better job. The requirements were stiff, Brill admits, but development work began. The result was "Ti-Pure" HR, which quickly showed promise in field trials and is now available in commercial quantities.

The success of "Ti-Pure" HR is best and most easily measured by the improvement it makes in "one-pass" retention. In a typical plant run, the titanium dioxide content of finished sheets varied like this: Conventional titanium dioxide plus a retention aid, 5.0 per cent; "Ti-Pure" HR plus same retention aid, 6.1 per cent; "Ti-Pure" HR plus retention aid, high lime and high alum, 6.4 per cent; and "Ti-Pure" HR and no retention aid, 5.2 per cent.

Pigment Placement Controlled

While high one-pass retention is not the only measure of a pigment's effectiveness, Brill emphasizes, it does point the way toward more uniform paper quality. Moreover, it curbs losses of titanium dioxide into nonpremium papers when small orders have to be run, and it reduces the load on pigment-catching "save-alls."

Although the widely used save-all system of reclaiming pigment from white water cuts losses, it has some drawbacks. For example, a mill may have completed a run of paper which contains titanium dioxide. The next paper scheduled requires no titanium dioxide, but through the save-all method, the second run is inadvertently upgraded beyond specifications. The same thing can happen when two adjacent machines share a return system, unless both are running titanium dioxide-filled paper. Through the use of "Ti-Pure" HR, more titanium dioxide is retained in the paper on the first run and smaller amounts are returned to the save-all system.

Several mills that recently have switched to "Ti-Pure" HR report savings of 15 per cent in pigment costs. Opacity and brightness of sheets filled with "Ti-Pure" HR are similar to those of commonly used beater grades of pigment. Retention of the new grade also is often significantly better when no starch is present.

"We're now actively working on other pigments to solve specific papermaking problems," Brill says. The goal, he explains, is to tailor new pigments to fit a growing industry.

Desk-top demonstration helps Dr. Harold Brill show papermakers how new high retention titanium dioxide pigment, "Ti-Pure" HR, can reduce costs.





Survey Men Focused Sights on homes in every portion of U.S. in air conditioning market studies made by "Freon" Products Division. They found 9 out of 10 homes without climate control,

at the mercy of heat waves, and pointed to size of potential market. Most important, they focused on sales barriers, dredged out hard facts on why people did—or did not—buy air conditioning.

A closeup look at

Cold Facts For A Cool Business

In 1890, Charles Dudley Warner voiced an ancient human irritation: "Everybody talks about the weather, but nobody does anything about it." Today, air conditioning manufacturers are proving it isn't so—and one of their prime tools is a pioneering profile of present and potential consumers

A century ago, a Florida physician named John Gorrie invented a machine that made ice cubes the size of paving stones, but mankind was still doubtful that you could improve much on nature. One newspaper called him "the crank who claims he can make ice as good as God Almighty."

Today, however, an industry with 600 plants and half a million cranks of Gorrie's type is working year-round to improve the climate in American homes. Fresh from triumphs that range from cooling atomic reactors to providing climate control for industry and such huge installations as Rockefeller Center, the Air Conditioning and Refrigeration Industry is now focusing its sights on a prosperous nation of 51 million houses. At first glance, the prospects seem golden, but there's a hitch: unlike industry, the householder does not *have* to control heat and humidity; if he chooses, he can swelter. And in the past decade, when the time seemed ripe to do something

about his weather, he proved mighty whimsical indeed.

Between 1946 and 1949, something like 60,000 room air conditioners were installed in homes, less than half the units produced. Even in 1954, only 560,000 were installed, compared to 7.3 million TV sets, and the market fluctuated unpredictably from year to year. A hot summer meant a shortage of units; conversely, a cool summer meant overstocked inventories and serious business losses.

For Du Pont's "Freon" Products Division, the matter was not one to look upon unmoved. Its fate and its customers' were inseparably intertwined. Markets for "Freon" would grow rapidly only if its customers' markets grew, as was amply proven by the history of the product. In 1931, when "Freon" fluorinated hydrocarbons gave industry a refrigerant that was non-toxic, non-flammable, and non-corrosive, a breakthrough came in home refrigeration. The icebox departed and new types of "Freon" were developed in subsequent years as markets grew.

What Surveyed Owners Liked Most About Air Conditioning:



Personal Comfort and the feeling of coolness outranked all other owner satisfactions. With an even, non-humid temperature throughout the house, they said, family enjoys home life, is together more, can eat normal, cooked meals and entertain indoors in summer.



Restful, Refreshing Sleep in hottest weather was air conditioning boon cited by all owners; husbands said they felt more efficient at work, and wives said children were less irritable, had better appetites, took daily naps, and suffered far less from heat rash.

Cleanliness, freedom from dust was applauded by housewives. Drapes, furniture and other interior furnishings do not require cleaning so frequently when dirt and dust are filtered from the air, thus lightening the chores of sweeping, mopping, dusting.



"Thus, in air conditioning, we, like our customers, were hungry for factual information on our problems," recalls R. L. Williams, who is manager of refrigerant sales to equipment manufacturers. "Just who had bought the air conditioners being sold each year? Why were they buying? What did they think about their engineering, styling and performance? Were they satisfied? What prejudices or misconceptions did they hold? We felt that if answers could be provided to the air conditioning industry, customer business would expand, and hopefully, so would ours."

Thus, in 1955, the "Freon" Products Division launched a full-scale, nationwide survey on Room Air Conditioners. A year later, a similar study was made on Central Residential Air Conditioning, and this was later followed by a study of Commercial and Industrial Air Conditioning. In each case, findings were distributed to the industry.

And the reception? Most gratifying, says Williams, one of whose proudest possessions is a bulging "cheer-up" file of letters from customers. Typical of customer comments among his souvenirs: "this type of research from an unbiased source is of great value to the manufacturing members of this industry;" "... the influence of your (studies) will be felt for many years to come;" "... the finest thing that was ever done in this industry."

Why the enthusiasm? "Well," says Williams, "hard facts were something we in the industry had never had before. The survey findings eliminated hunches and guesses, and gave objective information which could be used as a sound basis for sales and advertising campaigns."

Key fact established by the 1955 survey, on room air conditioning, was an astonishingly low penetration of the market. Only 4.3 per cent of the 13,441 householders interviewed said they owned a room unit, which meant that just short of 90 per cent of the nation's homes were without some form of man-made cooling.

Surveys Spotted Misconceptions . . .

In addition to detailed findings on market size came a flood of facts on both owners and non-owners—their likes and dislikes, possible mistaken notions and their suggestions for improvements. The surveys revealed, for example, that the public is only beginning to discover that air conditioning means more than cooling—that it also means cleaning air, circulating it, controlling its humidity, filtering out dust and pollen. Likewise, it became clear that actual owners were true enthusiasts. Asked, "Are you fully satisfied with your purchase?" a whopping 84 per cent of room unit owners and 85 per cent of those with central systems said "yes."

As for "cost," an item that worried non-owners, one-third of room unit owners were so pleased with results they hadn't even bothered to check; only 16 per cent of home owners estimated their electric bills went up more than \$7.50 a month. Even in centrally air conditioned homes, 25 per cent of owners did not apparently worry enough about operating costs to calculate them; half reported expenses roughly equal to winter heating.

One of the most significant—and surprising—comments of non-owners was that air conditioning was harmful to health. Owners reported that just the opposite was true. In the room unit study, for example, 28.4 per cent of all respondents said that they had made their purchase specifically to relieve some family member's hay fever, asthma, or sinus trouble.

Relief for people with heart trouble was also frequently applauded by owners. Scientific backing for their belief that the heart works harder in hot, humid weather is, in fact, borne out by pioneering studies on fatigue made by the staff of Du Pont's Haskell Laboratory of Toxicology and Industrial Medicine. Hard industrial work combined with heat, Dr. Lucien Brouha found, causes major modifications of man's physiological balance—produces a rise in body temperature, faster heart rate, greater cardiac output, partial dehydration, weight loss and muscular fatigue.

Pointing to heart-rate recovery curves after work at high and low temperatures, Dr. Brouha says, "One can see that in the coolest environment, a much greater amount of work could be performed with the same maximum heart rate at the end of work, and a much faster recovery than in the warmer surroundings. Thus more work can be achieved in the cool for less physiological cost."

For such reasons, the installation of air conditioned rest areas for workers has become common in high temperature process areas.

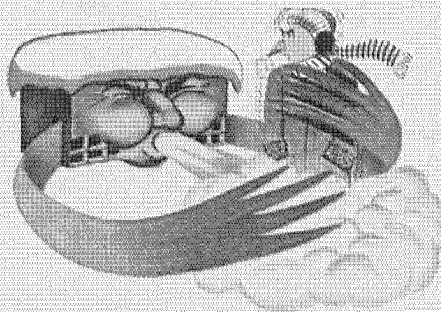
Benefits Promise Growth...

Unquestionably, experts say, the comfort, personal well-being and positive health benefits of home air conditioning promise growth—and the intimate market knowledge unearthed by the series of Du Pont surveys lays a groundwork by identifying sales barriers.

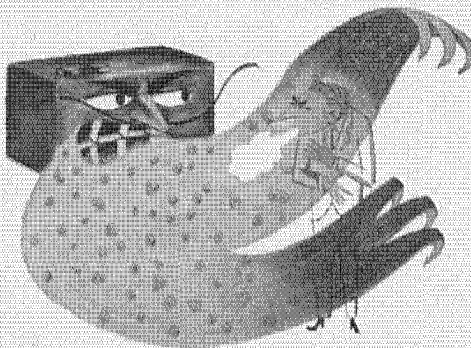
But it's not likely that growth will be automatic. Room unit sales in 1959 were about the same as those in 1956; and while twice as many homes have central air conditioning as did five years ago, the total is still only 900,000.

To tap this potential market is the big challenge, says Carl S. Oldach, Director of Sales, "Freon" Products Division. "Our industry's basic job," he opines, "is to improve the consumer's knowledge of air conditioning, to bring him into contact with it, and to dispel his misconceptions. As the surveys suggest, well-conceived sales and advertising efforts, promotional work with builders, educational campaigns—all will be necessary to finally convince the householder it's time to provide his family with air conditioning and all its attendant benefits throughout the year."

