

DU PONT

DECEMBER • 1946

MAGAZINE



Christmas Morning

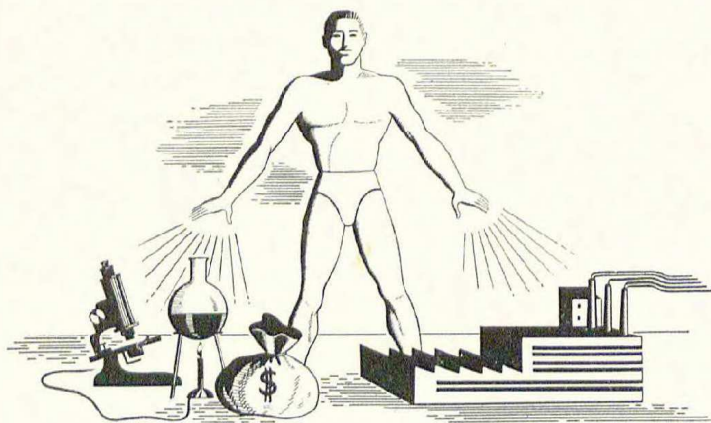
Page 1



REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING

Prosperity's Catalyst



In the minds of thinking men there are great promises for the future of America. Research men have created startlingly new products. Engineers have designed factories capable of producing vast amounts of goods. Investors are willing to risk money needed for expansion.

When these ingredients are properly put together they can result in prosperity. Yet prosperity needs a catalyst—another ingredient that will bring about a successful combination of research, production and invested money. *This catalyst is work.*

Work is the power by which goods are produced. It is the man energy to run

factories and to make more goods for more people and at less cost.

If this catalyst of work energy is applied, Americans will have more jobs and more money than ever before in the history of our nation . . . a nation where all may choose the work they like and spend their earnings for the things they want.

It is a privilege to work in America . . . and work we must. Without work, prosperity is just a passing dream.

Men of Du Pont have ably demonstrated their spirit to work for the creation of a better America. Their energy is dedicated to—

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



E. I. DU PONT DE NEMOURS & CO. (INC.), WILMINGTON, DEL.

So to speak...



IN OUR OPINION, sultry July is no time to pick a Christmas magazine cover subject. Nevertheless, we riffled through the snow scenes, yule logs, and holly wreaths, trying to find something that would still look good to us in December.

Finally we asked ourselves, "What best symbolizes Christmas to everybody everywhere?" Our conclusion: the stars in the eyes, and rapt expression on youngsters' faces when they see a gift-laden tree. That, we think, really spells CHRISTMAS.

So, we turned the technical problems over to Constance Bannister, of New York, whose faculty for capturing children on film has won her fame and credits on the covers of more national magazines than you can name.

She chose for her models five-year-old Tommy Nevins, and his two-and-one-half-year-old sister, Patti. Dressed in their pajamas and robes, they were led

into the studio where tree, gay packages, and camera were waiting.

Brother-and-sister like, they immediately divided the Cellophane-wrapped packages, then were persuaded to sit while they compared colors and sizes. At this point, Miss Bannister's camera shutter managed to "freeze" the youngsters for this month's Du Pont Magazine cover. Not a moment too soon, she tells us, for later the studio was a shambles of gift wrappings, boxes, and whooping children.

• • • • •

Perhaps you were one of those who received the October-November issue of the Magazine a month late. Ordinarily, it would have arrived about the 15th of September, but to our regret several truckloads of Magazines were stranded at Trenton, N. J., by the transportation strike, and there they sat 'til November 1st, after which we managed to get them all in the mail.

DU PONT MAGAZINE

Vol. 40 No. 5



DECEMBER, 1946

E. R. MANCHESTER, Editor

R. J. WOODRUFF, JR., Managing Editor

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BRIDGES ARE VULNERABLE

But "Dulux" Metal Protective Finishes are "top cards" for defense against Nature's corrosion

By ARTHUR M. VALZ

"A STEEL BRIDGE is only as good as its paint coating," So declares a noted engineer. The famous Brooklyn Bridge, for example, owes its service life to the fact that maintenance crews have kept the structure well protected with paint for sixty-three years! And that's only one instance—many more could be cited.

According to a recent survey there are in the United States and Canada, approximately 192,000 railroad bridges with a total length of 21,120,000 feet or 4,000 miles. There are also about 16,000 overhead highway and pedestrian spans, and 640,000 culverts. Their aggregate value is estimated to exceed \$2,500,000,000. Annual maintenance expenditures for all items amounts to nearly \$37,500,000, although only a fraction of this total represents the cost of painting materials. While these structures are not all of steel construction, it's true that all exposed steel surfaces require protection—and paints and finishes are commonly applied for that purpose.

Steel bridges are finished not only to combat rust, but in many cases to accentuate the structural design. The finishes used must be resistant to smoke, gases, salt air and other corrosive influences. They must be tough, durable, and hold their color despite the sun, rain and changing seasons.

One of the many Du Pont contributions to that end was the development, about 1930, of "Dulux" Metal Protective Finishes for structural steel. This product incorporated a then new synthetic alkyd resin vehicle. Basic characteristics of these durable finishes are smooth flow and leveling, high hiding power, quick drying properties, adhesion, flexibility, impermeability to moisture and gases, retention of gloss and resistance to corrosion and abrasion.

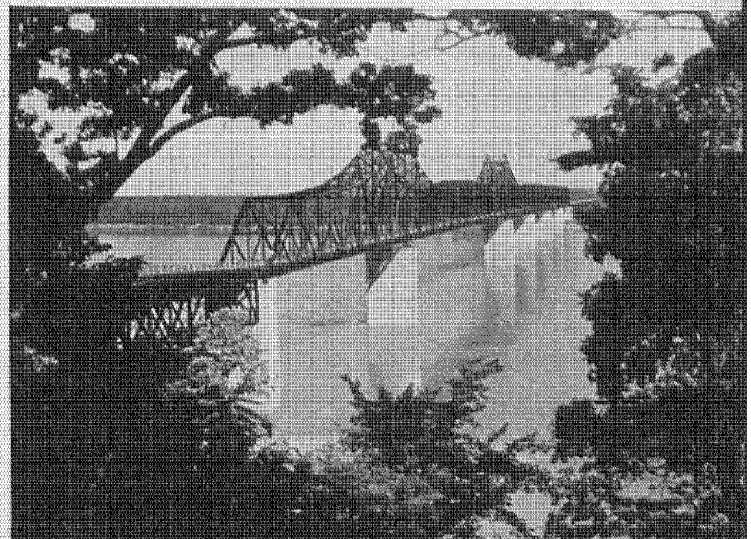
Paint finishes of this type are very serviceable if the surfaces on which they are applied are properly prepared and the conditions are suitable for painting.

To protect a bridge or any other structure requires careful attention to surface preparation, selection of materials, correct application and adequate film thickness. First of all the steel to be painted must be clean—free from oil, grease, rust, loose mill scale and other foreign materials. For example, if a shop coat is applied over a scaly surface, it cannot be expected to adhere any better than the scale does itself. When moisture comes in contact with steel, corrosion sets in rapidly. Inhibitive pigments in the primer stifle this reaction and retard rust. It is essential that the primer be in direct contact with the metal in order that the inhibitive effect can be realized. So surface preparation is the first essential—and it is important that the job be done thoroughly.

What is a satisfactory finish? Briefly, it is one that embodies correct pigmentation in a suitable vehicle. Metal primers are formulated to inhibit corrosion; intermediate coats to reinforce the shop coat, and the final coats to resist weathering and abrasion.

Unless all coats are cohesive and applied properly, poor results are certain to follow. Each coat must be spread evenly over entire surfaces, including sharp edges and rivet heads. Shop coats must cover and thoroughly wet all surface irregularities, and penetrate cracks, crevices, and pits. Also, the work should be done under favorable atmospheric conditions. Everyone knows or should know the hazards of painting a frosty or wet surface if satisfactory results are to be expected.

"Dulux" Black spans "Old Man River" on this cantilever bridge at Vicksburg, Mississippi. Its durability helps push upkeep costs down.

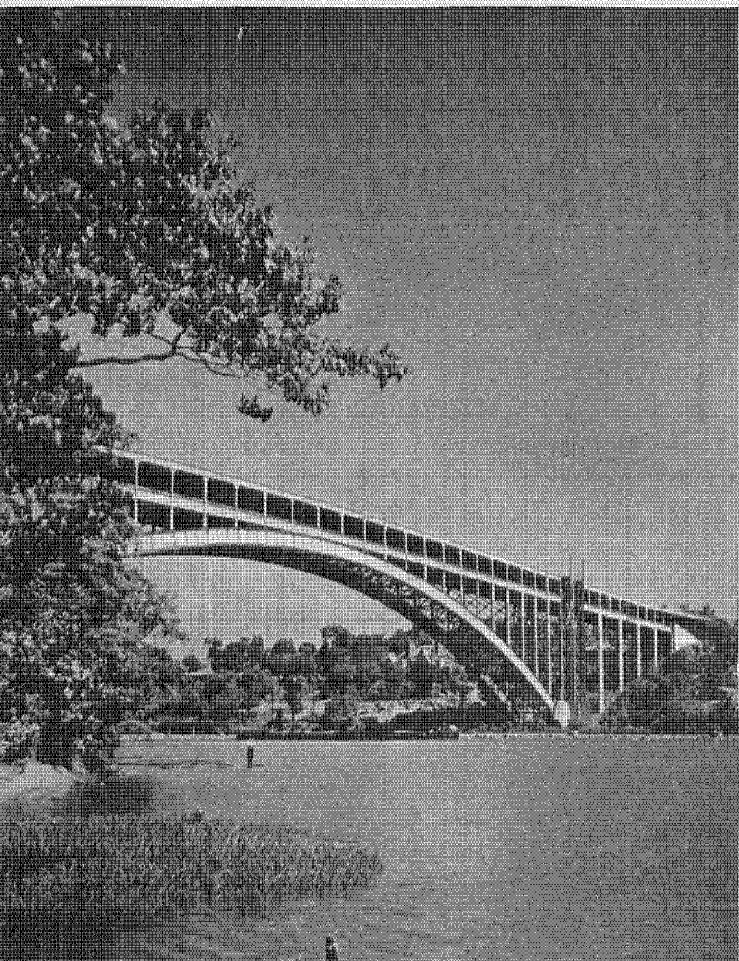


Steel bridges require tough finishes. "Dulux," for example, is highly resistant to year-round weather, salty atmospheres, and traffic fumes.



"Dulux" protects giant East River Crossing of the Tri-borough Bridge against industrial fumes.

"Dulux" Gray-Green adorns Gotham's Hendrik Hudson West Side Bridge over the Harlem River.

