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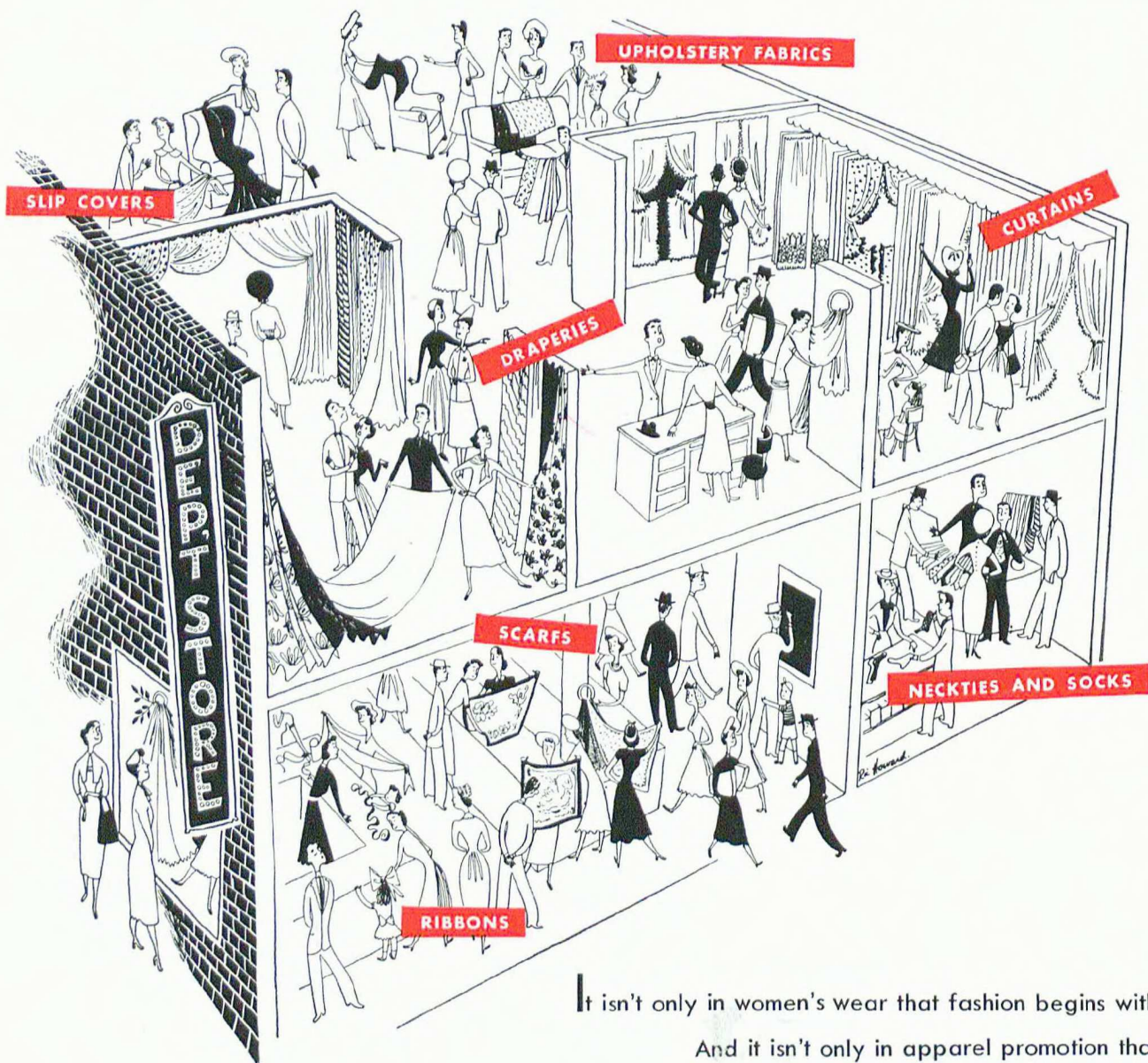


DU PONT

Better Things for Better Living
...through Chemistry

FIBERS... FIBERS

... EVERYWHERE!



It isn't only in women's wear that fashion begins with fiber.

And it isn't only in apparel promotion that good buyers...merchandise men...sales people feature a fiber.

Fine fibers made by Du Pont

NYLON • VISCOSE RAYON • ACETATE RAYON

are featured by stores throughout the country.



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

ACETATE DIVISION • NYLON DIVISION • RAYON DIVISION—

Rayon Department, E. I. du Pont de Nemours & Co. (Inc.)

Wilmington 98, Delaware

For nylon...for rayon...for fibers to come...look to DU PONT!