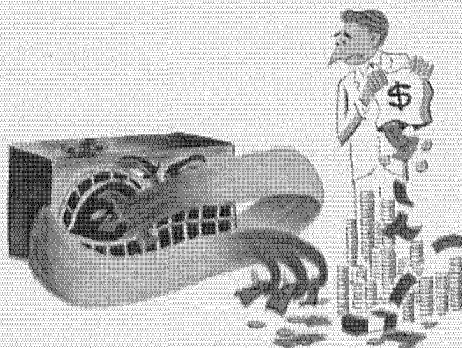
Fantasies:



Many Non-Owners thought room units were too cool or caused colds, they told survey teams. Often they said public air conditioned places were too cold; or that the contrast between air conditioned house or office and summer temperatures outside was too great.

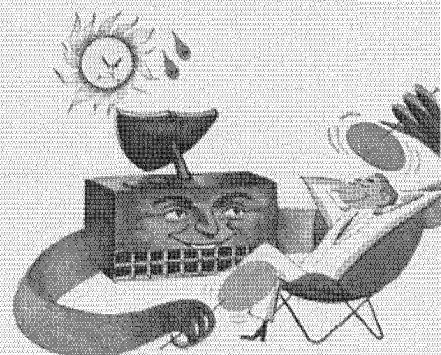


Some Non-Owners Thought that air conditioning was bad for health, citing such ailments as sinus, arthritis, allergies or rheumatic conditions. Some also mentioned as possible disadvantage the "lack of fresh air when a house is closed up" so that it can be air conditioned.

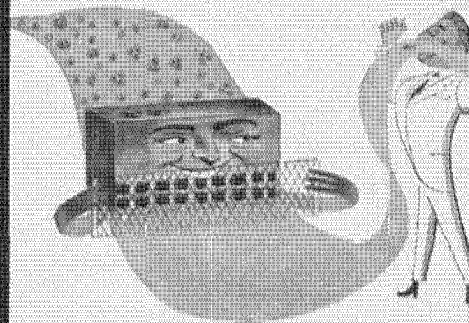


Non-Owners Thought air conditioning too great an expense at present, either to buy or operate. This did not mean they lacked money or thought units were too high priced, but rather that many other possible family purchases had priority over climate control.

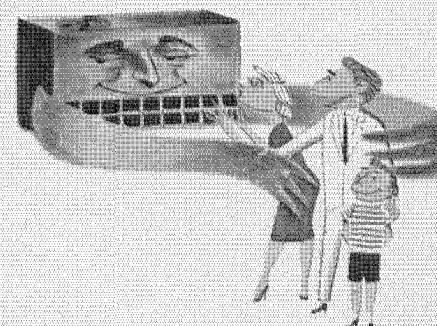
Facts:



Owners Never Mentioned "too cool" or cold as problem; most wanted more units, or central system. Units today generally have temperature controls; cold, public places simply have thermostat too low. Finally, body fat eases severest temperature contrasts in winter.



Owners Reported the reverse on all counts. 28.4 per cent of respondents said that heat conditions had sparked purchase of their room unit. Filtered, cool, non-humid, dust- and pollen-free air provided by climate control eases hay fever, allergies, asthma, heartstrains.



Owners, having experienced benefits, seldom thought costs excessive. One-third of room unit owners and 25 per cent of those with central systems had not even bothered to check. Thus sales problem is to create awareness of, and desire for, home climate control.



New Application Methods include spreading via helicopter. Field demonstration shows how "Dybar", a new brush control chemical, can be applied from the air.

The fast growing science of Chemical Weed and Brush Control

New herbicides plus new knowledge about older ones help solve maintenance problems

"We're a small company. Our building covers almost all the land we own, and the rest of the lot is paved. Where would we use a weed killer?"

It took a fire that stopped operations for half a day to answer this question posed by the president of a metal fabricating firm. What he had forgotten was a weed-grown railroad siding, from which flames spread almost to the paint spray booths before they were checked.

The size of an industrial weed problem may be but a few hundred feet, and treatment a tiny portion of a company's total maintenance bill. On the other hand, a large railroad may spend hundreds of thousands of dollars a year eradicating weeds along hundreds of miles of rights of way.

Scattered between these two extremes are industrial and commercial establishments of every size with varying weed problems and reasons for solving them. Before World War II only a few chemicals—salt for one—were used as weed killers. Now there are close to 100 herbicides on the market.

Many herbicides are effective only against certain classes of plants—narrow-leaved or broad-leaved species, for in-

stance. Others, like Du Pont "Telvar" monuron and "Karmex" diuron weed killers, serve as soil sterilants, controlling almost all types of vegetation.

When these substituted urea compounds reached the market early in the 1950s, they seemed strange to users because they represented an entirely new approach to weed control.

"2,4-D had come along right after the war and made a big hit," recalls Arne Carlson, manager of agricultural chemicals sales for Du Pont. "Men would spray it on plants and pretty soon the leaves would turn brown. The substituted urea herbicides have to be taken up by the roots to kill plants and so results take longer to show up on vegetation. What's more, we were asking people to spray ground when it was bare as a table to give pre-emergence control. But they were used to seeing weeds come up first and then trying to get rid of them."

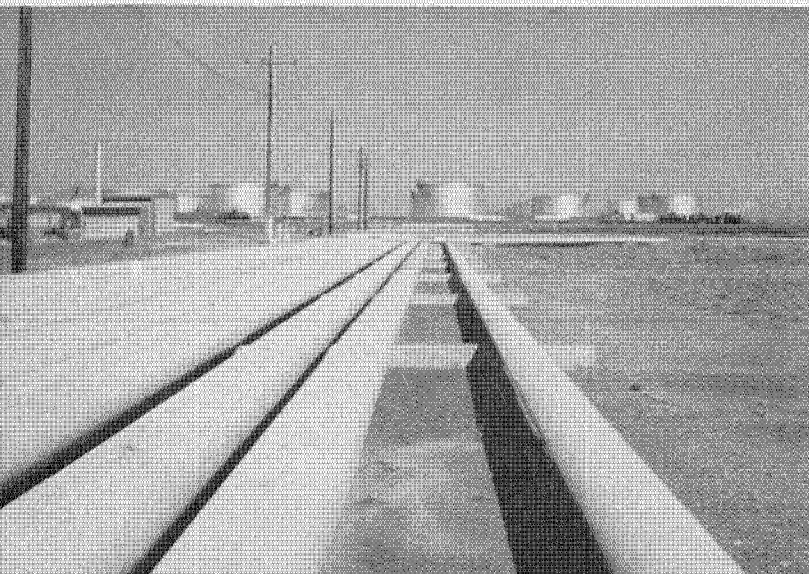
New Tests with New Urea Herbicides

Du Pont representatives traveled the country setting up trial plots along highways and railroad tracks, in lumber yards and oil refineries. As reports of favorable results spread, the substituted urea herbicides began to catch on.

Today they are widely used, both alone and in combination with other materials. Outstanding are their persistence in the soil and their effectiveness against almost all sorts of vegetation. In addition, they are non-flammable, non-volatile, non-corrosive and low in toxicity.

Convincing a prospective user that he should try "Telvar" or "Karmex" still is frequently a matter of setting up test plots and showing results. "Without results, all we have is a package of powder," Carlson points out. Since variations of climate, soil and vegetation all affect the performance of herbicides, a tremendous amount of testing must be done. It's not uncommon for a Du Pont sales and development man to spend

Weed Control Success with "Telvar" monuron weed killer in 1958 at the Tidewater Oil Co. refinery, Delaware City, Del., began with treating 3½ miles of overground pipeline.



several years on plot work demonstrating the efficiency and advantages of these herbicides.

The trend in industry is toward putting weed and brush control on a long-range schedule like that used for other maintenance work. Once a soil sterilant frees ground of vegetation, low annual applications hold the control.

Enter the custom weed control contractor, whose rise parallels that of herbicides. He will survey the problem, recommend a chemical cure and do the job; if he is on a long-term agreement, he will return to make spot treatments necessary to check regrowth. Today there are at least 600 custom applicators in the U. S.

Proven Results with Herbicides

Results? There is an abundance of case history information. A textile plant, for instance, reduced mowing costs by \$2,000 a year after centering a weed program about a substituted urea herbicide. A paper mill reports excellent control of vegetation in pulp wood storage yards at practical costs. A state highway department estimates that it saves \$500,000 a year with an expenditure of \$50,000 for herbicides. Several petroleum companies reduced weed control budgets by 50 to 75 per cent over a five-year period with the help of chemicals. A power company figures grass fire insurance, in the form of "Telvar", costs 32 cents for each wooden pole. Saving only a few poles a year from burning offsets the entire program.

Railroads, with some 390,000 miles of rights of way to maintain despite soaring manpower costs, show intense interest in chemical weed control. Last year the American Association of Railroads completed eight years of research involving no less than 60 combinations of weed killers. Among those reported effective were "Telvar" and "Karmex".