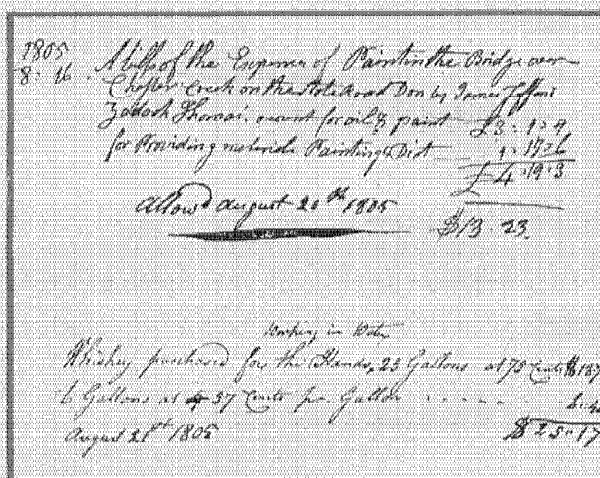


Adequate film thickness, too, is important. The recommended four-coat system—a shop coat and three field coats—deposits a film about the thickness of two of these magazine pages. Using fewer coats is uneconomical. For example, a two-coat system has only about one-third the service life of a four-coat system.

Bridge painting is a job for specialists. The engineer executes detailed specifications; a contractor manages the overall operation; the foreman oversees the crew; and the painters work from stagings or bos'un chairs. Many bridge painters learned their trade overseas or while serving as seamen.

Incidentally, structural-steel painting is tough on brushes. For example, when spot-priming pitted steel, even the best Chinese hog bristles are "chewed up" in a short time. Du Pont nylon bristled brushes, widely used by the armed forces in the war, are expected to become standard equipment in the future because of their excellent wearing properties.

In all painting operations, the biggest single item of expense today is labor, not materials. However, there was a time early in the nineteenth century, when unorthodox items came high. A bill for painting a small highway bridge in 1805, reveals that only \$13.23 was expended for materials; "whiskey purchased for the hands" totaled \$25.17!



The real test of a bridge finish is serviceability. Two examples will illustrate the point. First consider the Triborough Bridge at New York City which spans the Harlem and East Rivers, and is exposed to high concentrations of smoke and fumes. Here's a brief painting history of this structure:

- 1935 Construction started.
- 1936 Three "Dulux" field coats applied over primer on major areas. Parts of bridge finished in orthodox paint. Final coat, aluminum. Opened to traffic.
- 1938 Condition satisfactory.
- 1941 "Dulux" satisfactory. Orthodox paint showing chalking.
- 1946 "Dulux" still giving adequate protection. Bridge engineers anticipate repainting in 1947. "Dulux" returns ten years of satisfactory service.

Since 1940 when the Susquehanna River Bridge at Havre de Grace, Maryland, was opened to traffic, millions of motor vehicles traveling on U. S. Highway 1 have crossed this span. Exhaust gases from the steady flow of traffic have done their best to break down the "Dulux" finish which was applied to this structure. Briefly, its painting record shows:

1939 Shop primed with "Dulux," and erected.

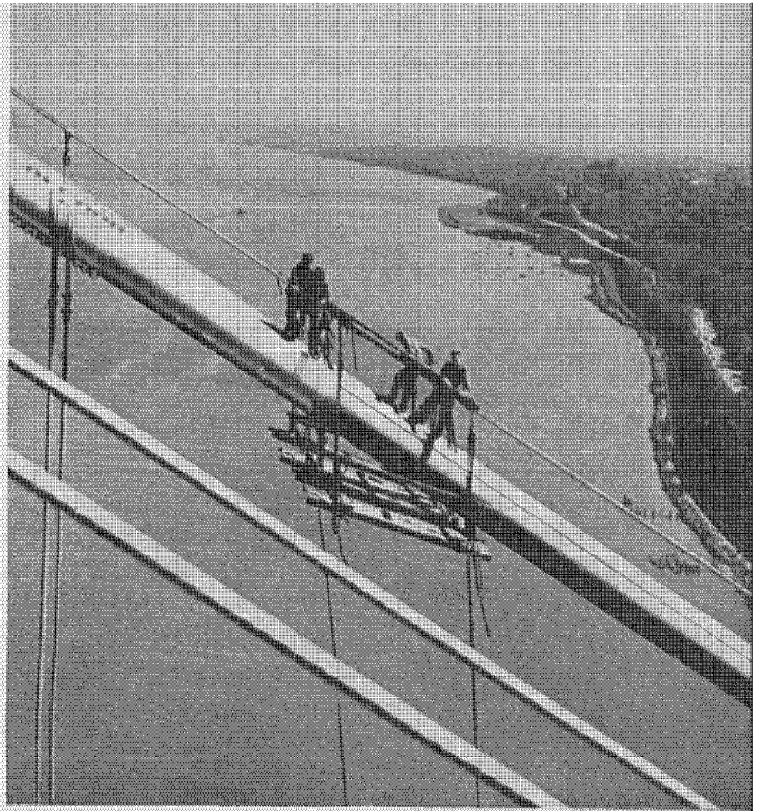
1940 "Dulux" field coats applied. Final coat "Dulux" Gray-Green.

1946 Structure in excellent condition. Bridge officials and consulting engineers expressed pleasure with service results.

Similar reports have been made on most of the major bridges erected during the past ten years. Possibly the best testimonial to "Dulux" performance is the fact that owners and engineers re-specify its use in their maintenance programs.

The Susquehanna River Bridge exemplifies not only the durability of the finish but also points up a new trend in painting structures of this kind for better appearance. In this case the use of a decorative gray-green instead of a black or battleship gray resulted in a decided improvement colorwise. More and more bridges are being painted in soft shades of green to harmonize with their locale. New pigmentations, with better color retention, allow satisfactory protection yet increase in many cases the beauty of bridge structures.

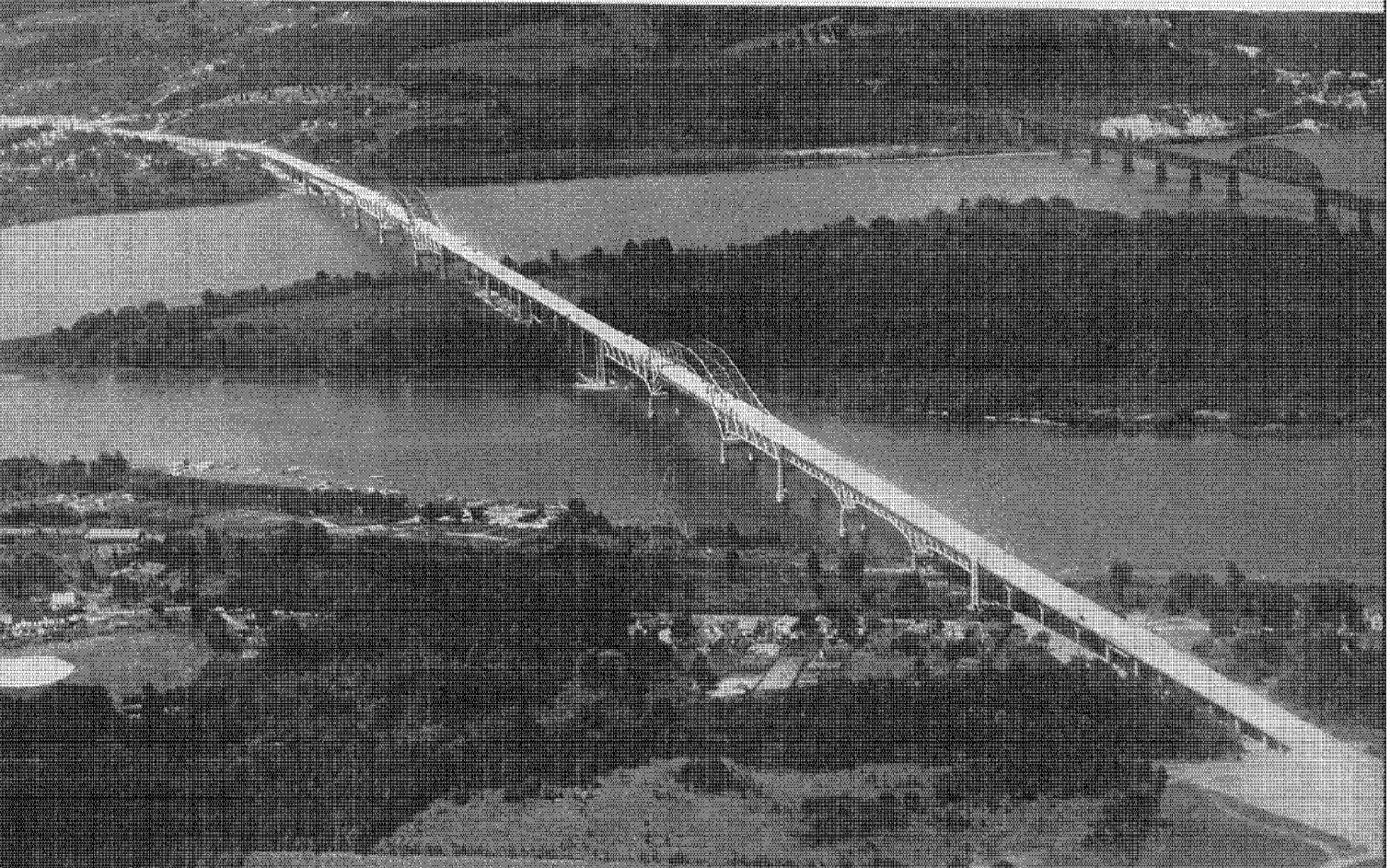
The next time a bridge in your neighborhood needs a "face lifting," remember that "Dulux" Metal Protective Finishes, because of their quality return 50 to 100 per cent longer life. Experience has proved them to be economical when measured by the yardstick of years of service per dollar.



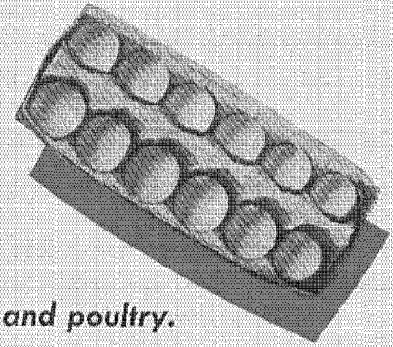
Bridge painters are specially-trained for their precarious trade which often requires working at dizzy heights from "catwalks" or "stagings."

• • •

This aerial view shows the Susquehanna River Bridge at Havre de Grace, Maryland, which is protected with decorative "Dulux" Gray-Green.



WHERE DID YOU GET THAT EGG?



Chemical science has helped make possible our vast output of eggs and poultry.