DU PONT

MAGAZINE

Vol. 43 No. 6



BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

E. R. Manchester, Editor

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COVER: It was almost hot enough to melt the sidewalk on the day when the artist came to talk about a Christmas cover for the Magazine.

"Skip the customary snow scenes," we said, "for we want the cover to point out that Du Pont makes plastics for toys, nylon for the traditional stocking, finishes for presents of all kinds. . . ." The artist kept nodding. Show you something when I get back from vacation, he said.

We liked his cover from our first glance. It was simple in design, the toys delightful, the symbolic touch good. "Fine," he said. "Now I'll go over to the sale of summer sporting goods and hunt for bargains. When I go to work, about snow-and-slush time, on a July cover I'll certainly need inspiration!"

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Chemistry and America



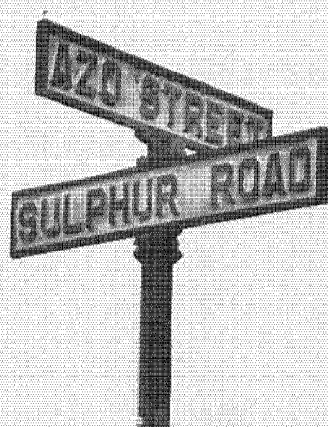
In the year of 1915 fewer than 100 masters and doctors of chemistry were graduated from all the colleges and universities in the United States. In 1941, just before the war, there were 775, nearly eight times as many. This gives you some idea of the importance of chemistry in our modern world.

If a storm took down all of the power lines in America tonight, not a light would burn in your house, not a heating pad, not a vacuum cleaner would work, and you would be instantly conscious of the vital part electricity plays in your life. If a comparable accident were to close down all the chemical manufacturing plants in the United States, you would not feel it as quickly, but after a while you would feel it just as sharply and painfully. The United States *was* shut off from its main source of chemical products during World War I when our chemical industry was only a fraction of what it is today. And after a few months we did not have inks to color our postage stamps, nor dyes to color our clothes, and we were without some of the valuable medicines needed for the sick.

Because of the lesson we learned, we built chemical plants—one of them described on page two—and when World War I ended, America had about a thousand of them. Today, there are about 7,000. Du Pont is only one of these many chemical companies, yet this Company alone has enriched the American economy with nylon, chemical pigments, neoprene rubber, plastics such as "Teflon" tetrafluorethylene resin, and scores of other products. Sometimes it seems that developments come out of our laboratories faster than we can tell you about them in our Magazine.

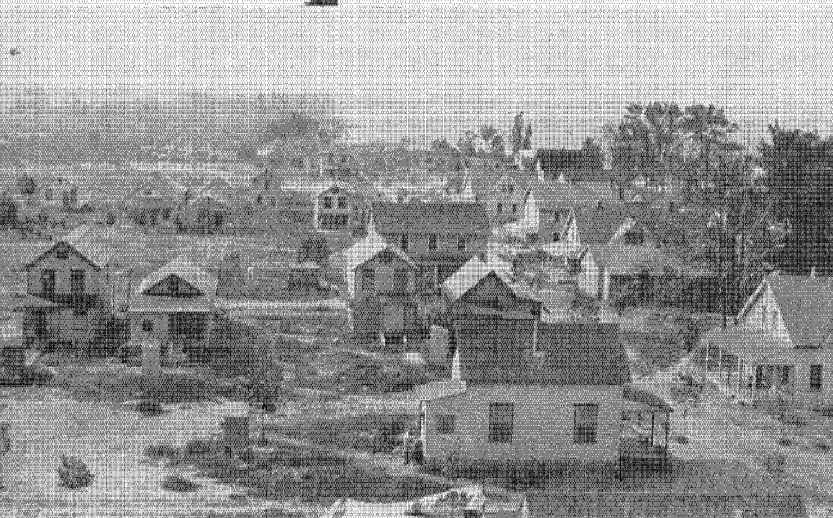
If it were possible to visualize all of the achievements of chemical science at one time, you would realize how greatly it has benefited mankind both in contributions to better living and as a creator of new jobs and businesses.

What, then, will chemical science accomplish in the future? No one can say, but we hope to continue, here at the Du Pont Company, turning our energies to more and more challenging problems. We hope to guide them through from research to reality, for their solution holds out the greatest promises of benefit to mankind.