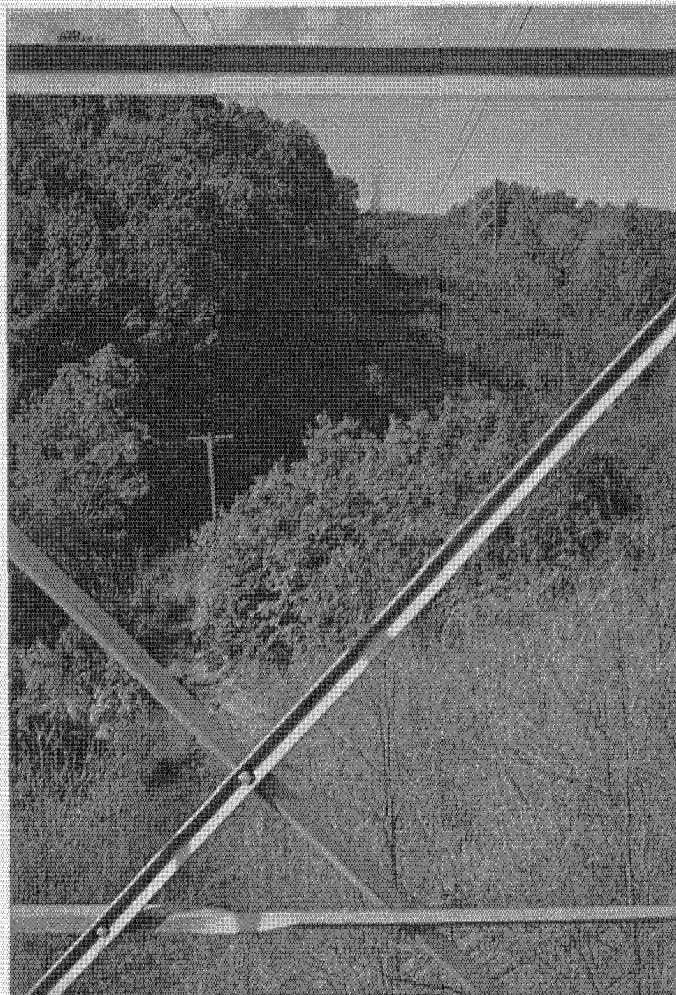
Du Pont representatives work closely with a large number of railroads on weed programs. The Northern Pacific Railway Company, for instance, last spring launched an extensive effort involving Du Pont herbicides after several years of cooperative evaluation and study. Service and development man Arden Aanestad and sales representative Russ Greenstreet rode the spray train. Chemicals were applied under the combined supervision of the railroad's employees, the Du Pont men, and representatives of Nalco Chemical Co. of Chicago, railroad weed control suppliers. Throughout the summer, results were recorded so carefully that a composite diary could cover each line, almost from mile post to mile post. Masses of such data are steadily building a science of weed control.

Meanwhile, chemicals are making heavy inroads against brush. In one example, Du Pont "Ammate" X weed and brush killer, ended 98 years of hand cutting of brush at the Hartford, Conn., water bureau reservoirs. The task, which once occupied a ten-man crew from early spring to late fall, is now done by one three-man crew in a few weeks. Costs of the chemical method average less than two-thirds those of hand cutting.

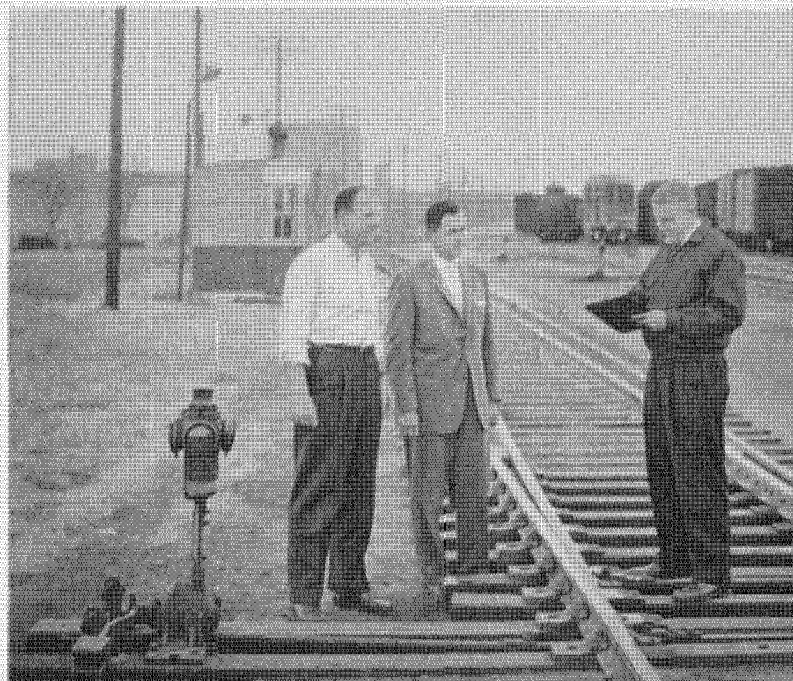
A younger member of the clan, "Dybar" fenuron weed and brush killer, wound up 1959, its first full commercial season, with an impressive score against woody plants. Major advantage is its pellet form, which makes for easy application by hand—a tablespoonful is scattered at the base of each brush cluster—by mechanical broadcaster or from the air.

What's ahead for weed killers? We have only begun to realize their full potentialities, believes Dr. Max T. Goebel, director of research for Du Pont's Industrial and Biochemicals Dept., which develops and markets these materials.

"Eventually" he says, "it may be possible to analyze the weed situation just as we make soil tests, and prescribe the precise herbicide formula needed. Every year brings us closer."



New Results with "Dybar" fenuron weed and brush killer on right-of-way are shown by the contrast between treated brush in the foreground and untreated brush in background. This application was on Central Illinois Public Service transmission line.

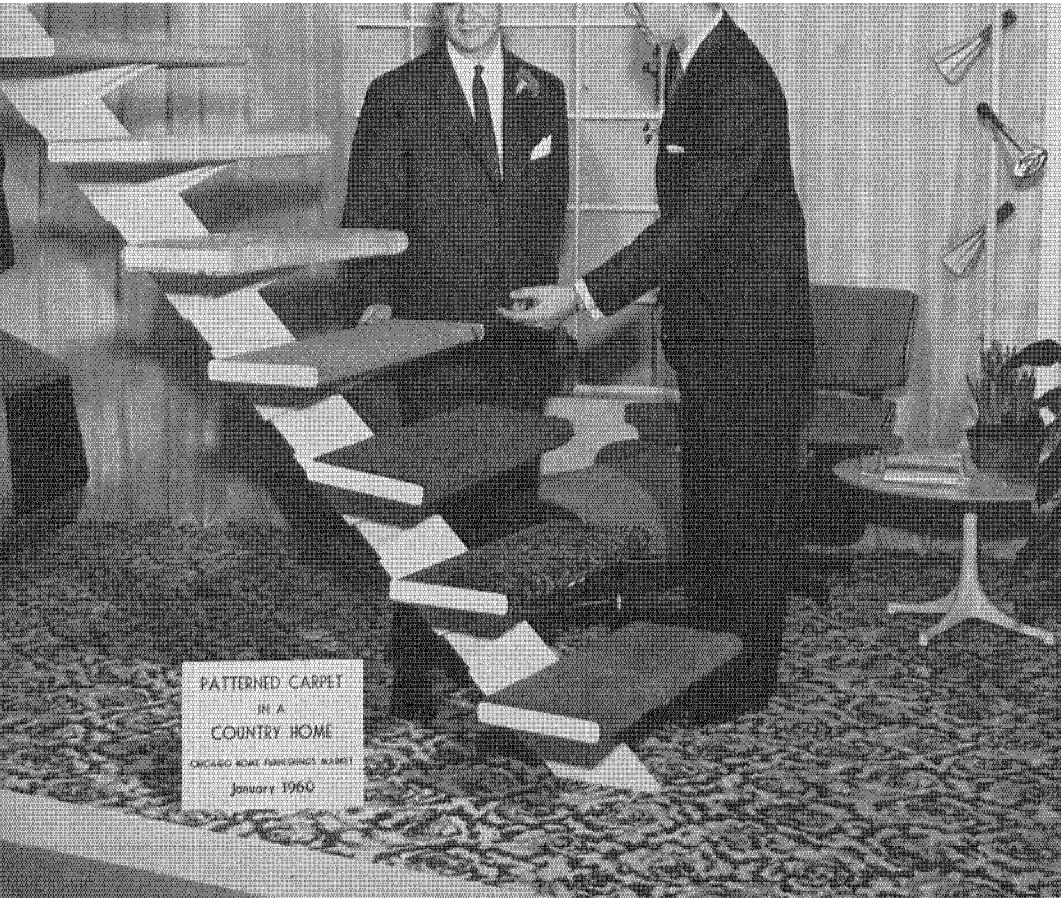


Cleaner Yards and track with "Telvar" combined with various weed killers was experience of Northern Pacific Railway Company in 1959. Du Pont service man Arden Aanestad (left), rode spray train, kept track of results. Here, he checks St. Paul yard with NP's Howard Moore (center), and Du Pont's R. S. Hodgson.

A Veteran Store Buyer Welcomes a New DESIGN T

Converging on Chicago one week last winter were more than 10,000 wholesale buyers, manufacturers' representative and suppliers for the semi-annual International Home Furnishings Market. The bulging Merchandise Mart had gone upon van of fine furnishings, all tastefully arranged in exhibits that spread over a total of 96 acres. Now came the buyers.

One was a mid-western floor covering buyer from St. Louis, who one Monday morning walked briskly through the main lobby and jammed himself into an already over-crowded elevator. He was headed for the 10th floor, exhibit location of several major carpet mills and fiber producers. His assignment: to determine what would be most appealing to St. Louis housewives and families shopping for carpets this spring at Stix, Baer and Fuller department store.



Carpet Conference at Home Furnishings Market takes place in Chicago exhibit where St. Louis Buyer William Palmer (left) discusses new trends in patterned nylon with Fred Willoughby, Du Pont merchandising representative. On the floor is floral patterned carpet called "Monte Rosa" being made by James Lees and Sons Co.

Bigelow's new broadloom "Beaupoint" offers freshly styled design.



Carpet Replica of Manhattan Island shown by Carolyn Walker symbolizes amount of nylon carpet—enough to blanket New York City—that has been sold since fiber's first introduction in field. Trade sources estimate that one out of every five square yards of broadloom carpet sold in 1959 was 100 per cent nylon.



Visiting Home Furnishings Market Nylon Carpet Style Concept As TAKES THE FLOOR

The St. Louis man has been a floor covering buyer since 1925. In 35 years, he's sold some \$30 million worth of carpeting. A good percentage of this, he says, has been manufactured from 100 per cent nylon.

Quick to admit that a buyer doesn't always make the right decision about consumer interest in a new carpet, the 56-year-old retailer likes to recall a happy experience. A year ago, following his visit to the Chicago market, his store was selected by James Lees and Sons as one of the first retail outlets for Lees' new carpet of Du Pont 501 carpet nylon. And through last December, the store had sold over 8,500 square yards of Lees' carpets of 501. "Wish I could guess that well all the time," reports the buyer cheerfully.