By JOHN BIRD

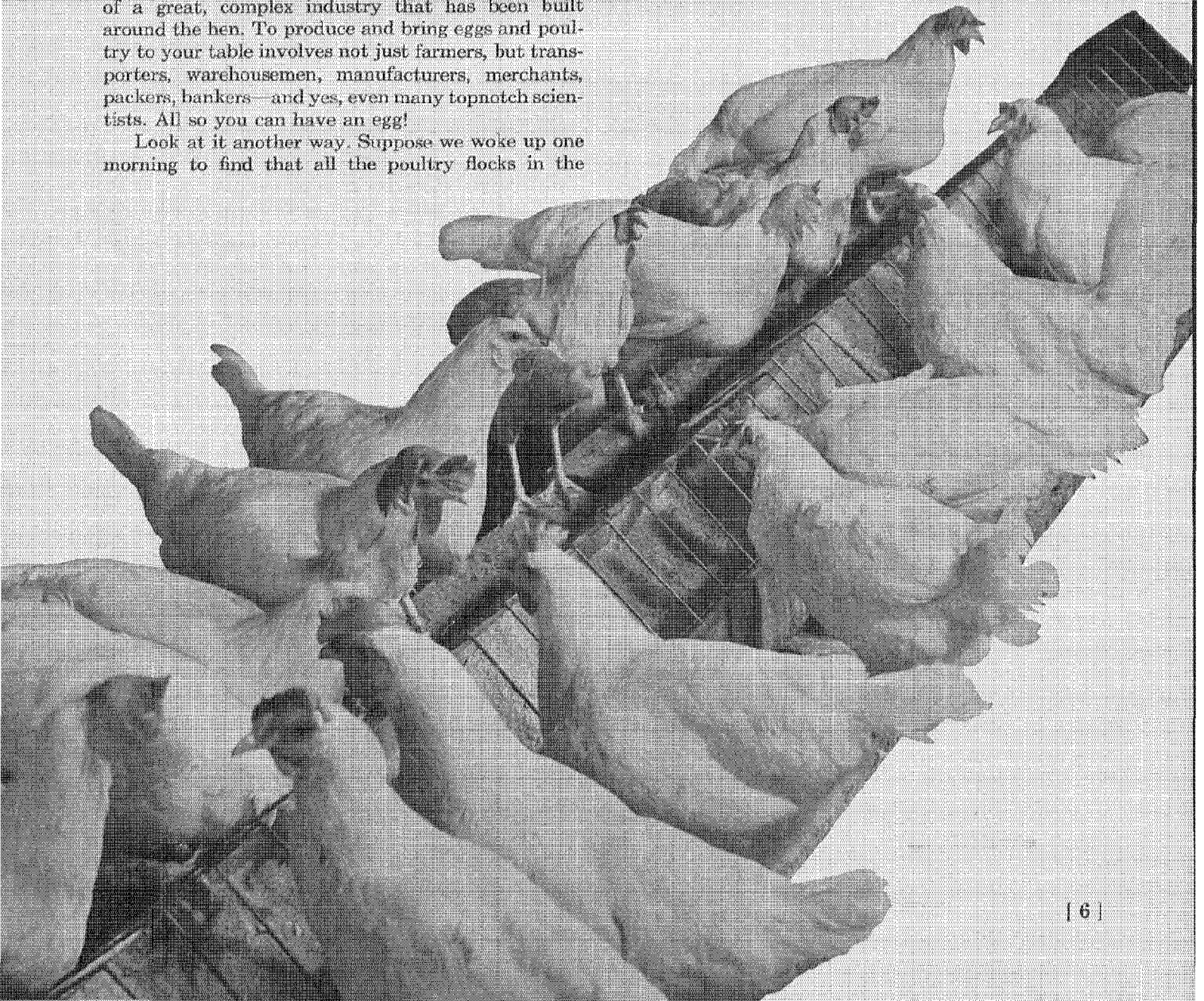
"A DOZEN EGGS PLEASE," says the housewife to the grocer. That simple, casual request is heard millions of times daily throughout the United States. Nothing could be more everyday and unexciting than buying eggs. Or so it might seem.

But actually, when a housewife opens a carton of gleaming white or golden brown eggs, she is concluding a truly spectacular chain of events. For today when you eat eggs or poultry you are enjoying the benefits of a great, complex industry that has been built around the hen. To produce and bring eggs and poultry to your table involves not just farmers, but transporters, warehousemen, manufacturers, merchants, packers, bankers—and yes, even many topnotch scientists. All so you can have an egg!

Look at it another way. Suppose we woke up one morning to find that all the poultry flocks in the

country had been stricken by a mysterious deficiency in their diet which robbed them of their productive power. Not a single egg had been laid!

No doubt about it, that would be a major catastrophe. A failure in the hen house would be a great blow to our national economy—as serious as the shutdown of any great industry. For poultry turns out a flood of new wealth each year and supports many



hundreds of thousands of jobs. Poultry flocks produce some income for nearly six million farm families; they are the main enterprise on many thousands of specialized poultry farms. In the last few years we have had about 450 million hens and pullets at work on our farms. Their output of eggs is measured in stratospheric statistics—as many as 58 billion eggs a year. Last year eggs and poultry produced receipts of \$2,577,000,000 for farmers. Just by way of comparison that is three quarters of a billion dollars *more* than the value of all passenger vehicles rolled off assembly lines in pre-war 1939.

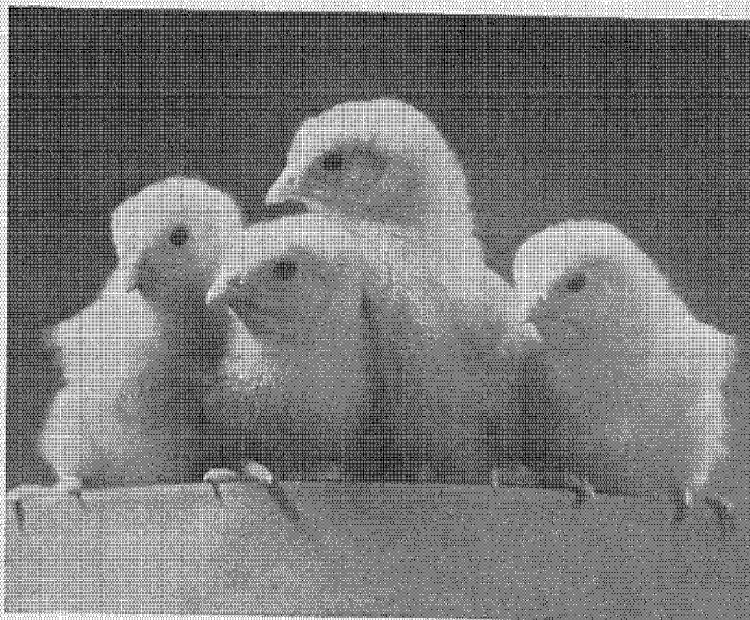
Thus, any way you look at it, the modern version of the jungle fowl contributes much to 20th century living. The high-bred hen, the chicken of today, is a virtual egg machine; good ones can shell out 300 eggs yearly. The efficiency of this tamed bird is the reward of centuries of persistent trial and error, and many years of scientific research in recent times. Take poultry rations. "Feeding the chickens" might conjure a nostalgic picture of Grandma tossing some kitchen scraps to a backyard flock—but only to those who aren't familiar with modern methods. The hen in a high-class commercial flock probably is more carefully and scientifically fed than most people. Her rations, developed by state, federal, and industrial research, are delicately balanced as to proteins, carbohydrates, minerals, fats, and vitamins, with as much precision as the meals from a hospital diet kitchen.

PACKAGE OF HEALTH

Now consider the result of all this linkage of effort: The egg you buy, one of the world's unique and valuable foods, is a small but powerful package of health. It is one of the few foods we obtain in ready packaged form, sealed in a delicate limestone shell, with its contents untouchable until you break that shell.

Let's check briefly what the egg offers its eater. There is about 16 per cent protein in the yolk and 11 per cent in the white. That protein, moreover is "complete." It is made up of various amino acids, and those constituting egg protein include all that are needed for the growth and repair of body tissue. Also in the egg are goodly amounts of calcium and phosphorus, both raw materials for strong bones and teeth. Iron needed for proper functioning of the red blood cells is there too. The list of egg vitamins includes many of those necessary to human well being: A, B-1 (thiamin), D, E, G (riboflavin), niacin, and K.

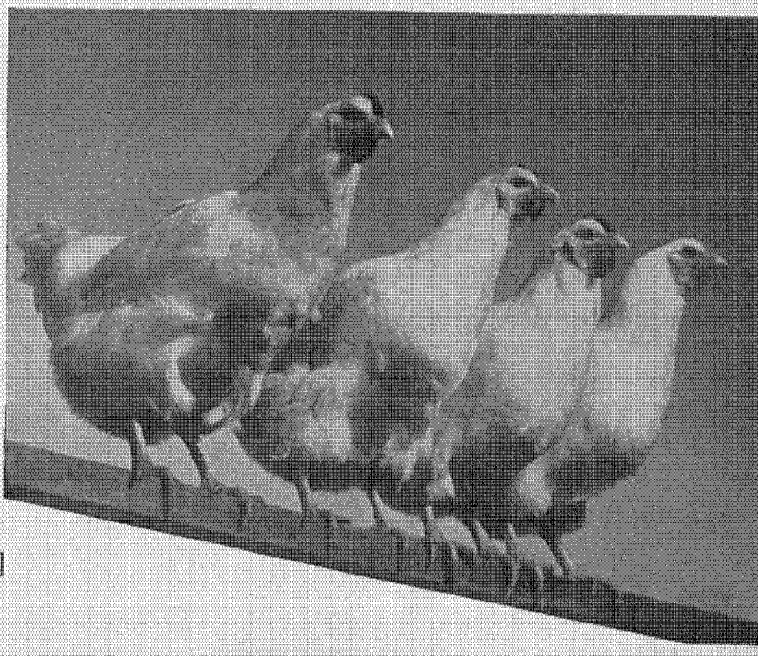
Today's poultry industry assures us of eggs the year through, and of frying, broiling or roasting chicken in all seasons. That wasn't always possible. Until the past few decades hens produced most of their eggs in the spring of the year, nature's traditional time of increase. Poultrymen tried to beat the seasons by housing flocks, but hens didn't produce well when confined; and the eggs they did lay reluctantly were likely to have poor shells and low hatchability. Chicks didn't do well except in warm sunny weather. When raised indoors in attempts to produce off-season or "hot-house" poultry, chicks were highly susceptible to rickets and many of them died. It seemed that the



chicken was a bird that performed efficiently only in plenty of direct sunlight.

Within the past generation scientists have tracked down some of the fundamental secrets of nutrition that helped to make possible our present vast and continuous output of poultry and eggs. One of these important discoveries solved the poultrymen's sunlight problem. Researchers first found that you could give an animal a ration containing all the then-known essential elements, including plenty of bone-building materials, but the spark of growth was missing. The probing scientists soon found, however, that some quality in strong sunlight gave the animals the ability to utilize the calcium and phosphorus in their diets for the building of bones. Later this power of the sun was narrowed down to the ultra-violet part of the spectrum and it was discovered that many foodstuffs could be charged with this newly found factor by irradiating them with electrically-produced ultra-violet light.

This factor came to be known as one of the vitamin series—Vitamin D, which is essential to growing animals.



If this Vitamin D is created simply by exposure to sunlight, why don't all animals get enough of it? The answer, investigators found, is that sunlight is not a dependable source. In many climates sunlight is insufficient for adequate Vitamin-D production during much of the year. Poultry, in particular, must have large and sustained amounts of this factor to grow, thrive, and produce lots of strong-shelled eggs. In fact, the lack of Vitamin D, even for a day or two is a set-back for these sun-loving birds.

So it was highly significant to the poultry producers when evidence came out of the research labora-

Even with huge military and export requirements last year, an egg-a-day was available for each civilian.



tories that Vitamin D could be formed in feed ingredients by irradiation with ultra-violet light. Here was a possible means to obtain high production with housed birds, to avoid seasonal slumps, to operate in adverse climates. Here was the promise for raising stronger chicks, for producing better eggs.

Du Pont chemists had followed the early Vitamin D research carefully. They were especially interested in investigations which indicated that the vitamin was produced by the action of ultra-violet rays on "sterols"—the chemical substances which occur in the tissue of plants and animals. And now it had been found that they were the natural factories for Vitamin D, when triggered by ultra-violet light.