The "City" that Chemistry Built

A kaleidoscopic organic chemical works now stands on the site of a former New Jersey meadow



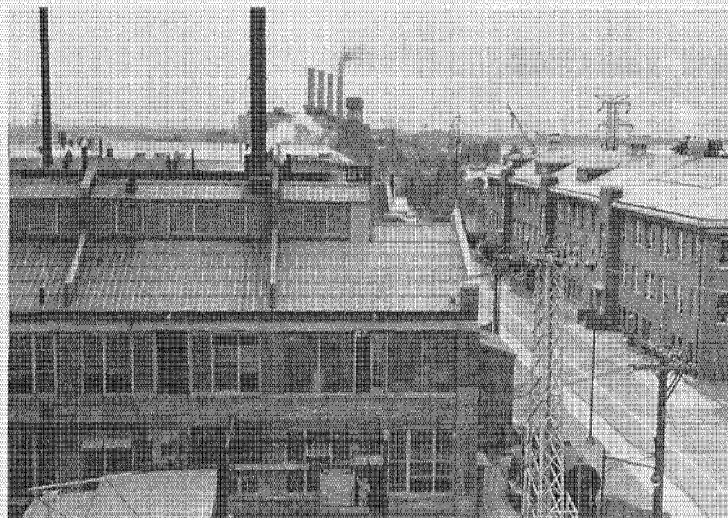
In years past, this small cluster of summer cottages dotted the bank of the Delaware River at what was Fenton's Beach.

Thirty-three years ago, if you had been flying over the Delaware River on the Jersey side opposite Wilmington, you would have seen below you the Du Pont smokeless powder works at Carney's Point. Farther south was a muskrat meadow.

Today, on this site, stands a vast industrial plant. It grew out of America's urgent need for synthetic dyes and organic chemicals, at the time when World War I had cut off foreign sources of dyes. In 1916, a sulfur black unit installed at Deepwater Point marked the beginning of Du Pont's dye manufacturing business. By 1919, vat dyes with excellent fastness were being made.

With the emergency over, the Company found it had a dye works in which it had risked millions of dollars, but which was not yet on solid ground, physically or financially. Only a large concern could undertake such a project. Not until 18 years later, after \$43,000,000 was risked, did the business break even.

Du Pont's interest in organic chemicals soon branched out. In the '20s and '30s the Company started making tetraethyl lead, ethyl alcohol, neoprene rubber, camphor, and other materials. The enterprise that began as a dye works now turns out about 2,000 different organic products. It's now called the Chambers Works in honor of Dr. Arthur D. Chambers, who had much to do with its growth.



Today, the site looks like this. The above picture, showing buildings at the Chambers Works, was taken from same point.

If you were to start early in the morning on a tour of the works, you'd see first the long lines of cars and buses streaming toward the plant gates as the ferries cross the Delaware. In order to visit this fenced-in area, where about 7,000 Du Pont men and women work, even Company employees need a pass—and we needed a guide.

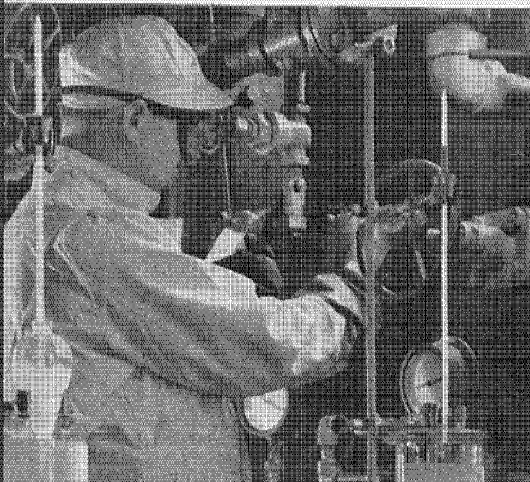
Obtaining the services of one, we started on a trip around the eight miles of paved roads in the 550-acre area. First, we drove down Canal Road toward the laboratory area where chemists, physicists and technicians work in large buildings surrounded by lawns and attractive landscape. Enroute, the guide pointed out the Administration Building and began to explain what's what and where.

"At your right," he said, "are the Petroleum Chemicals Laboratory, Jackson Laboratory and the Rubber Laboratory—just ahead, at the left, is the Technical Laboratory." Not far away were the plant structures flanking River Road, and the semi-works area where processes are tried out on a semi-commercial basis. Next, our companion pointed out the fire house, the hospital, and the plant where Du Pont tetraethyl lead antiknock compound is made.