Before coming to the market this year, the St. Louis buyer had heard about patterned nylon carpets being introduced by four major mills—Bigelow, James Lees, Magee, and Alexander Smith. Hence, one of his first stops was the Du Pont exhibit space where the company, as nylon fiber supplier to the carpet industry, was showing dozens of samples from these four mills.

"Recently," said this buyer, "a sizable percentage of our

customers seem to have lost interest in solid colors. Housewives have been asking to see what we had in patterns. We've had nothing to show. But that'll be different this spring with these patterned carpets.

"In the switch from plain to figured goods in nylon, I can see excellent consumer values. These goods are flexible; they'll complement any decorating theme—modern, colonial, traditional, or French Provincial. I'm very pleased that Du Pont and these mills have responded to the new trend and need in carpet design."

In the average home, the floor is the largest soft-covered surface area and an area representing the largest home furnishings dollar investment. When Mrs. America spends up to \$1,000 for wall-to-wall carpeting, she expects a product that will serve her well. And Du Pont carpet nylon helps to provide that "built-in" insurance.

Nylon is the most durable carpet fiber known. It will outwear other carpet fibers in equivalent constructions by at least two times. Because nylon absorbs little moisture, most stains don't penetrate the fiber and it is easily cleaned with mild detergent and warm water. That includes such familiar "spills" as ink, coffee, and ketchup.

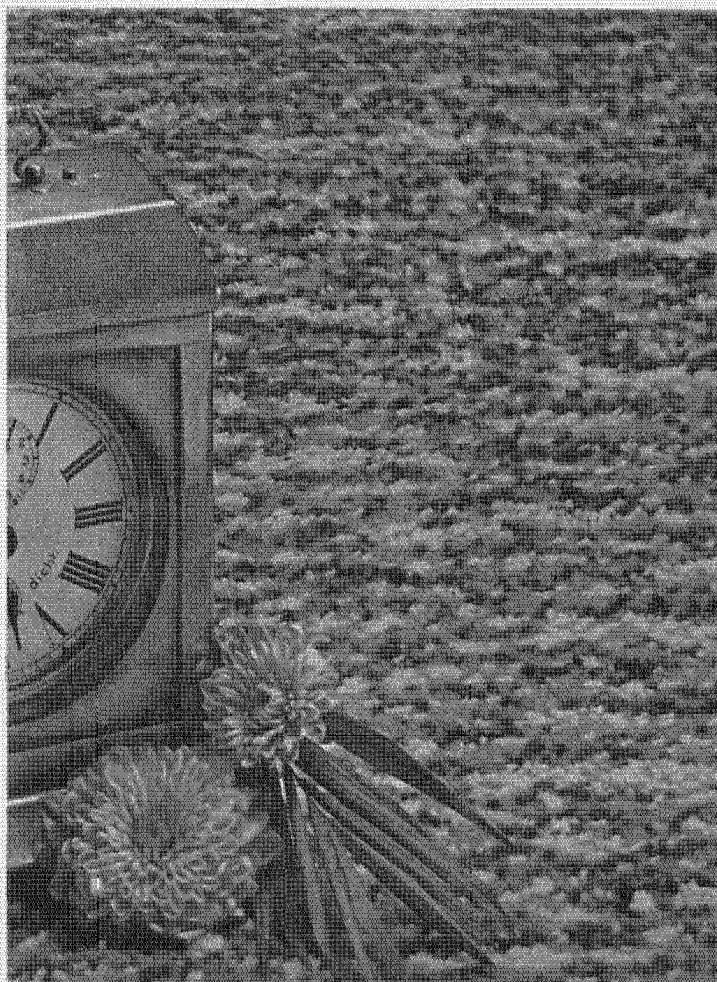
There is no limit to colorations of nylon, a prime aesthetic feature for women. Muted and bright luster nylons can be combined to give a new dimension in color from dull chalk to sparkling tones, as below.

Patterned nylon carpets—a radical new styling concept in carpet nylon—have been developed to offer the consumer elegance with "built-in" insurance at a modest price. Those ordered by the St. Louis buyer in Chicago are now on showroom floors in Stix, Baer and Fuller's as well as many other top furniture and department stores. For the trend to nylon carpet—in patterns—is strong and rising.

Magee's smart parquet design "Infinite" has softly tailored elegance.



Alexander Smith's "Prelude Texture" harmonizes pattern, texture.



In three years, hundreds of curious fans have asked questions at the sponsors. Here . . .

On a warm Sunday evening in September 1957, some 40 million U. S. viewers joined an anxious sponsor to watch a major TV debut: a series of monthly, 90-minute spectaculars dedicated to producing the highest quality dramatic fare.

As Fate would have it, the first show, a lavish musical, was only "fair" by later standards. But subsequent presentations, such as "The Bridge Of San Luis Rey," were acclaimed as few TV productions have been, then or since. Now, as "Show Of The Month" nears the close of its third season, it looks back on an imposing record of 26 productions ranging the theatrical spectrum from such modern fantasies as "Harvey" to basic Shakespeare.

Q Few Du Pont products go directly to the consumer, so what is the purpose of such an elaborate program?

A "Show Of The Month" has one mission: to create and maintain public understanding and appreciation of Du Pont's role as a large business in our society. We think it's important that as many Americans as possible know our products, policies and activities, for a company can succeed without a favorable climate in which to conduct its business. Besides enhancing present sales, public good will and confidence often creates acceptance for a new product before it hits the market. This is very important to Du Pont, for the backbone of our future business is new products.

Q Why don't you broadcast "Show Of The Month" on the same day and hour each month?

A We can't because our show takes over the time normally occupied by weekly programs. Because the network cannot pre-empt any one regular advertiser more than two times a year, we must take different nights of the week. The same is true of broadcast times except that when the show appeals to children, we try to get early evening hours.

Q I enjoy your soft-sell commercials, but I wonder if they attract as much attention as more raucous competitors?

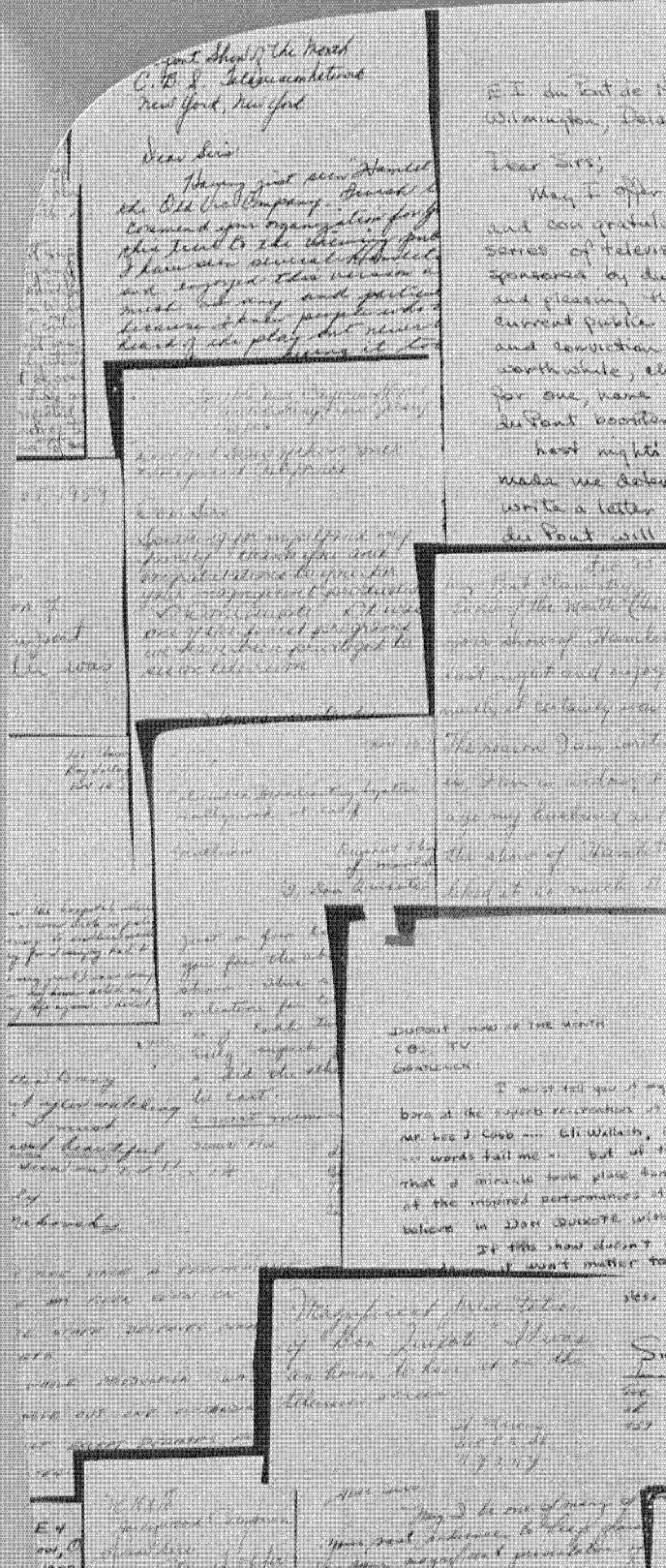
A We think they do. For one thing, it's extremely rare for commercials to get fan mail; ours do. When the series began, about 7 per cent of all our mail praised them; even more remarkable, about 7 per cent of all professional reviews still applaud them. Also, of course, "Show Of The Month" is one of the most thoroughly searched programs on television, and studies show that our audience has been informed or influenced favorably about Du Pont, as indicated by their response to questions or recall of commercials.

Q How did you happen to decide on drama? Wouldn't westerns or whodunits get bigger audiences?