In 1930 Du Pont biological chemists set out to learn more about sterols, especially how these substances might be most effectively activated.

Up to that time it had been assumed that there

was no essential difference in the value of Vitamin D formed in plant sterols as compared with that in animal sterols. However, scientific evidence developed in the Du Pont experiments showed that certain sterols from animal sources were many times more effective in producing the desired vitamin than were the plant sterols.

Out of this work came the formula for commercially producing a practical, effective Vitamin D product for poultry—a means of putting a measured supply of known potency Vitamin D into the ration. The new product of chemistry was trade-marked "Delsterol" "D"-Activated Animal Sterol, and approved by the Association of American Feed Control Officials.

There were still two problems. Which of the available animal sterols was most suitable for irradiation? And could such sterols be found in quantities sufficient to assure a plentiful, continuous domestic supply of raw material? As experiments and research by Du Pont progressed, it was found that sterols extracted from certain plentiful marine animals produced a highly satisfactory Vitamin D. The tests also resulted in a method for utilizing sterols extracted from by-products of the meat-packing industry. With these raw materials available the poultry industry could be supplied with "Delsterol" at all times.

PROCESSING

To see "Delsterol" being manufactured is to realize the part chemical science plays in agriculture today. Here ultra-violet rays are harnessed to provide one of the vital ingredients of a complete, balanced diet for poultry. Under these rays pass the raw materials, the sterols about which we knew so little only a few years ago. The transformation taking place under the light cannot be seen, but while the lights glow a new power of growth is captured. The processed material is "Delsterol". It is mixed with an edible powder for easy handling and efficient dispersion in poultry feeds, and then packed and shipped to feed-mixers.

Each batch of "Delsterol" produced by Du Pont actually is scientifically "chick-tested" to measure its potency before it is distributed. The effect on each chick is carefully measured, even to a chemical analysis of the bones, before it is certified for sale.

* * *

"... and a dozen eggs, please," says the housewife. During the war when many foods were scarce or not to be had, the housewife usually could be sure of getting eggs. Without a dependable, domestically-produced Vitamin D supplement, it would have been impossible for poultrymen to have produced anywhere near the needed supplies of poultry and eggs. But "Delsterol" was there. Instead of declining, egg and poultry output soared to an all-time high. The military forces required about 500 million dozen eggs a year—and got them. Last year about 105 million dozen were dried and exported to help sustain our Allies. There were enough eggs left so that the civilian consumption reached a record of 390 per person per year.

And that is how and where you got that egg.

DU PONT "TELEFILM" HAD A "D-DAY"



The demonstrations in Washington and New York proved the value of motion-picture film for television; other uses are discussed here.

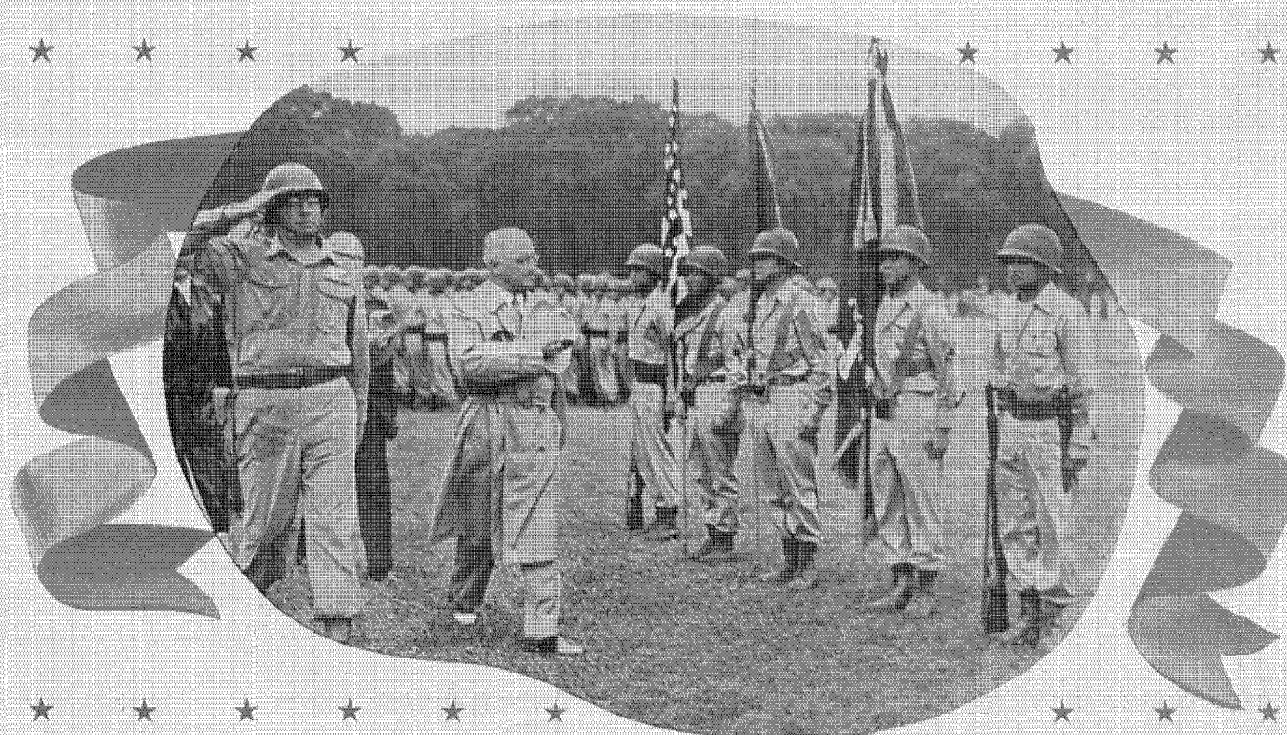
By CARLTON D. FORD

LATE IN THE AFTERNOON of July 15 in Washington, the famous 442nd Japanese-American Combat Team marched down Constitution Avenue in the rain to receive from President Truman an official commendation and a Presidential Citation Banner for the regimental colors. It was a memorable occasion for the Nisei; they were soon to be honorably discharged from the Army.

For photographers clicking this big news event it was just another assignment on a blue Monday. But for one cameraman it was "D-Day" (Demonstration Day). He was using a special "Telefilm" motion-

picture film, a new Du Pont product developed at the Photo Products Department Laboratory in Parlin, New Jersey; and this negative film was to be used for television transmission that same night in New York.

Telecasting with negative film isn't a new technique. The engineers merely use an odd number of stages of amplification of the picture signals to deliver natural looking positive images on the receiver's screen. But to improve results they needed a film coated with a special emulsion that would give better detail in both highlights and shadows and be satisfactory for use under poor lighting conditions, like those which





● *In the National Broadcasting Company's film control studio, engineers preview the film as it goes on the air four hours after the ceremony in Washington.*

prevailed on that rainy afternoon in Washington.

The demonstration of "Telefilm" was a joint project of Du Pont and the National Broadcasting Company. Its purpose was to show the quality improvement made in this film and how quickly and how well NBC telecasters could get the Washington news-pictures on the screens of patrons in New York City. Here's what happened:

When the parade and ceremony ended about 6 P.M., the film was rushed to a local laboratory and developed only. By 7 P.M. it was aboard a chartered plane for Newark airport. Due to adverse head winds it did not arrive there until 9 P.M., when it was whisked away in a taxi to the R. C. A. Building in New York. On arrival there at 9:35 P.M., the film was hastily inspected and edited. By 9:55 P.M., a movie projector was casting the images into a television camera, which shot out the sound and video signals.

The show was on the air in New York in *less than four hours after the pictures were made in Washington!* It was considered good enough to interrupt for six minutes the "live" telecast of a baseball game under lights between the New York Yankees and the Detroit Tigers at the Yankee Stadium.

At the same time in Washington, where two television sets were installed in the local NBC radio station, a few invited guests had another opportunity

to see the parade again as the telecast signals came over the coaxial cable from New York.

By early 1948 this may be commonplace, for it is estimated by engineers that 100 television stations will be in operation by that time and that the public will own 1,000,000 receiving sets.

Station operators will want to telecast the news. If they have portable television equipment on the spot where and when the news breaks, they can work from direct action. But that is neither practical nor possible in all cases.

If they have network connections by coaxial cable with metropolitan television companies, they can pick up and relay telecasts regularly. Unfortunately, such networks are not yet extensive—and they are likely to grow slowly because of the high cost of installing coaxial cable or microwave relay stations. For stations operating locally and without network facilities, it is now practical to telecast from motion picture film a local athletic event or the homecoming of a celebrity as soon as the film is exposed, developed and dried.

The New York and Washington demonstrations were made with 35 mm. Du Pont "Telefilm," but the 16 mm. film can also be used with satisfactory results, as has been shown by the work of cameramen who have investigated the possibilities that lie ahead in news-picture telecasting.

make it completely natural, they have the alternative of producing a movie. For instance, a manufacturer might tell the story of his new product by showing a few of the most interesting shots in connection with its development or production, followed by a demonstration of the great number of ways it may be used.

Television Magazine some months ago sent out a questionnaire to the present active stations and to those scheduled to start soon, concerning the percentage of time film might be used in programs. The average from the replies was 31%. Regular picture-taking and sound-recording films will be used, and regular release stocks will serve for printing. In most cases, the saving of a little time will not be urgent.

OTHER USES

The third use for films in television is to photograph the images as they appear on the monitor set in the control room of the station. If the telecast is from live action, a picture record of it may be necessary for legal reasons, or an advertiser or sponsor may want one for his reference files. Some months ago when NBC telecast Du Pont's broadcast of the Cavalcade of America show "Children of Old Man River" a record of it was made on Du Pont film.

Ultimately, special cameras will be needed to photograph the monitor-tube screen in perfect synchronization with the scanning of the television image and the recording of the accompanying sound. When that is achieved, a national advertiser may telecast a live show for network use and at the same time make a film record. From the latter multiple prints may be made and shipped within a few hours by air express to stations not connected by networks.

Some theater managers are worried about television for fear it may ultimately detract from their box office income. Yet it is conceivable that in the not-too-distant future they may be quite willing to subscribe to a service, which will bring over specially-leased lines television action of outstanding sports events, such as a Louis-Conn fight, a Kentucky Derby or a World's Series baseball game. In that case, movie operators would probably receive the image on their tube as a negative, photograph it with special recording film, develop it quickly in the approved race-track manner, and project it on the screen—all within a few minutes. Such a procedure would permit brighter and larger pictures in their theater than might otherwise be obtained.

To summarize then, Du Pont films will soon be needed for these purposes:

To photograph news and sporting events, where it is neither practical nor possible to use television cameras and where time is of the essence, as in the Bikini atom-bomb tests.

To provide entertainment and educational features, either sponsored by an advertiser or not.

To photograph the image from a television tube of live action, either for record or legal purposes, or for subsequent transmission by other stations, or for use by a theater on a large screen or to make horse racing as safe as possible for the unwary bettor.

Our picture story of the Nisei parade illustrated the first use of another "better" Du Pont film product and how, in its "D-Day," it came through over the air with flying colors.

M. R. Boyer (left), of the Du Pont Company's Photo Products Department, and O. B. Hanson, ABC vice-president and chief engineer, view the first showing of the new telecast in New York.