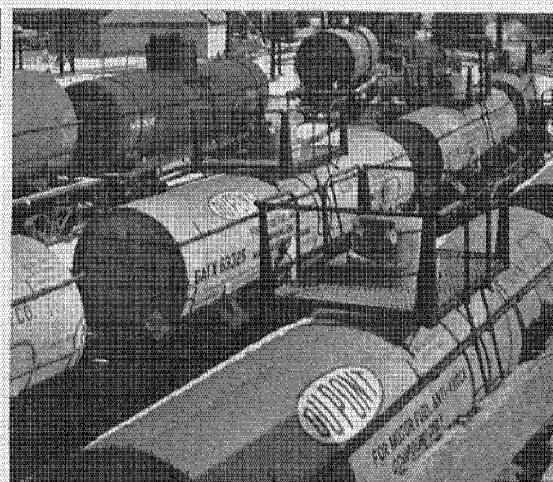
Approaching another plant, one whiff told us its product. "They use turpentine here to make synthetic camphor," the guide commented. He told



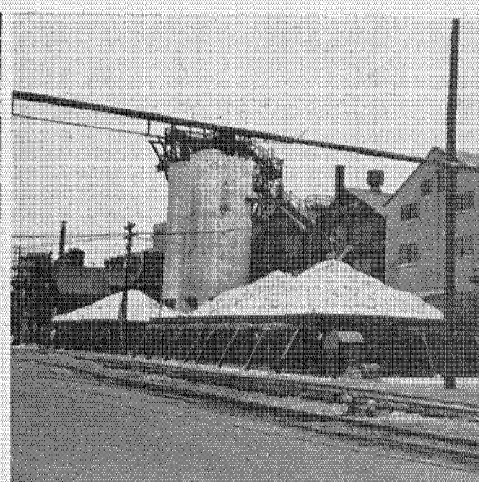
From the maze of buildings in the 550-acre area come dyes, camphor, tetraethyl lead, refrigerants and other products.



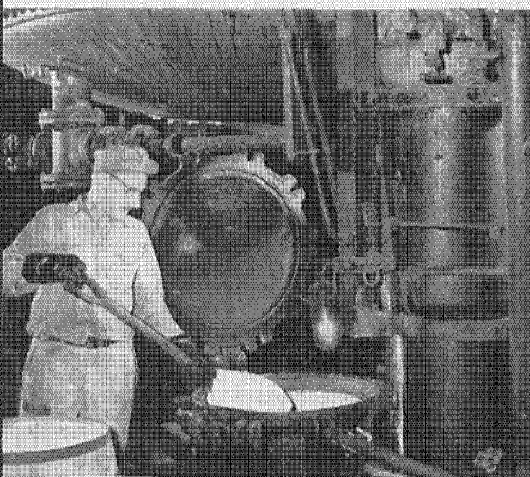
Kinetic chemicals worker checks equipment during manufacture of "Freon" refrigerants.



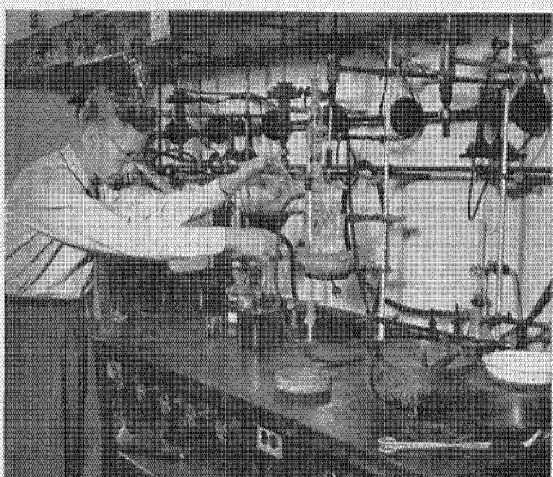
Loaded tank cars carrying tetraethyl lead for motor and aviation fuels.



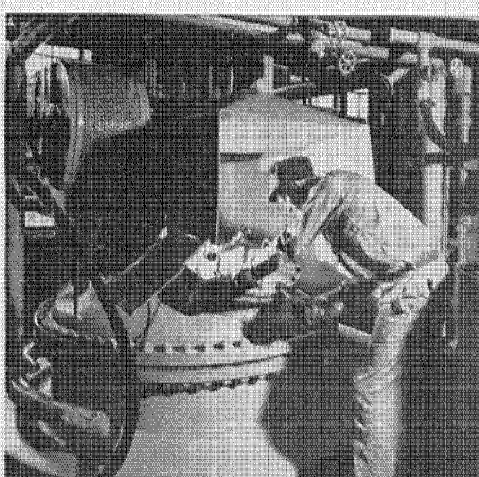
Outside view of the Kinetic Chemicals plant shows piles of the raw material, floors



Azo color production, seen here, is one of many dye operations at Chambers Works.



Typical scene in Jackson Laboratory. Du Pont chemist is at work on a research problem.