A Possibly, but we've averaged 30 million viewers per show, which indicates that people respond to quality television entertainment, too. The most important point, however, is that we have a serious message to impart, and we know from experience that a



FLOW OF FAN LETTERS from television-viewers across the country follows each presentation of "Du Pont Show Of The Month." One viewer in 10 singles out commercials for praise; others ask questions about scripts, playwrights, background music or dramatic stars. Every letter is answered. Biggest mail response of present season came for "I, Don Quixote."



MAILBAG

responded to "Du Pont Show Of The Month" by taking pen in hand and firing a barrage of answers supplied by Du Pont's television men . . . are questions viewers most often ask.

speare like "Hamlet." And the result? A gratifying response. Audiences have been huge, averaging 30 million who tuned in for any portion of each show, and rising, with "Harvey," to an incredible 43 million.

Professional critics, while blistering a few individual shows, have been unanimous in acclaiming the series. Some typical coast-to-coast commentary: "A fine tribute to television" (*New York Herald-Tribune*); "One of television's most ambitious ventures and one of its finest" (*Chicago Daily Tribune*); "... Could lead television back to adult, intelligent dramas" (*Los Angeles Herald Express*).

Not statistically significant, perhaps, but almost as pleasing to the sponsors are the hundreds of letters, postcards and wires each show evokes. Coming from eminent jurists, school principals and neighborhood grocers alike, they usually praise and they often ask questions.

In key with the program's objective of creating good will is the fact that every fan letter—good or bad—gets its answer. Recently, 5,000 letters were checked to determine what kind of questions viewers have asked about the program; Du Pont's Television Section blended them with typical employee queries—and came up with these answers.

serious message is best carried by a serious program. When our program was first conceived, for example, its title was "Du Pont Tele-Classics." Certainly, many shows—westerns, variety, sports events—would not be appropriate to our objective—which is to produce a program of quality, dignity and significance.

Q What criteria do you use to select stories?

A We look for four things: a story should be a work of stature and significance; it should have mass appeal; it must be practical to produce in terms of sets, locales, actors, etc.; and it should help to balance the rest of the season's shows so that the series presents diversified entertainment.

Q Personally, I like your show but I've heard neighbors say some of the productions are a little longhair. Are you reaching the man in the street as "Cavalcade" did?

A The average "Cavalcade" TV show reached 14 million in its last season; average "Show Of The Month" reaches 30 million. The question is: Who is the man in the street? Actually, we must plan a season by remembering that peoples' preferences vary widely. We try to develop shows of various moods, types and characters. The best we can hope for is that *most* people like *most* of our programs.

Q Why not do brand-new stories that everybody is hearing about—like a smash Broadway musical or a dramatization of a novel like "Dr. Zhivago"?

A The most important reason is that they are exorbitantly expensive or otherwise unavailable; the dramatic rights to most current plays or novels are usually bought by the movie industry for huge sums. Also, of course, many writers are understandably reluctant to eat up their entire market in one night.

Q Why don't you do more original plays?

A We would like to, and are always on the lookout for good original work; unfortunately, it's not plentiful. Many good writers prefer a long-run stage presentation to a one-night stand on TV; others deal with themes or subjects that we deem unsavory or inappropriate—at least for our program. Naturally, we don't choose classics simply because they're old, but because they're good. Their survival proves it.

Q My only objection is that I've already read some of your stories or seen them in the movies.

A You may have, but most people haven't. Movie audiences, for example, are small by TV standards; it took "Gone With the Wind," most-seen movie of all time, 20 years to play to some 31 million people; a good TV play beats that in one night. Theatre audiences are likewise small: it's estimated that more people saw "Hamlet" on "Show Of The Month" than had seen it, in toto, in the past 350 years.

Q Are your programs "live" or on tape?

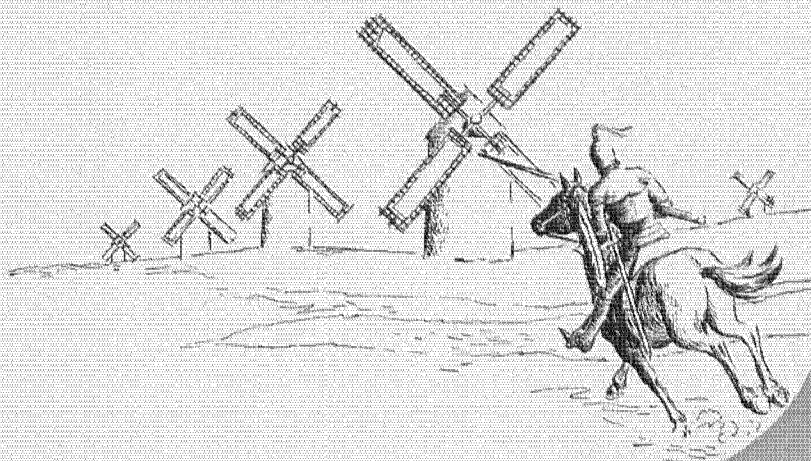
A Originally, they were all "live." Today, they are a blend of both techniques. The reason is simply that tape allows greater scope and flexibility in scenic or other effects.

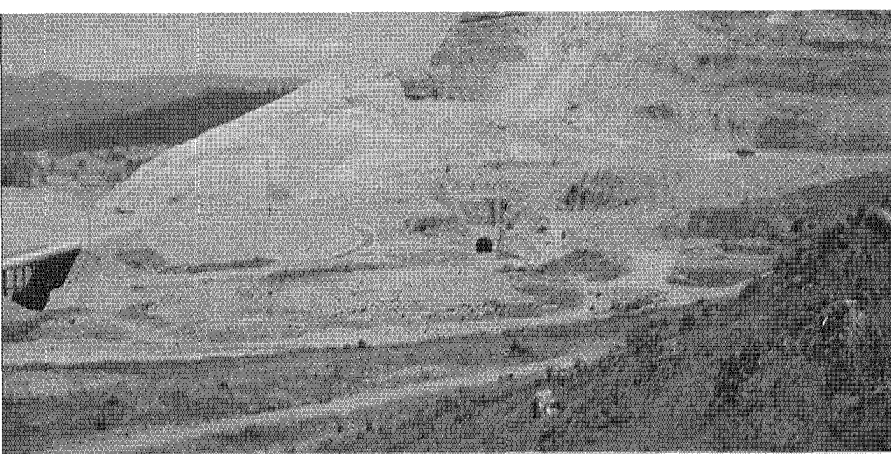
Q Ninety minutes is a big chunk of the evening. How did you decide on that time length?

A It takes at least 90 minutes to do justice to the kind of stories we want to present. Second, a 90-minute show dominates the evening and delivers larger audiences.

(Note: To those emanating from other viewers, the editor had one perennial query to add: when will the next "Show Of The Month" be presented?)

A The April show—and the last presentation of the current season—will be seen on CBS, Thursday, April 21, at 8 p.m. The play tentatively scheduled: "Years Ago," by Ruth Gordon.)





Dam Under Construction will flood foreground area, forming eight-mile-long Hills Creek Reservoir. This downstream view shows right abutment, which Du Pont explosives helped construct and stabilize.

EUGENE, ORE.

Driving east from this Willamette Valley city, you pass with remarkable swiftness from lush farm country (the promised land to many a nineteenth century pioneer) to tall timber. An easy hour's ride over excellent roads brings you to the tiny town of Oakridge, temporary home for the crews that are busy damming the middle fork of the Willamette River just below its juncture with Hills Creek.

The Hills Creek Dam—an earth and gravel embankment 1,920 feet long and 338 feet high—is a key unit in a broad plan to control floods, furnish power and provide irrigation waters for the Willamette Basin, where unruly water long has been a problem. This Willamette Valley Project is directed by the U. S. Army Engineer District, Portland, under authorization of the Flood Control Act of 1950 and earlier acts, with Phillip Cole as resident engineer.

The 45-mile drive from his home in Eugene is a familiar one to A. J. McAdams, representative of Du Pont's Explosives Dept. He has made the trip about once a week since work began in the summer of 1957.

The road ribbons along a blue jewel of a lake in a dense green pine setting. "That's Lookout Point Reservoir, the biggest unit in this whole Willamette Basin Project," McAdams says. "The Willamette is known for whipping around a lot. One year a farmer east of Eugene would have forty acres on one side of the river. The next year they'd be on the other side where he couldn't get to them."

McAdams explained that dams to control the Willamette go back a number of years. "Fern Ridge on the Long Tom River west of Eugene was the first in the series. It was built in 1941. Cottage Grove was finished the next year. Then came the war and no more dams until Dorena in 1949. After it the Detroit Dam on the North Santiam and Lookout Point on the Willamette. When Hills Creek and the Cougar, on the McKenzie, are completed, the Willamette should be pretty well harnessed."

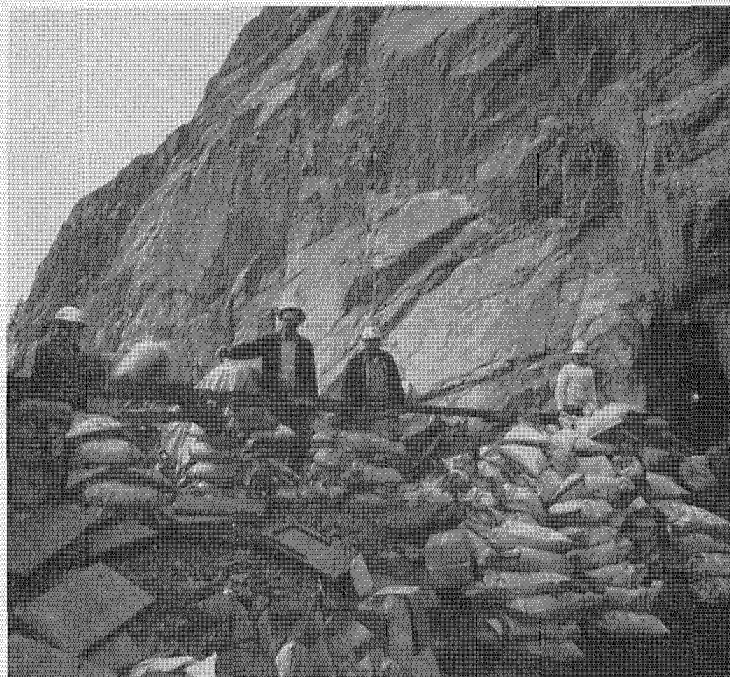
In addition to flood control work, the Lookout Point Dam generates power, with a capacity of 120,000 kilowatts. Hills Creek's powerhouse will be capable of an additional 30,000 kilowatts to feed the Pacific Northwest's burgeoning industries.