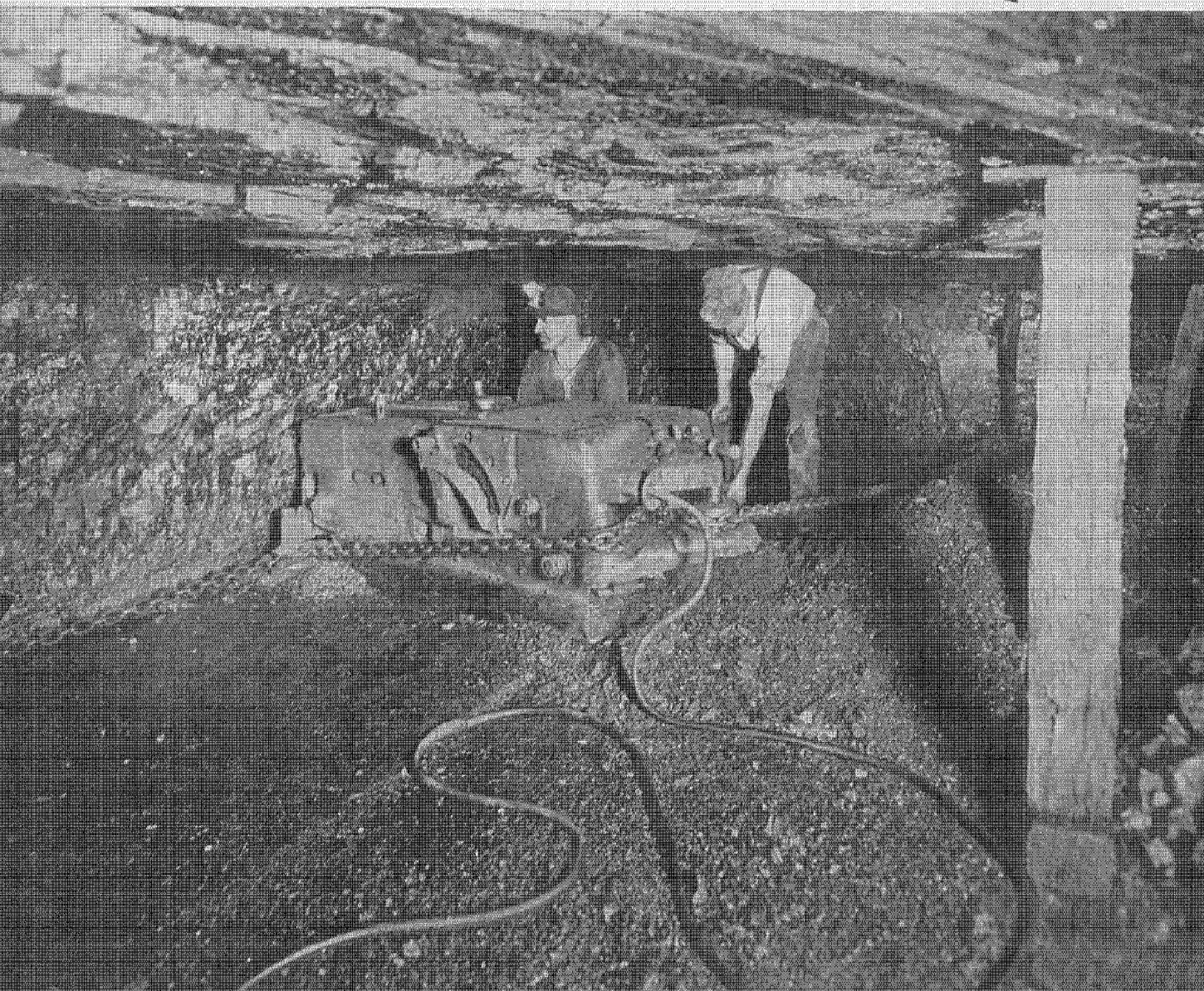
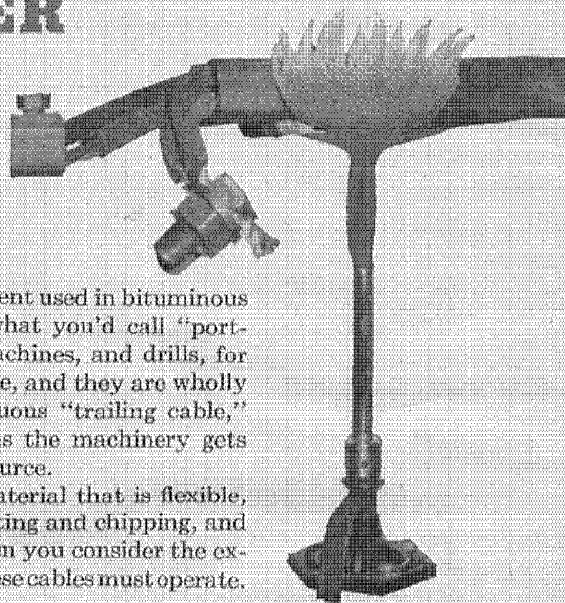


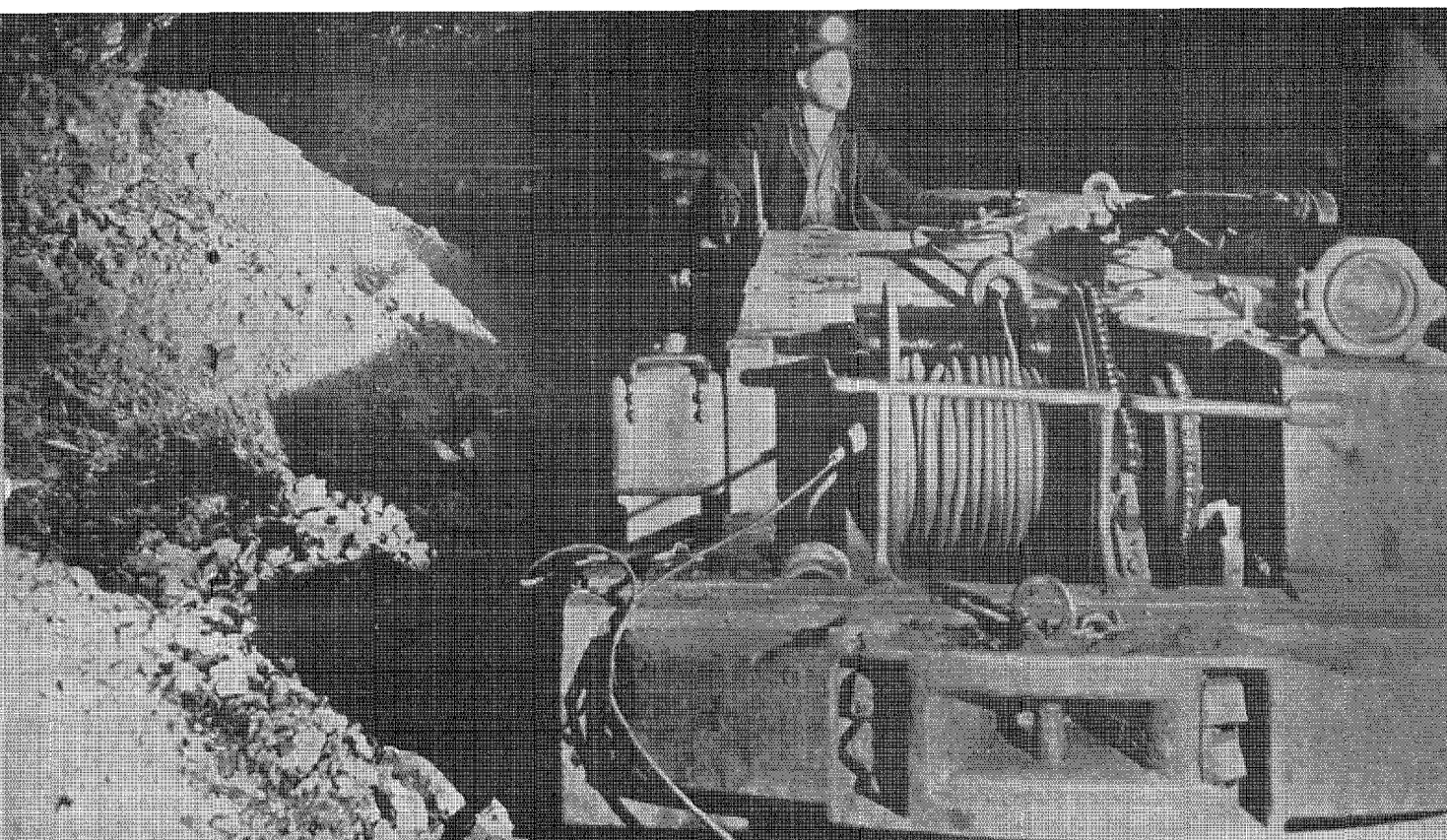
MAKES MINING SAFER

*Neoprene-jacketed trailing cable meets new
Pennsylvania code for flame resistance.*

MUCH of the electrical equipment used in bituminous and anthracite mines is what you'd call "portable." Locomotives, cutting machines, and drills, for instance, are always on the move, and they are wholly dependent for power on a tenuous "trailing cable," which drags, or is reeled out as the machinery gets farther away from the power source.

The need for a jacketing material that is flexible, yet resistant to abrasion, to cutting and chipping, and to oil and grease, is obvious when you consider the extreme conditions under which these cables must operate.





Electric-powered mine locomotive in operation. Power cable fed from reel is potential source of fire when current overloads occur.

For a number of years, most of the trailing cable used in coal mines had been made of a rubber-insulated wire core, with a tough outer jacket of Du Pont neoprene. These jackets were specially designed by cable manufacturers for resistance to wear and oil, but no special effort had been made to secure flame resistance.

Surveys made during the war by the Coal Mining Institute of America revealed that most mine cables, at one time or another, were carrying dangerous current overloads, in some cases 300 to 500 per cent above the safety limit. Here was a real fire hazard that needed correction.

Records showed instances where poor cable splices had "blown," or short circuits had appeared between conductors. Almost invariably the outer sheathing of the cable ignited. Any fire below ground has the makings of a major mine disaster.

At the Institute's meeting at Pittsburgh, Pa., in December, 1944, the following resolution was adopted:

"The secretary (shall) request the heads of all state departments of mines to initiate amendments to state mining laws requiring all insulated cables used in coal mines of their respective states to be of flame resistant construction, and that the secretary request the United States Bureau of Mines to make such recommendations to the coal mining industry."

Severe laboratory tests (top left) determine the flame resistance of neoprene-jacketed mine cable. The need for a sturdy cable to power the under-cutting machine is apparent in mine scene (left), far below the surface,

The Pennsylvania Secretary of Mines promptly initiated a bill which provided the necessary legislation, and this amendment to the state mining laws, designated as Act 206, was passed by the Pennsylvania General Assembly, and was signed by the Governor on May 15, 1945.

This act, which applies to both bituminous and anthracite mines, declares that it shall be unlawful to operate any portable electrical equipment by means of trailing cables in coal mines one year after the passage of the act unless such cable is safely and efficiently insulated by flame-resisting material.