An operator performs one step in the manufacture of colors for petroleum products.

about the early days of camphor manufacture, when the Japanese still had a monopoly on the natural product. "We really scared 'em," he said, smiling. "Our product wasn't perfected yet, but we took a few of their officials through our plant. They were so frightened by the prospect of competition from the synthetic chemical industry that the price of natural camphor dropped fast."

MOLASSES A RAW MATERIAL

Farther along, a tanker at the wharf was discharging another raw material, black-strap molasses, into enormous storage tanks. Soon it would be fermented to make ethyl alcohol. Turning right on Alcohol Road, we passed the Kinetic Chemicals area with its huge piles of fluorspar. "That's used for making 'Freon' refrigerants," we learned. Nearby was a pond, where residues are treated to prevent pollution of the Delaware River. Water from this pond, pouring through the sluice gate into the river, passes over what used to be the mouth of Whopping John Creek.

Soon we were approaching a group of fort-like structures. "Now there's historic ground," said the guide; "the first neoprene ever made commercially came from there."

Next, we swung south through other areas, finally pulling to a stop as a train of tank cars blocked the way ahead. Our guide took this opportunity to tell about the 24 miles of railway tracks in the area. "Carrying supplies is a busy branch of our business," he said. "Every day you can see tank cars, gondolas and freight cars bringing in loads of raw materials. Then

these narrow gauge cars shuttle back and forth among the plant buildings, carrying both raw materials and manufactured products. Finally, trainloads of the finished materials move out."

When the tracks were clear we continued on to Broadway and Main. Here millwrights, carpenters, plumbers, pipefitters, electricians and other artisans do their shop work. Headed south, we passed the Acid Area where a mountain of sulfur waited to be changed into sulfuric acid. At Azo and Main, the power house loomed up. In this locality the basic sulfur and azo dyes are made. The big Finished Dye Storage and Shipping House was our next stop. Beyond it stood other large buildings and platforms where raw materials and other supplies are brought in.

Our guide pointed to "Ponsol" No. 2 Building, a five-story structure occupying several acres. "That houses the largest single vat dye manufacturing plant in the United States," he told us. "There's been so much demand for our anthraquinone dyes that we have had to add new facilities almost every year."

"Well, you've seen most of it. There's more I'd like to show you if we had time," he concluded. "We even have a laundry, a Credit Union with banking services, a newspaper, a cafeteria and a police force—without a jail."

As we left to board the Pennsville-New Castle Ferry for home, we saw workmen eating their lunches along the water front and watching the ships go by. "What changes do you suppose the next 30 years will bring to the muskrat meadow?" we wondered.

Bird's-eye view of Chambers Works today. The plant provides jobs for about 7,000 employees who make some 2,000 products.





“Oh, You Beautiful Doll!”

When Santa Claus comes this year, his warm smile may come from behind a nylon beard. He'll open his large toy-filled bag (probably nylon too) in front of the Christmas tree and reach inside. Then, you might very well see him pull out a beautiful little doll, primped for the moment with the latest hair-do. She's the “Toni” doll, so-called because her nylon hair can be shampooed and waved without damage.

Washable, waveable wigs have been sought by the toy industry ever since dolls were first made commercially. Many materials have been tried over the years. Human hair, for example, would tangle and snarl if not handled by an expert wig maker with years of experience. Mohair failed. So did all other fibers known.

Recently, a nylon wig for dolls was thrown into the ring and promptly picked up. There were problems, of course, but none were serious. Since the nylon

monofilaments were smooth, they didn't tangle when washed, combed or curled. They didn't shrink or otherwise change their shape. And nylon wigs, unlike other types, would not pull loose from the doll's head even though washed repeatedly.

About this time the Ideal Novelty & Toy Co. of New York heard of this wig and recognized that it was a natural for a unique, new doll. Thus the “Toni” doll was born.

The doll comes with a complete “play-wave” kit. Included in this are all the necessities required for the youngster to copy mother's home permanent routine. The kit supplies shampoo, curlers, end-tissues, simple instructions and a wave solution that is harmless. It's a “play-wave” solution of plain sugar and water—safe enough to drink. But we'll bet little girls will have more fun using it to wave the doll's lustrous nylon hair.

The Unseen Plus in Your Gasoline

Du Pont field laboratories, working behind the scenes, help the petroleum industry produce better gasoline

By DONALD C. McSORLEY

Our civilization literally runs on petroleum. In one form or another we use petroleum products to power cars, trucks and trains; propel our ships, heat our homes and do countless other tasks that are an integral part of our daily lives. Wherever a wheel or shaft turns, it runs on a film of oil. If our oil were suddenly taken away, this modern machine age would rapidly grind to a halt.