Actual construction at Hills Creek is in the hands of Green-Tecon Corp., the first joint venture of two well-established companies, Green Construction Co., Des Moines, Iowa, and Tecon Corp., Dallas, Texas.

An introduction to Hills Creek begins with project manager T. C. "Chal" Beard. In his car we headed along West

HARNESSING

*Reducing annual flood
by 85 per cent is the goal of the
the building of a strin*



Loading of Hole for big coyote blast was directed by Du Pont's A. J. McAdams, left. Shot took 380,000 pounds of "Nitramite".



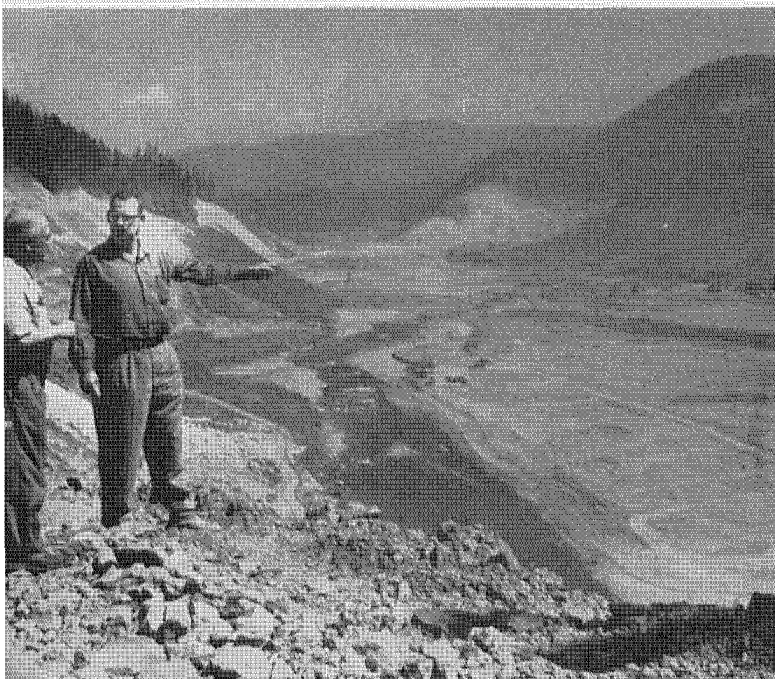
Road Building usually accompanies dam construction. At Hills Creek, dynamite carved West Side Road through stretch of rock.

THE WILLAMETTE

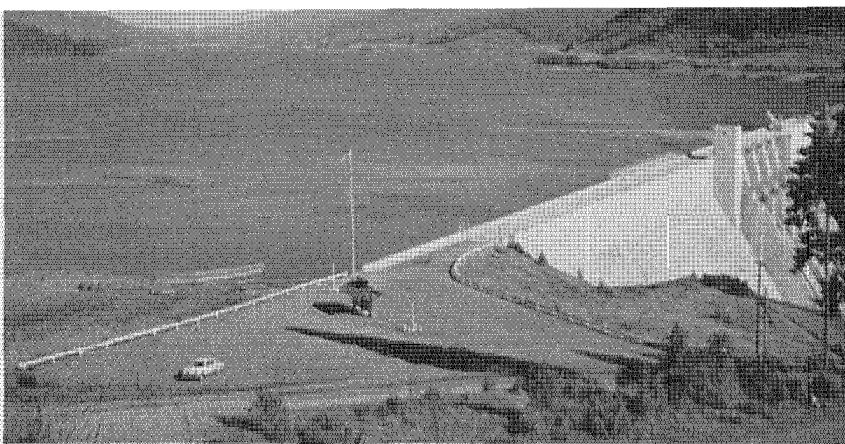
e from this Oregon river

my Corps of Engineers as they direct

ms along its tributaries



Future Lake Bottom at Hills Creek is surveyed from upstream by McAdams, left, and T. C. Beard, Green-Tecon project manager.



Dam in Use created Lookout Point Reservoir, 26 miles downstream from Hills Creek. With these dams, water that once flooded fertile farm lands can be diverted for irrigation, power production, recreation.

Side Road, one of four hard-tops that were relocated as part of the project. Several hundred feet below us the Willamette trickled along, a slender summer stream. "It won't look like that this winter, though," Beard commented. "We work the year round, and flooding has caused more lost time than bad weather has." Eventually the lake will rise within five or six feet of this road level and sprawl eight miles upstream.

"That's Nipple Peak where we had the coyote shot," McAdams said, pointing toward the west side's highest hill. The coyote—small tunnel—blast, he explained, was probably the largest of this kind ever fired in the Pacific Northwest.

"Four of us from Du Pont spent most of the week helping Green-Tecon get ready for it," McAdams recalled. "The coyote tunnel had been drilled back 160 feet into the hill. Three shifts of men worked from 8 a.m. Tuesday until 5:30 a.m. Sunday to load it with 380,000 pounds of 'Nitramite' FR nitro-carbo-nitrate."

That single shot produced half a million cubic yards of high-grade rock fill for the dam. The completed embankment will contain more than 11 million cubic yards, much of which has come from the bottom of the future lake.

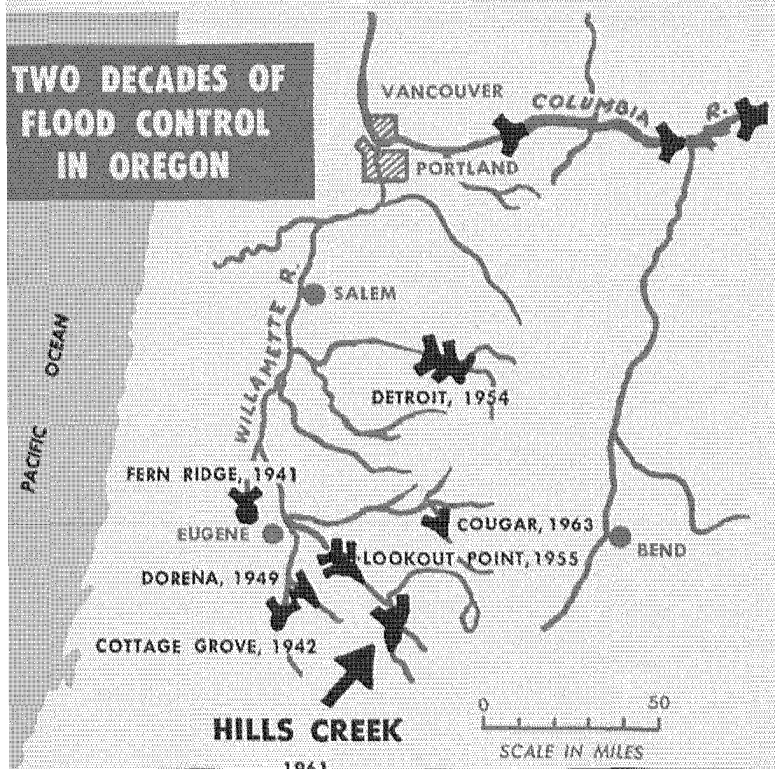
"We're into some pretty good material over here," Beard commented as we headed across the upstream bottom. A silty-gravel core, he explained, sets Hills Creek apart from the usual straight clay-impermeable dams of the Pacific Northwest.

By now we were on East Side Road, moving toward the dam's right abutment, where geology threw the construction men a curve. A system of slips and seams that wasn't readily apparent at first caused severe sliding. An extra 200,000 cubic yards of rock were removed from the abutment in an effort to stabilize the back wall. Using "Red Cross" "Extra" 40% dynamite, Green-Tecon men chiseled the face into a series of benches. A relocated road runs along the widest one.

The \$46 million Hills Creek project is due for completion in the spring of 1961, but Green-Tecon expects to finish several months ahead of schedule. The completed reservoir will reach its lowest level during late fall and winter, to leave room for run-off water. Once flood danger passes early in the spring, the reservoir will be allowed to reach capacity. Summer and early fall will be water conservation periods, with the pool held at its highest level after downstream demands are satisfied. As fall turns into winter once more, the cycle will be repeated.

Eventually, picnic and campground areas will be provided around the lake, as they have been at older dams, to make the reservoir truly a multipurpose one. But never to be forgotten is the primary flood control purpose in a region that historically has known the angry bite of swollen waters.

TWO DECADES OF FLOOD CONTROL IN OREGON

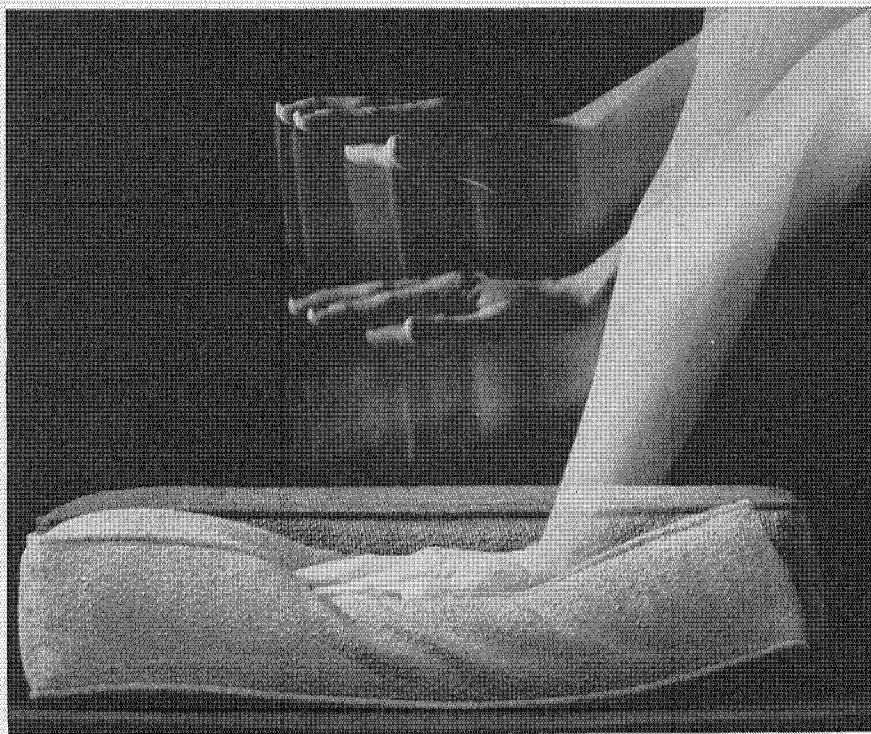


Introducing:

A Magic Cushion That Plumps Itself Up...