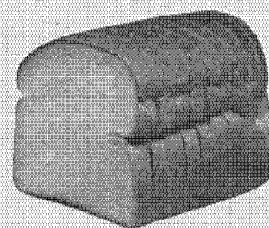
A test procedure simulating mine conditions was developed, and it was specified that the new equipment must be as good as "standard" cables in every way, and must also pass the flame test.

For some time, Du Pont chemists had worked on methods for compounding neoprene to improve resistance to flame propagation. So, when the standards of the new Pennsylvania law were known, intensive joint effort with technicians of wire and cable manufacturers resulted in the rapid development of flame-resisting neoprene jackets. This cooperation resulted in jackets which had superior flame-retarding properties with no sacrifice of other necessary qualities.

At this writing many types of cables jacketed with neoprene have passed the flame-resistance tests required by the Pennsylvania code. Users of trailing cable in mining and in other industries can be sure of safer operation, thanks to this synthetic rubber.

TO HELP FEED A HUNGRY WORLD

Bakers are cutting bread waste with "Mycoban" mold inhibitor



WHEAT, RICE, FATS, AND OILS—in that order—are the world's primary needs today in combatting the global famine which threatens to take a greater toll in lives than the late war. Small wonder wheat heads the list, for a ton of wheat will make about 2400 one-pound loaves of bread, the equivalent of over 2,500,000 calories. If the same amount of wheat were fed to cattle, on the other hand, it would only produce about 200 pounds of meat, or roughly 200,000 calories. Bread, certainly, is the staff of life—and, fortunately, a bumper wheat crop was produced this year.

In meeting food commitments to nations abroad, America is not asked to go hungry, but to *conserve* in every way possible. For instance, an estimated total of 100,000,000 loaves of bread was wasted annually in this country due to *mold*. The loss was especially high in sliced bread, where the individual slices are prey to mold spores, which are in the air everywhere. Much of the bread made today, though, has "baked-in" resistance to mold, because for years many bakers have been using calcium or sodium propionate, added to retard spoilage.

The propionates occur in some foods we eat but the quantities are so small that they have no noticeable effect on mold. When added to bread in the proportions of approximately two ounces per 100 loaves, however, the propionates delay the growth of mold about three days beyond the time when it would normally develop. Du Pont's trade-mark for propionates is "Mycoban."

The Good Housekeeping Institute recently made a thorough investigation of the inhibition by propionates of mold on bread and gave its "Guarantee Seal" to "Mycoban."

"Mycoban" is mixed in the dough and requires no change in normal baking procedure. Bakers are willing to absorb the small cost entailed since on the average, it amounts to only four cents per hundred loaves. "Mycoban" continues to protect bread even in the housewife's kitchen. So, by producing bread that stays mold-free longer, your baker is helping to cut waste in a food that money can't buy in many parts of the world.





● *Negligee of nylon is filmy and graceful. Quilt, chaise lounge upholstery, and curtains are also nylon.*

NYLON ON DISPLAY

Showroom at Wilmington gives visitors a picture of Du Pont Nylon's versatility

TODAY nylon is as well-known to the American public as baseball. Nylon stocking lines rate headlines in the news as nylon military equipment rated citations for meritorious service in wartime. No textile yarn in history ever received such public attention.

The Nylon Division itself does honor to this versatile yarn with the Nylon Merchandise Laboratory. A nylon showroom, it was conceived originally to demonstrate the properties and versatility of nylon and to stimulate imaginative and creative thinking about it. Incredible rumors had circulated about nylon, but here were some of the possibilities in tangible form. Out of long years of intense research had come tailor-made filaments of a yarn promising a variety of applications. Experimentation on these had only begun when the war halted all but military production. Now, enriched by manufacturing experiences gained in war research, nylon is returning to serve you.

Since the room's origination, its contents have changed as improved fabrics result from unceasing

experimentation. Nylon's multi-personality is strikingly illustrated in the most recent setting which includes three wedding scenes. The events are portrayed against a nylon background which previews the wonders soon to be available for everyone.

The bride's boudoir is shown in the first scene. Nylon curtains, transparent as air, hang at the window. Ice-blue satin drapes which match the satin cover and satin pillows on the couch, add shimmering sophistication to the scene. At one end of the boudoir stands a linen closet. Blankets and bedspreads in rich pastels are piled on the shelves. A luxurious satin quilt is folded beside a light summer coverlet. Off to the side is a costumer with a sheer negligee, nightgown and lingerie hanging from it. And nearby, a bureau contains a wealth of apparel as added proof of nylon's versatility. A colorful array of gloves, girdles, slips, scarves, lingerie, sachets, blouses and hosiery come tumbling out of the drawers.

The wedding scene introduces two other nylon fab-



Suits like this are combinations of man-made fabrics. This style is spun rayon and nylon. Of course, the hose are of sheer, seamless nylon.

rics; sheer net and rich lace fashioned into graceful gowns for the bride's attendants. The bride herself is radiant in a shimmering ice-blue satin gown. The little girl holding her train is also attired in satin and the yoke of nylon net flowers forming the neckline are the same as those in the bride's hair and on her muff.

The newly-united couple are shown together in the final scene as they leave on their honeymoon. His Navy uniform as well as her going-away outfit are stamped with nylon's personality. Even his gold braid is made of tarnish-proof nylon.

The materials used in each of these scenes are either all nylon or part nylon. In many cases, combinations or blends of yarns make the most satisfactory product. The satin is woven of 75% nylon and 25%

rayon. The groom's uniform is a blend of spun rayon and spun nylon, and the bride's suit is a combination of nylon and rayon. More and more, in order to meet specific textile needs, a blend of fibers is selected wherein the good qualities of any one fiber, or even its weaknesses, will be complemented by the strength and qualities of one or more other fibers. Thus all the important qualities of each fiber may be fully realized.

Nylon has a variety of valuable qualities to recommend it for combination weaving as well as for use alone. Its strength, abrasion resistance and mildew resistance suggest uses in upholstery, rugs, sails, mooring lines and heavy duty fabrics. Its shape retention, sheerness and washability have already popularized it for hosiery, curtains, lingerie and dress goods. Its elasticity and resilience will add long life to any weave.



This satin bridal gown is a mixture of 75 per cent nylon and rayon. Veil and flowers are all-nylon.

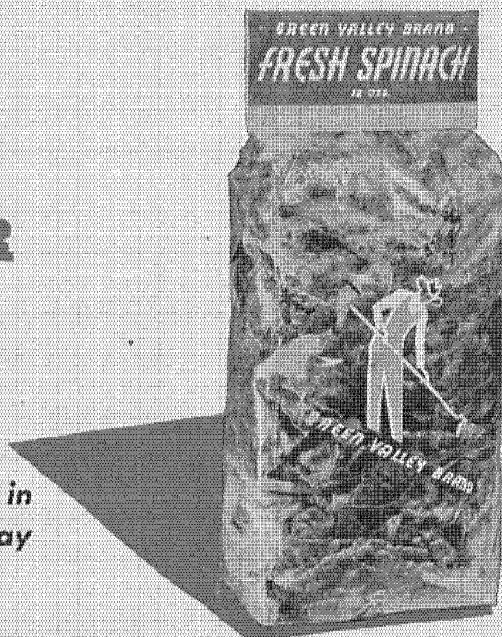
Many of these things are still in the experimental stage. Some of them will not be available for many months to come. But the Nylon Merchandise Laboratory proves that nylon yarn will offer the textile world almost limitless opportunities to build many new constructive and interesting qualities into the products it will develop in the future.

Nylon's multi-personality is illustrated below. Model wears a nylon pleated gown and over it a nylon lace negligee. Tassels decorating table and lamp are made of nylon. Shades and curtains are also woven of the versatile synthetic material.



NEW STYLES FOR PRODUCE ★ ★ ★

Fruits and vegetables "prepackaged" in Cellophane for self-service—a new way to help lower distribution costs and reduce waste.



MARKETING AUTHORITIES estimate that about one-quarter of the farmer's produce never reaches the dinner table. In other words, the yield of twenty-five acres of every hundred harvested is destined to be wasted. Cost of this waste is reflected in the price the consumer pays for her corn, peas, tomatoes, melons and the like. However, a new method of produce handling is being developed which aims to reduce this loss by seventy-five per cent—and pass on the savings to the housewife as well as to the farmer.

Food experts call this new method of handling "prepackaging," because the produce is packaged in convenient retail units prior to counter distribution. The trend projects a major development for the produce industry which has experienced few changes in marketing methods in recent years. Better quality fruits and vegetables, at no increase in price to the consumer, is the goal.

Prepackaging may be performed at one of three major levels of distribution—grower-shipper, wholesale or retail store. Some waste is incurred at every point

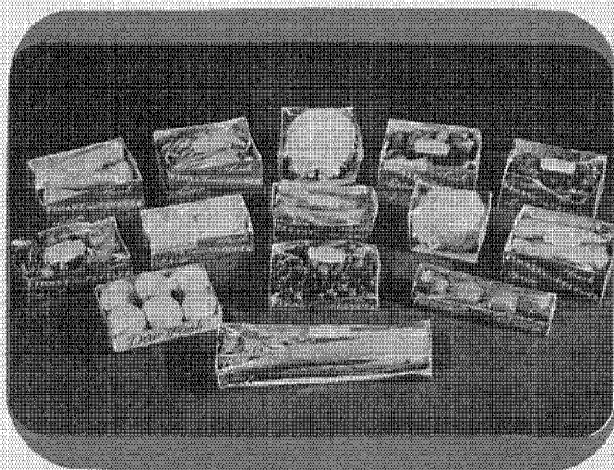
throughout which perishables travel. Experience has shown that proper handling and careful planning can reduce spoilage at all levels.

Pioneering work on prepackaging has been conducted by several progressive retail organizations utilizing the two principal functions of the transparent package: faster sales, which reduce the time in which deterioration can take place; and protection, which preserves freshness longer. Growers, wholesalers and retailers are watching closely the results of tests.

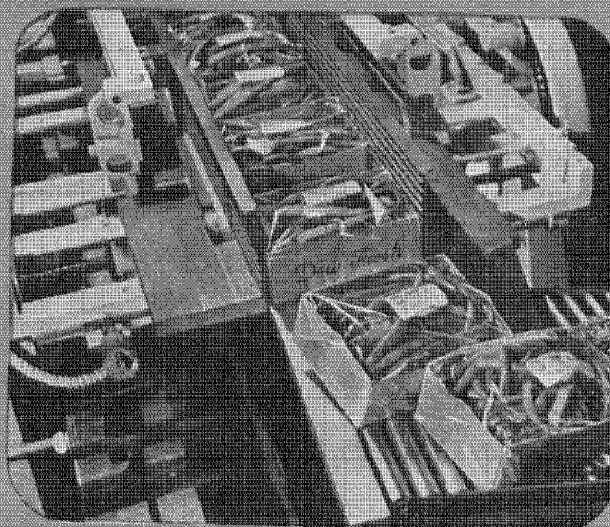
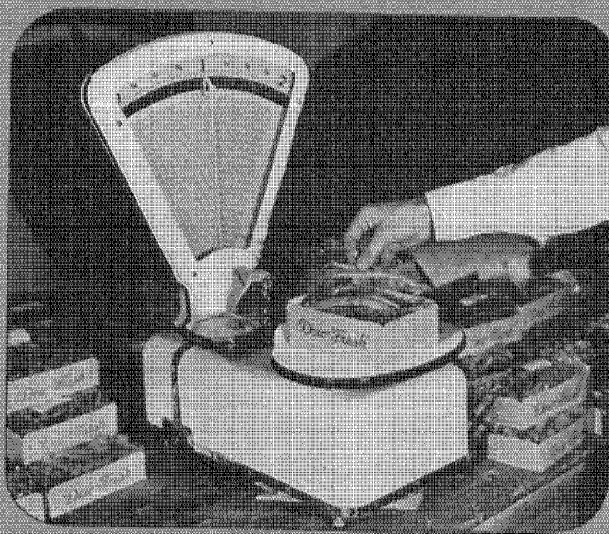
In these tests, various types of produce are first trimmed and washed thoroughly. The items are then either put into moistureproof Cellophane bags or packed in cardboard trays and overwrapped with Cellophane prior to store display. In some instances, open-top, self-service refrigerated cases are used. Cellophane is the logical packaging material for this use because experience has indicated that customers want to see the produce in addition to having it protected.