Actually, petroleum consumption is a good measure of a country's standard of living. We in the United States unquestionably enjoy the world's highest, and our per capita use of petroleum products amounts to about 575 gallons a year for every man, woman and child. The next largest user is Canada with a per capita consumption of only about 310 gallons a year.

Making these products available at prices everyone can afford is the great American oil industry, this year celebrating its 90th anniversary. Chief among petroleum products, and probably best known to everyone, is gasoline. Our gasoline powered vehicles last year took more than 35 billion gallons to cover a total distance of some 350 billion miles.

Only through constant development and improvement has it been possible for the oil industry to provide such tremendous quantities of petroleum products. Their general high quality is the result of rigid control at every step from production through refining and marketing.

Working with the oil industry to help supply top-quality gasolines, Du Pont maintains five completely equipped laboratories located in Wilmington, Delaware; Chicago, Illinois; Tulsa, Oklahoma; Houston, Texas, and El Monte, California. These laboratories act as technical service centers. They advise on the use of Du Pont chemical additives for improving various gasoline properties and help refiners maintain a high standard of uniformity and control in their own laboratories.

TOURING A DU PONT FIELD LABORATORY

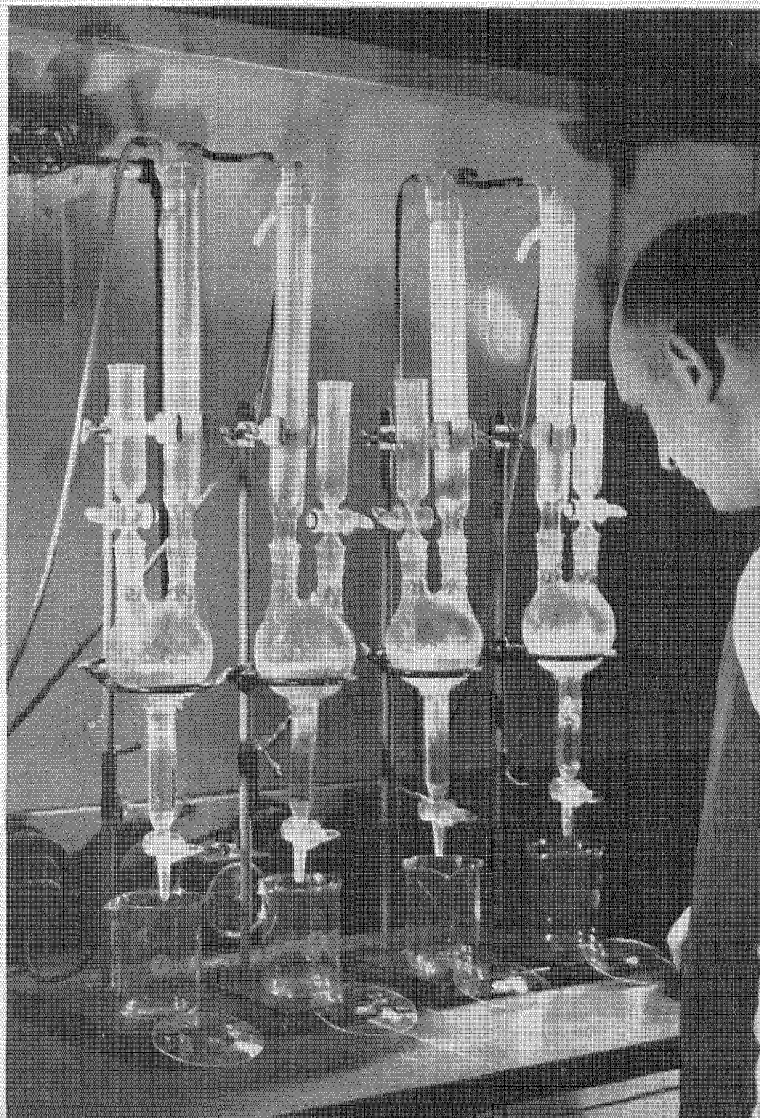
If you visited one of these laboratories, you would find that it is divided into two main sections. One, called the knock-testing section, makes tests on gaso-

lines to determine their antiknock characteristics. The other, known as the inspection section, checks the physical and chemical properties of gasolines.

In the knock-testing section you would see special single-cylinder engines that determine octane ratings of gasolines—a measure of their antiknock characteristics. The engines—built, maintained and operated in accordance with rigid specifications of the American Society of Testing Materials—insure that results in all the laboratories throughout the country will be uniform. To maintain high standards of precision and control accuracy, each of the field laboratories exchanges samples once a week for check-testing. In addition, all of the laboratories participate in exchange groups with oil company, Government and other laboratories.