Duet Cushion Construction shown by pretty Anne Bristow of Du Pont features a core of polyether foam made with "Hylene" organic isocyanates wrapped in a blanket of "Dacron" polyester fiberfill. Soft resilience of this combination makes...

.....a new furniture cushion with soft resilience that
plumps itself up. It gives a new luxury and comfort, yet.....



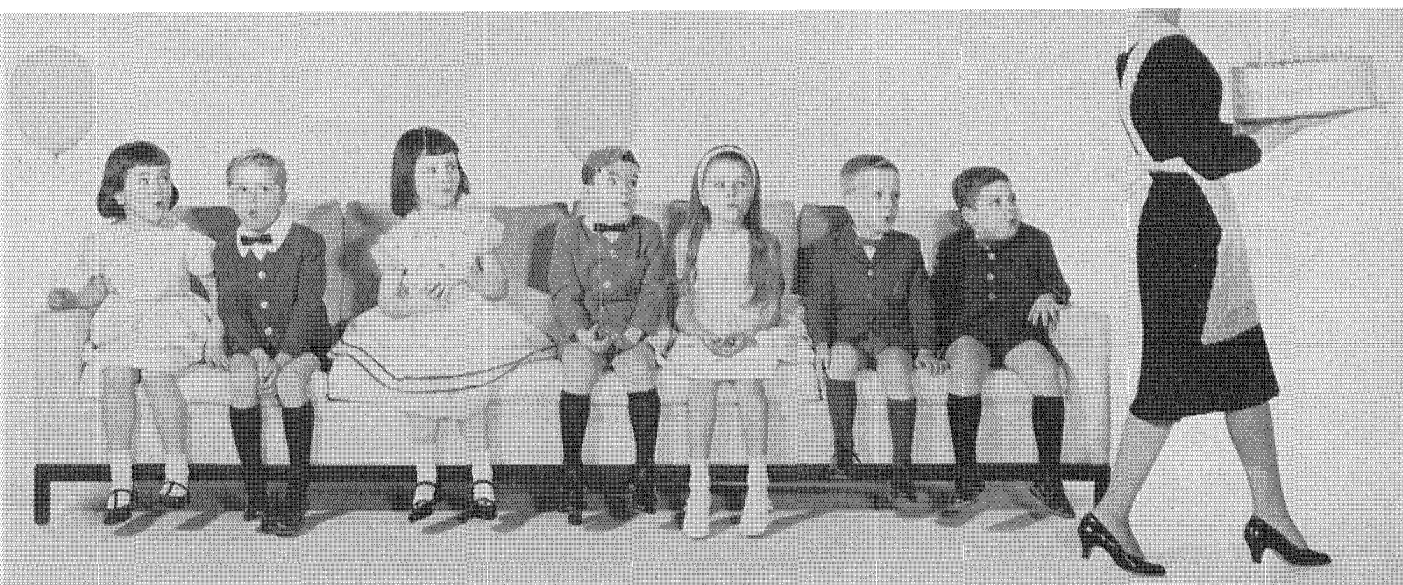
It provides furniture manufacturers with a new standard of com

When two youthful products as compatible as "Dacron" polyester fiberfill and polyether foam made with "Hylene" organic isocyanates get together, it's just natural that they'll create a stir somewhere. In the furniture world, where feathers, down, cotton batting and wire springs have been the mainstay in cushion construction for generations, fiberfill and polyether foam are causing more than just a stir. Furniture manufacturers all over the country are combining them into what spells the latest word in comfort — "Duet", a remarkable new cushion construction pictured above, in which a fluffy white blanket of "Dacron" fiberfill is wrapped around a luxuriously soft core of polyether foam made with "Hylene".

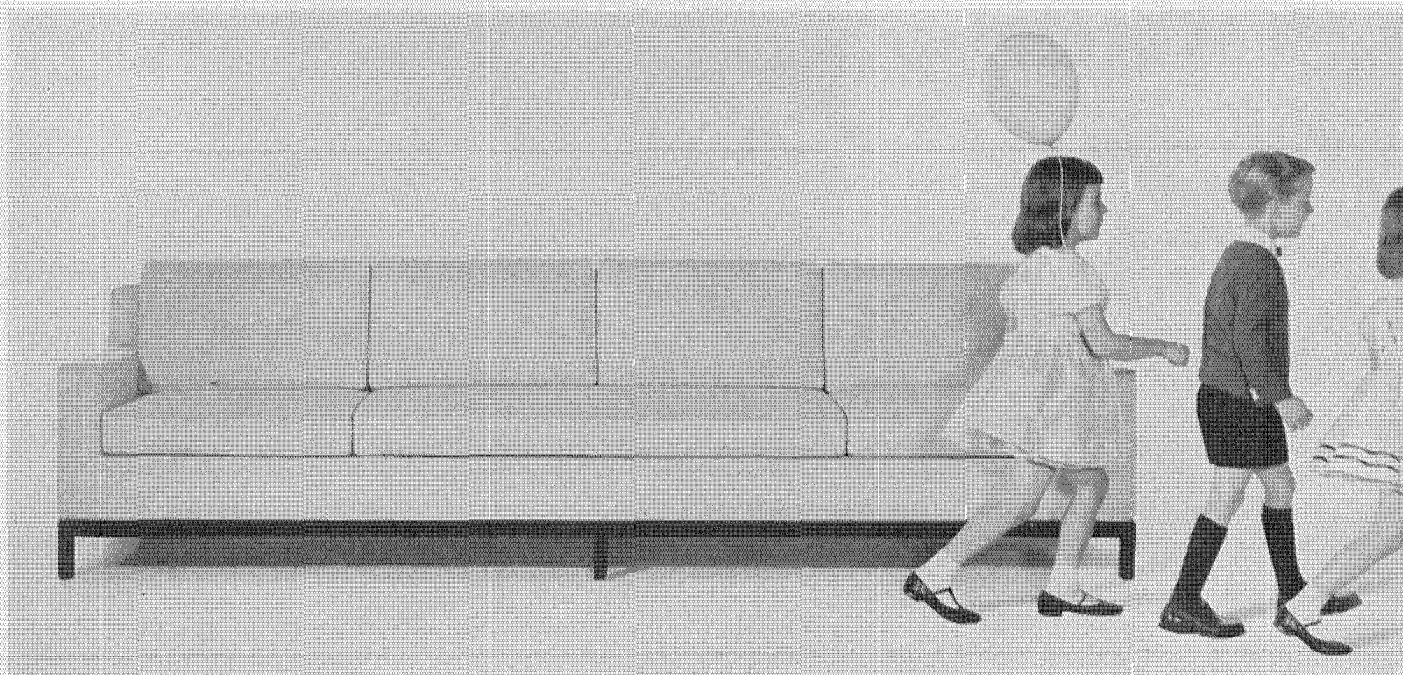
Within the last decade furniture manufacturers have

multiplied the variety of styles and values obtainable through the use of new materials. Foam rubber was the first major addition in cushions, followed by polyether foam. In four short years, the use of polyether foam has rocketed from a modest beginning to 40 million pounds in 1959, a figure twice that of 1958.

Today the duet cushion construction idea promises to extend the use of polyether foam still further. The reason is clear. In duet, furniture people have a cushion that yields the utmost comfort for buyers of fine furniture; and at the same time it actually *plumps itself up* under the most severe conditions, time and time again. Testing laboratories have found no appreciable change in cushion shape, condition or service after 300,000 sittings.



.....even the gaiety and bounce of seven party-going youngsters giggling momentarily on a luxurious divan.....
leave no trace of untidiness, for, as youngsters pursue birthday cake, cushions have already plumped themselves up



at is now appearing in retail showrooms

The new idea for duet cushion construction is based on creating just the right amount of resilience through a special combination of "Dacron" and polyether foam. Since the resilience of each element can be individually controlled, the furniture maker can turn out a top-quality chair or sofa cushion as soft or firm as he desires.