These experiments have proved that practically all produce items, if carefully packaged, remain in a more salable condition until purchased. In one test, packaged vegetables were given a salability rating after being displayed in a refrigerator case for five days. The following items were still 100 per cent salable: tomatoes, peas, peppers, parsley, celery, beets, cauliflower, lettuce, carrots and green beans. Ordinarily, many of these vegetables would start to deteriorate after twenty-four hours.

In the past, the produce counter has usually been a drawback to the efficiency of most food stores. Nowhere in the store was waste so prevalent or profits so variable as in fruit and vegetable departments. Not



These handy retail units were "prepackaged" in Cellophane. The products are kept clean, are visible, and safe from handling.



1 Workers are shown checking, weighing, and "traying" trimmed produce enroute to wrapping machine.

3 The worker is "feeding" filled trays into the automatic packaging machine. Flow of packages is rapid.

2 This "behind the scene" shot shows weighing method. Absence of customer pressure makes for accuracy.

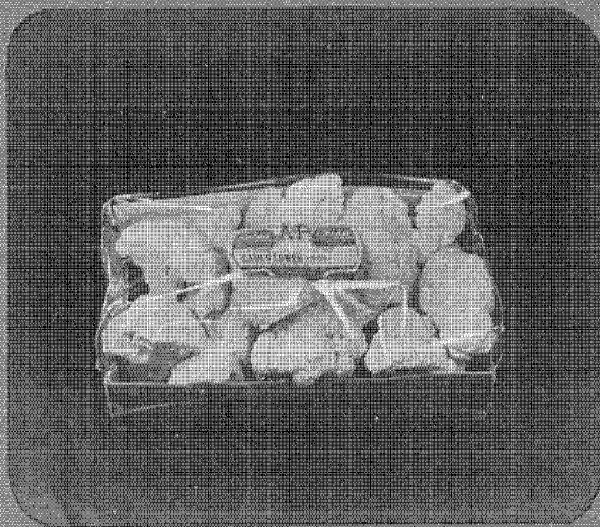
4 These fresh-wrapped items in protective, visible packages are now ready for retail distribution.

properly cared for, it was the most unattractive section. The floor was often cluttered with refuse discarded by careless trimmers. Poor ventilation caused many perishables to dry out prematurely. Shoppers often had to wait for service. Late-comers took or rejected "picked over" items. About ten per cent was never sold, becoming a total loss to the store.

Prepackaging is eliminating many of the "sore spots," and is helping to put the produce department on an equal basis with the other sections of the store. Packaged produce is more uniform in quality and

freshness. Weight and price are clearly indicated on each package. No traffic congestion occurs, for the customers move along rapidly as they serve themselves. Full supplies are kept in spotless cases at all times. The items not only look good through their Cellophane wrappers, but are good because their garden freshness is safeguarded. Customer damage to the produce, through handling or pinching, is minimized because of the protection afforded by the package.

Those in the produce field with an eye to the future realize, just like other business men, that con-



This "prepack" of cauliflower contains the choice parts of the head and is all ready for cooking. Label includes name and price.

The select quality of these grapes is plainly visible to buyer. This new way of packaging is receiving enthusiastic public approval.

Busy shoppers experience no delays at modern self-service cases where they help themselves quickly to "prepackaged" produce.

Traffic jams and impatient queues at counters are drawbacks to the efficiency of conventional fruit and vegetable departments.

sumer approval of a new idea is all-important, and are naturally impressed by the fact that consumer acceptance of prepackaged produce has been immediate. Shoppers are impressed with the cleanliness, convenience and better appearance of the items. Many have reported that the package keeps the contents fresh, even while it remains in the refrigerator at home, awaiting use.

This new way of handling fruits and vegetables was introduced on a small scale before the war, but

was limited principally to the prepackaging of brussels sprouts, tomatoes, and blueberries. The war interfered with the development, but now it is underway again, incorporating changes found necessary through test experience and research work. As necessary display equipment, packaging materials and other supplies become more available, it is predicted by many authorities in the produce industry that this new method of merchandising fresh produce will become a national practice.

DOORS AND WALLS THAT FOLD

Made of fire-resistant Du Pont plastic-coated fabrics, they are now practical for use in modern homes and apartments

• • • • • By H. D. OBERDORFER, General Manager • • • • •
New Castle Products

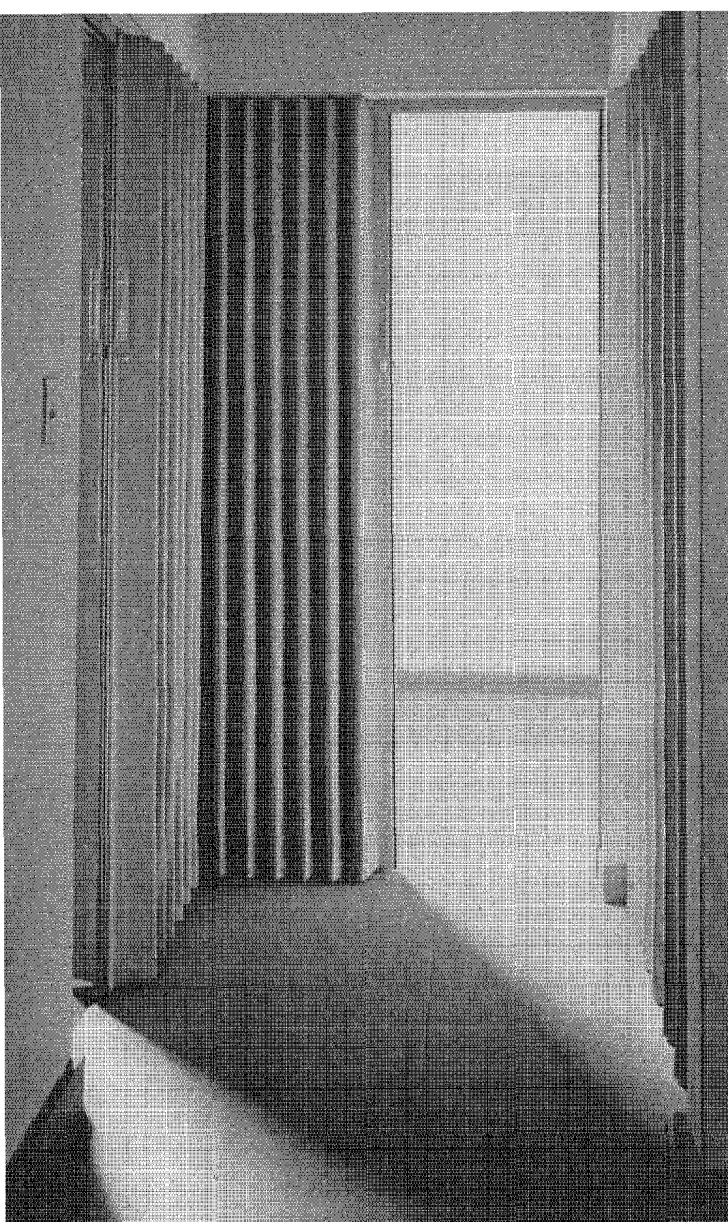
SWINGING, sliding and folding doors of wood construction are quite usual. But nowadays there are also folding doors—and walls, too—of coated fabric construction that can be opened or closed at will by means of two or more metal pantographs operating in horizontal planes with equally-spaced vertical rods to give the structure rigidity. Manufactured by the New Castle Products of New Castle, Indiana, and sold under the name Modernfold, these special prod-

ucts have made steady advances in a variety of applications since their introduction in 1936.

Originally the base fabrics were coated with pyroxylin, which is a material of great durability, but with restricted applications in the building industry because of existing fire regulations. During the war better synthetic resins were developed and used for coating military fabrics. These flame-resistant coatings when applied to fire-resistant cotton fabrics of the

You can make two bedrooms from one with the accordion-like folding wall, yet no floor space is sacrificed.





type used in making Modernfold doors and walls have resulted in products that now meet some of the most exacting requirements of state and municipal fire regulations.

For example, the Board of Standards and Appeals of New York City, which has the duty of safeguarding the public in metropolitan areas from fire and other hazards, has approved the fire-resistant grades of Du Pont P.C. (plastic-coated) "Cavalon" 6025 and P.C. "Fabrikoid" 6200 and 4500 as satisfactory coverings for Modernfold Doors used in places of public assembly. This will be good news to present and prospective apartment houses and private homes, for refinements have been added—such as "Lucite" acrylate resin pulls and handles, satin chrome locks, latches and miscellaneous hardware.

With building costs at high-record levels, it is important in planning to make the best possible use of every cubic foot of space. Modernfold doors and walls can help to achieve that objective; they take up relatively little room.

If you desire a breakfast nook separated from a kitchen area, that can be done easily.

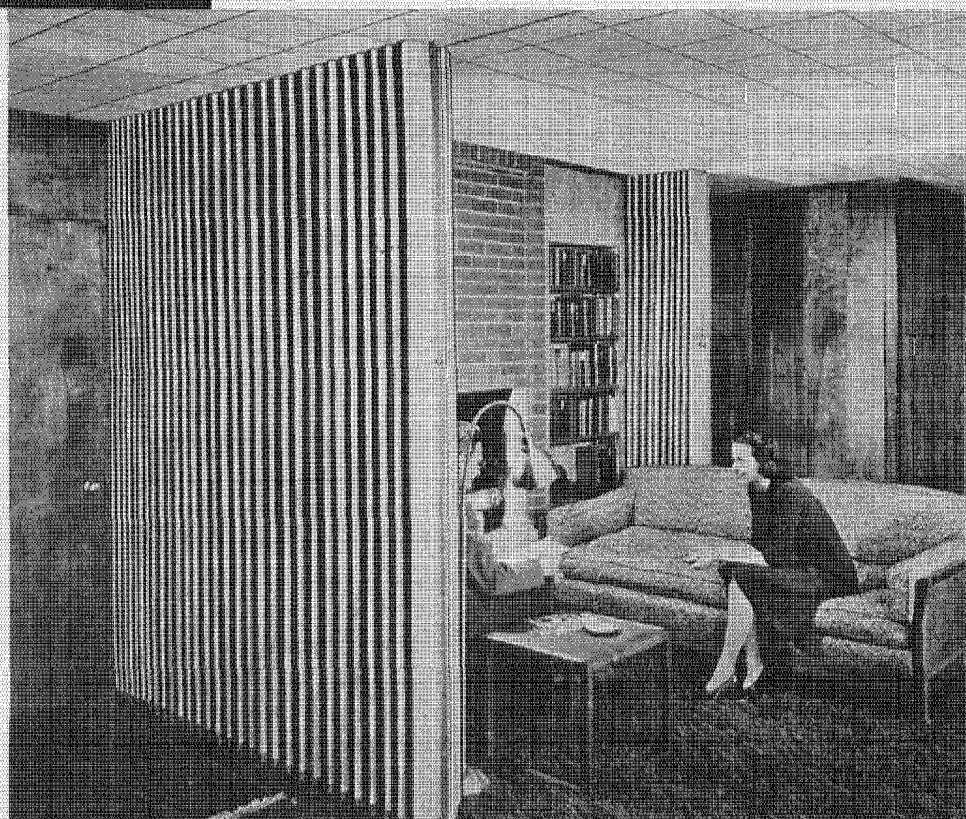
Does one part of your large living room also serve as a dining room? If so, it may be desirable at times for privacy to have the two areas temporarily separated, with a Modernfold, "the wall that moves."