The octane number, as you may know, influences gasoline performance to a large extent. The “knock” you sometimes hear in your engine usually comes from a gasoline with poor antiknock characteristics. To step

This laboratory test is used to determine the amount of tetraethyl lead that is present in a sample of gasoline.



◀ Knock testing engine for checking octane number of gasoline. The cylindrical containers hold samples of fuel under test and samples of known value for comparison.

up octane number, Du Pont supplies the refining industry with tetraethyl lead compounds, commonly called TEL. Minute quantities greatly improve gasoline antiknock characteristics. The knock-testing engine is used to tell just how much TEL is required to bring any given sample of gasoline up to the refiner's specifications.

In the inspection section you would see many types of equipment designed to test gasolines and the effect of additives upon them. One of the most important pieces of apparatus, from a quality control standpoint, is for determining the "induction period." In a few hours, a sample of gasoline is aged the equivalent of several months. Since gasoline may form gum when it is stored, it helps to determine in advance

what a particular gasoline's storage stability tendencies will be. To improve the oxidation stability of gasoline in storage, Du Pont supplies chemicals, called antioxidants, which are added to the gasoline during the refining process. Another important factor in gasoline storage stability is copper. Even minute quantities have a catalytic effect, promoting gum formation. To counteract these gum-forming tendencies, Du Pont supplies a special additive, known as Metal Deactivator. The induction period test enables the laboratory to advise a refiner how much antioxidant and Metal Deactivator should be added to his gasoline.

TESTS CHECK GASOLINE PROPERTIES

Another check on gasoline quality which a visitor would see is called the distillation test. This works on the same principle as a boiling tea kettle. A sample of gasoline is heated until it starts to distill, and the temperatures are recorded as the various fuel components are condensed. From this engineers learn about the starting, warm-up and acceleration characteristics of a gasoline.

Du Pont supplies special dyes to give gasolines a distinctive color. Trained operators compare visually a sample of known color strength with the gasoline being checked. This way it is possible to tell how much dye is needed to meet correct color standards.

So much for testing and development. The oil industry is a dynamic one. It works endlessly to provide the public with improved gasoline and other products. Chemical additives for petroleum and the Du Pont field service laboratories will continue to play an important, although unseen, part in this production.

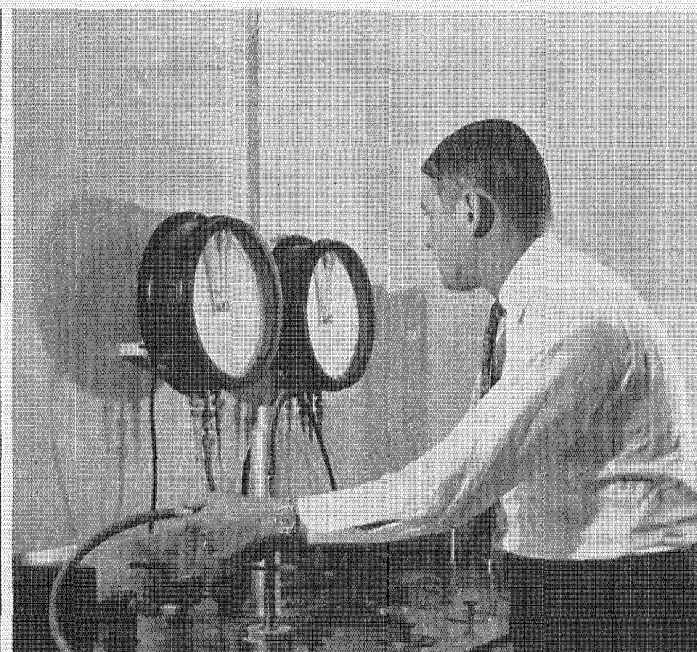
◀ Inspection section of a field laboratory. Apparatus in right foreground is used to determine amount of sulfur in gasoline.