Already leading firms such as Heritage, Shaw, Hickory-Tavern, Sherrill, Sherman and Drexel are using the duet cushion construction in their furniture lines. Many of these firms have their own names for their cushions. First adaptations were in transitional styles; and the first pieces in these styles were recently shown in the nation's leading furniture showrooms. Retailers, amazed at the possibilities, foresee an industry-wide switch to the

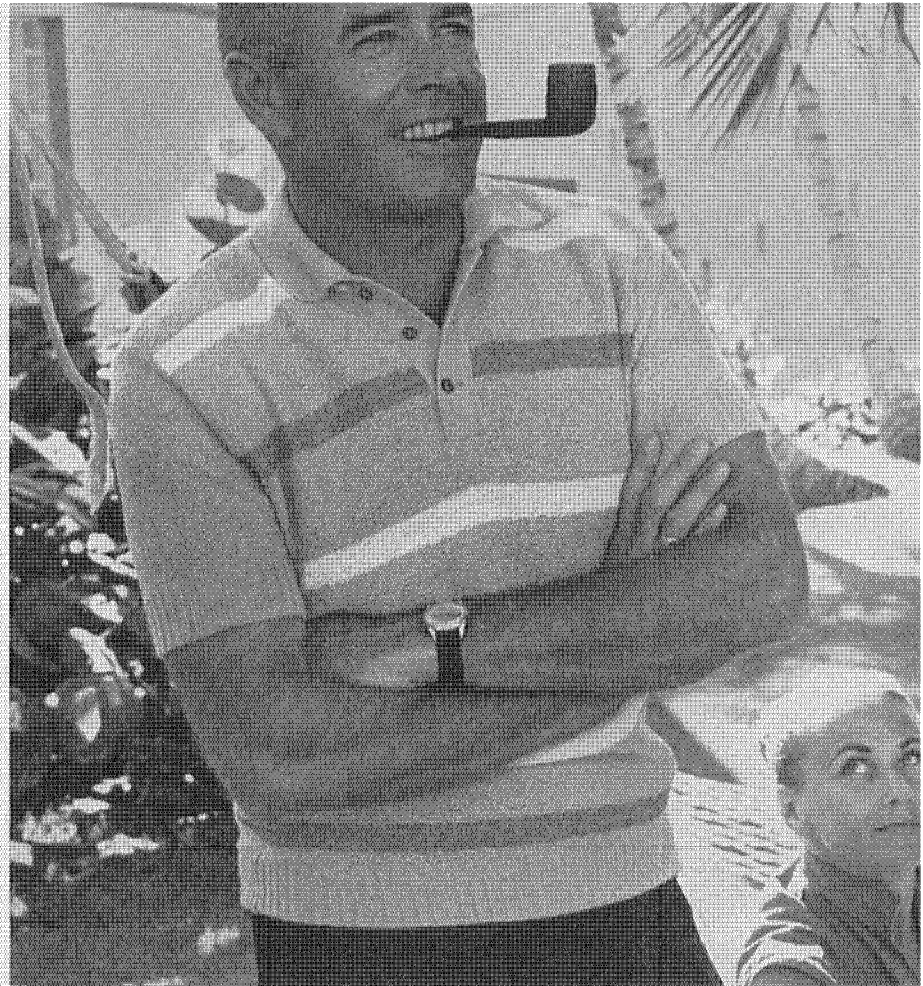
duet cushion construction for furniture lines that have been of conventional spring and down construction.

Du Pont, of course, doesn't make the cushion. "Dacron" fiberfill, the outside blanket that is wrapped around the polyether foam core, is shipped direct to furniture manufacturers from a company plant at Kinston, N. C. Polyether foam is produced by foam manufacturers with "Hylene" organic isocyanates, a foaming agent made at Penns Grove, N. J.

Now that the duet cushion is moving to retail outlets, first consumer reactions are echoing the enthusiasm of a leading furniture maker in the South who reports: "With the luxurious comfort of this construction, the duet cushion has already become a new standard."

Summer Knit Shirt Photo features new men's knit of "Orlon" 21 in garment made by Puritan Sportswear. Newspaper articles featuring this picture will mark first major consumer introduction of "Orlon" 21. Initial sale of shirts at about \$11 in specialty shops is scheduled this spring. Later, summer shirts will be available in unlimited colors and larger quantities of fiber and shirts and sweaters will be in men's wear stores for fall.

"Orlon" 21 comes of age



Among the inviting new styles of men's shirts, the Puritan summer knit shirt (above) has a special place. It is made of "Orlon" 21—an exciting new type of "Orlon" acrylic fiber now making its bow in the textile industry. This shirt shows how the new fiber is helping Puritan Sportswear and other firms make a real advance in men's sport clothes.

"Orlon" 21 has been widely hailed as the most important technological break-through in textile polymer chemistry since the creation of the parent "Orlon" itself. The reason is clear. This fiber has a permanent (U-shaped) crimp built into it; the crimp separates individual fibers in the yarn, resulting in high bulk, or "loft". Crimp also maintains air spaces between the fibers and yarns. Consequently, shirts or

sweaters can now be designed in a wide variety of weight constructions to provide seasonal wearing comfort and offer the additional features of improved resilience.

Crimp is a desirable characteristic for many textile applications; and traditionally it has been applied to fibers by mechanical means. Now with "Orlon" 21 it is built right into the fiber and lasts the life of the garment. The result is elimination of sag through a new fiber characteristic not available before. Garment liveliness and spring is retained with every washing or dry cleaning. For the energy of re-crimping action present in the fiber literally works the fabric surface to restore its original unmussed appearance.

Initial introduction of "Orlon" 21 is now underway with

Behind the Scenes in Men's Wear...

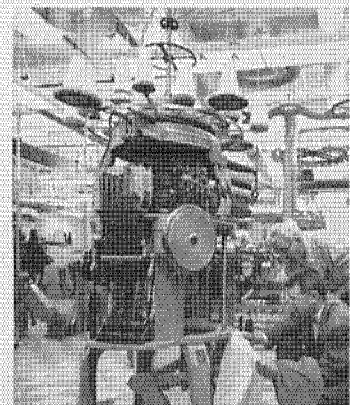
Research at Du Pont's Benger Laboratory, Waynesboro, Va., discovered and established new technology for "Orlon" 21. Senior Chemists James Ryan and Robert Tichenor, who made major contributions, assess the crimp in experimental samples of fibers.



Process Development at Du Pont's large May Plant, Camden, S. C., involved added groups of research and development men. Equipment modifications have been essential to volume output. "Orlon" 21 is seventh type of this fiber made here.



Product Development at Chemstrand Laboratories, Wilmington, Del., included knitting of 2,000 test sweater shirts and several years of work with men like Robert Chapin (examining sweater body with Operator Law)



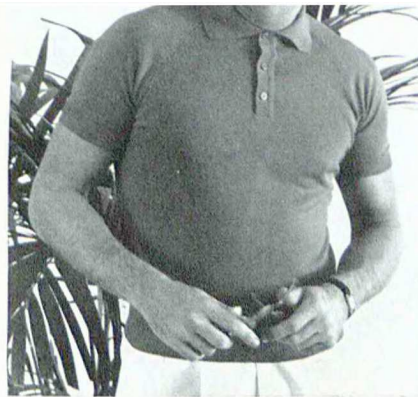


Stunning Tunic Cardigan with matching skirt by Talbott shows how "Orlon" 21 opens new style concepts in women's wear also.

first sweaters and shirts of the fiber being distributed in major cities this spring. By fall, with added fiber capacity, more sweater makers will be making garments of the new "Orlon" 21. Says one: "I'll put half of my standard line into 'Orlon' 21 this year." The sweaters will be available in an unlimited color range; they will be styled in a wide range of knit constructions and priced in the \$8.95 - \$13.95 range.

Style appeal for "Orlon" has been dramatically broadened by this new fiber, which gives fabric maker, garment designer and consumer new aesthetic horizons to explore and enjoy. The dynamic acceptance of "Orlon" in sweaters (the fiber has grown from 5 per cent of market in 1953 to approximately 50 per cent today) and the availability of this new type of "Orlon" sketches the tremendous growth potential for "Orlon" 21 that lies ahead in knit-wear. Other applications in woven goods are still under-going evaluation. Picture highlights in the development story of "Orlon" 21 are reported below.

Press Conference in New York provided occasion for Du Pont to bring news of significant new fiber to fashion writers. Announcement of "Orlon" 21 marked culmination of development period and beginning of use by knitting industry.



Sweater-Shirt for men shows resort and spring wear styles that are being introduced with Du Pont's new "Orlon Cantrecre" fiber. This is a full fashioned Bel-Aire sweater-shirt, available at \$13.95 in five colors. Shirts are wash and wear, and they feature luxury look and excellent drape.

"Orlon Cantrecre" in the Headlines

A second new type of "Orlon" now turning up in men's wear is called "Orlon Cantrecre": it's a silk-like fiber that will help to produce a dressy, casual—yet cool and comfortable—look in sweater-shirts (see above).

"Orlon Cantrecre" is a continuous filament still in its early development stage. Alfred of New York, Peerless Robes & Sportswear, and Bel-Aire Knitters introduced the first sweater-shirts for men on this fiber last fall, just in time for Christmas. Rich Guild, McGregor and other leading knitters are now delivering added styles to retail stores. Now Pringle of Scotland and Spagnoli of Italy are also styling garments of this luxury material.

The development pattern of "Orlon Cantrecre" duplicates that of "Orlon" 21. And the end result is a broader line of appealing merchandise for knitter and retailer alike, with the consumer finding a new wardrobe avenue to express his individual taste.



Sleek Lustrous Pullover sweater marks first appearance of "Orlon Cantrecre" in women's wear. Sweater has a modified scoop neck and $\frac{3}{4}$ sleeves. It is priced at approximately \$13. This silk-like garment is ideal for wearing with a suit.



Glamorous new material for building ... colorful panels of LUCITE®—with beauty that lasts

Acrylic Sirup



OUTDOOR SIGNS

You're looking at the most modern of translucent building panels. Made of a new sirup form of Du Pont LUCITE—in combination with glass fibers—they are the first reinforced acrylic panels available.

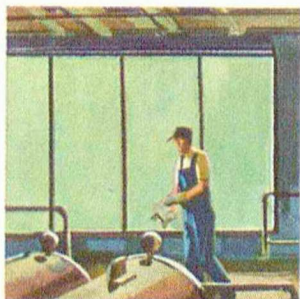
These beautiful panels of weather-resistant LUCITE acrylic sirup retain their brilliant sparkle and decorator colors. In addition to their weather resistance, panels of LUCITE are durable and shatterproof. Light in weight, they are easy to handle and install . . . save construction time.

For added charm and style in industry or the home, specify building panels made from LUCITE in the color of your choice. For information on these panels and the name of the dealer in your area who handles them, mail the coupon.

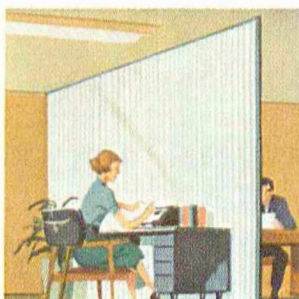
POLYCHEMICALS DEPARTMENT



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



INDUSTRIAL GLAZING



OFFICE PARTITIONS

E. I. du Pont de Nemours & Co. (Inc.),
Advertising Department, Room DPM, Nemours Building,
Wilmington 98, Delaware

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