A guest room with twin beds can, on occasion, easily be converted into two single bedrooms. Such installations can be made without sacrificing floor space and with the utmost flexibility in use.

To these advantages add still another—the beauty of these coated fabrics. Modernfold coverings are available in twenty-eight pleasing colors from which customers may select materials in all price ranges and in colors to blend with any scheme of interior decoration.

Where would you like to have your doors? Modernfold lends flexibility to interior arrangements.

This shows how home-owners can make a dining room and living room out of a large space. Fire-resistant coated fabric on the folding wall comes in a range of twenty-eight pleasing colors.

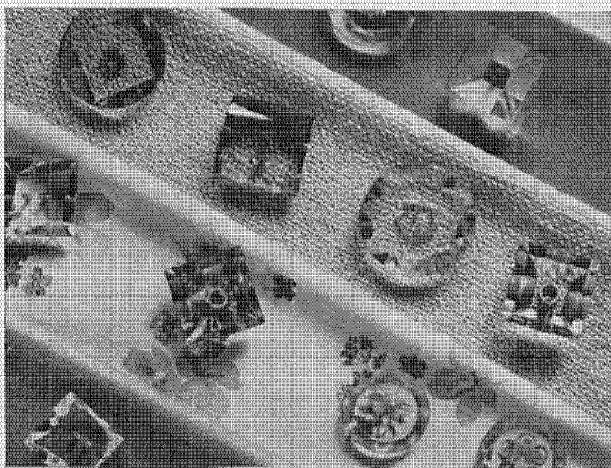


What's New

NEW SALES OFFICE. Smith & Aller, Ltd., the West Coast distributors of Du Pont motion picture film for approximately twenty years, has been acquired by the Du Pont Company. The Photo Products Department opened a district sales office in Hollywood, California, concurrent with the transfer. This office which is located at 6656 Santa Monica Boulevard, formerly the headquarters of Smith & Aller, will handle the distribution of cinema, x-ray and other type films, and photographic papers and chemicals.



PLASTIC RAIN-CAPE. In this transparent cape and hood of polythene, made by the Boland Manufacturing Company of Chicago, Illinois, a war-developed material enters the fashion field. Polythene has unusually good resistance to water and wind, and is tough, yet flexible enough to drape well—even over a regular coat. Because of its flexibility and light weight, the new rainwear can be folded for convenient carrying or storage. These garments are available in colors and standard sizes, and are sold separately.



BUTTONS WITH A SPARKLE. These unusual and distinctive buttons of "Lucite" acrylic resin, jeweltone or crystal-clear, are highly embellished with cutwork, giving full play to the natural sparkle of the plastic. Note that holes for sewing, in those designed with a flower motif, are ingeniously cut through the stamens. Bernard A. Diamant, of Los Angeles, Calif., is the manufacturer.



AN IMPROVED WORK-SAVER. This housewife demonstrates a new gadget that scrubs in a jiffy. Her mop of soft neoprene sponge is highly absorbent. An ingenious wringing device assures protection against "dishpan hands," puts an end to "flooded" floors. Manufactured by the Spartan Company, of Minneapolis, Minnesota, the swab resists abrasion and won't be harmed by grease on the floor. It may also be used to wash windows, walls, and to remove surface dirt from rugs.

ELECTRIC CORD. From submarines to heating irons, toasters, vacuum cleaners and other home appliances, the "Coiled Kord" shown here, is manufactured by Kellogg Switchboard & Supply Company, of Chicago, Illinois. A newcomer on the civilian market, this new-type of coiled cord has the insulation jacketed in neoprene molded in spirals. The gadget is only about a foot long, but can be stretched six times its coiled-up



length with ease, and resumes its compact form. There's no tangling or kinking of this cord, no springs or mechanical devices to get out of order. Neoprene protects the wire and gives long-lasting and satisfactory service.



PLASTICS ON THE GRILL. "Teflon" tetrafluoroethylene resin, the Du Pont Company's new industrial plastic that retains strength and form at higher temperatures than any known organic material, is shown receiving the hot-plate test. The instrument held by Ruth Longren, laboratory technician at the Arlington plant, registers the temperature of the grille at about 390°F. Rods of the two other plastics have melted or swelled out of shape, but "Teflon" remains unaffected. Gaskets and wire insulation for "jet" engines are made of this plastic, which is unharmed in some cases by heats ranging up to 575°F! Limited amounts in the forms of sheets, rods, tubes, coated wire, tape and fabricated sections are available for experimental purposes.

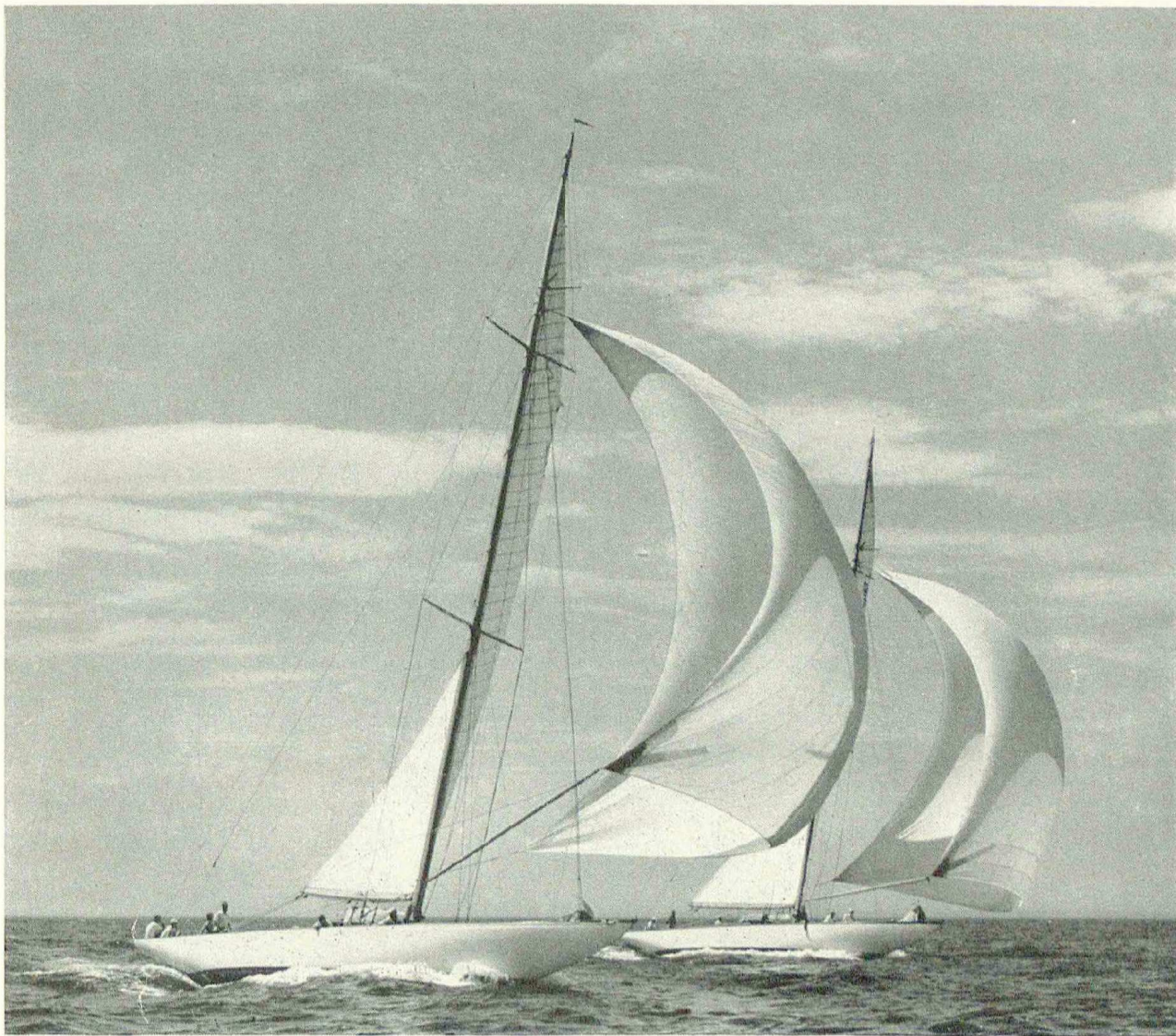
BETTER FAST COLORS. Women who live in cities have discovered that their gay colored frocks of acetate rayon sometimes lose their colors prematurely. You may not know it, but this reaction is caused by gas fumes which are in the atmosphere, especially in the larger cities. A new product—Du Pont Anti-Fume DE Paste, which is added in small amounts at the mill when the fabric is dyed, will retard this fading. It gives better all-round fastness to certain important shades of this material, even after repeated washing or dry cleaning. Commercial supplies of Anti-Fume DE Paste are being made available as rapidly as possible. Technical personnel of the Dyestuff Division are cooperating with those interested in its use.

• • • • •

AN IMPROVED SOLVENT. Cleaners will be interested in a new dry-cleaning fluid trade-marked "Ovalene." The Company recently added it to round out the Du Pont line of synthetic solvents, which include the well known "Perclene" and "Triclene." This pre-tested product has certain advantages over orthodox-base fluids used in "open" equipment. It replaces NSC Cleaning Fluid previously sold by the Company. Further information may be obtained by writing to the Electrochemicals Department, E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Delaware.



FOR GALA OCCASIONS. A punch bowl of crystal-clear "Lucite" acrylic resin with matching ladle and cups of the same material heightens the appeal of colorful fruit drinks. Each piece is virtually unbreakable and light in weight. Three discs form the base of the bowl to prevent tipping and the cups are designed to permit a firm grasp. The set is manufactured by the Hunton Plastics Company, of Englewood, New Jersey.



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THE GIRLS MEN CARE ABOUT are fussy about all the little things that are part and parcel of good grooming. Hair kept in shining order, for instance! Your best beauty bet for that is a Du Pont comb! Its rounded teeth won't worry your scalp, the smooth washable plastic just glides through your hair. And the colors are gay, enticing—colors to match your purse, your room, your mood! Du Pont combs—in exclusive Du Pont designs—10 to 50 cents, at good dealers everywhere.

BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY



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