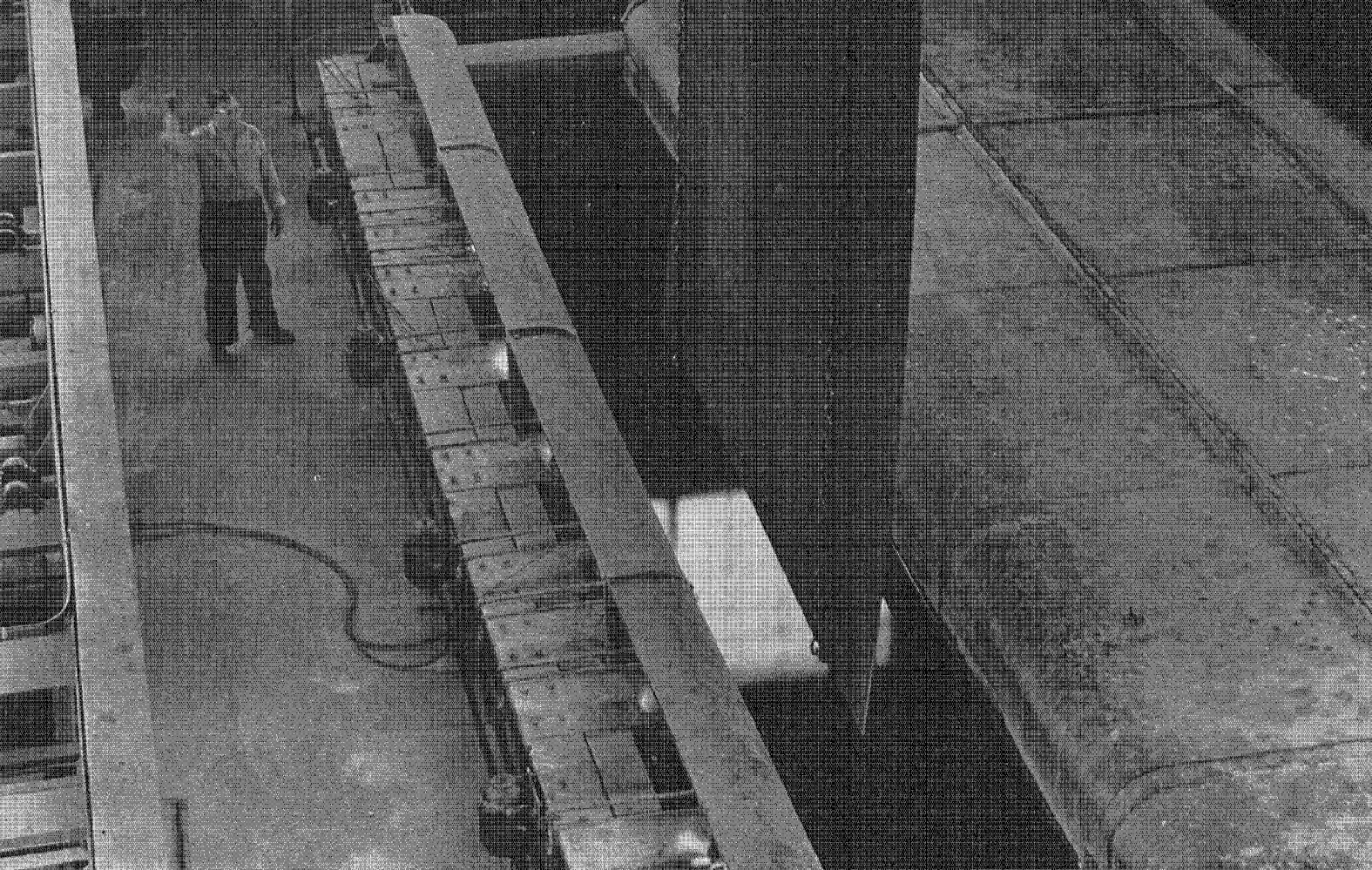


The distillation test is one of many standard methods of the American Society for Testing Materials used by field laboratories.



Equipment for making the induction period test. This measures the tendency of a gasoline to form gum during storage.





Another steel plate gets a sodium hydride bath at the world's largest installation, Coatesville, Pa.

Ammonia is in the Metal Business

This chemical supplies one of the elements needed to descale metals by the new sodium hydride process

Ask any experienced angler how to descale fish, and he'll tell you how, from A-to-Z. Ask him how the metal in his fish knife was descaled, and he'll probably give you a stony stare and wonder if you've gone crazy.

Yet, in milling and processing metals, scaly formations on the surface must be removed. Prior to World War II this was usually done by sandblasting or by passing the work through an acid "pickling" bath to etch off the scale down to the base metal. During the war, when industry had to produce stainless steel at top speed with a minimum of waste, Du Pont's chemists introduced a much quicker, less wasteful way of descaling—the new sodium hydride descaling process. It came into commercial use in 1941, but remained hush-hush until 1946. Now it is widely used in American iron and steel mills and fabricating shops. In fact, the editor of one magazine for

the iron and steel industry, *The Iron Age*, calls the sodium hydride process "the most significant development in pickling (descaling) in decades."

Metal is descaled in a tank containing a bath of fused caustic soda and a small percentage of sodium hydride formed in the bath by the reaction of sodium with hydrogen. The most economical source of this hydrogen is from ammonia that has been "disassociated," or broken up into its component gases.

The Du Pont refrigeration grade of anhydrous ammonia is 99.98 per cent pure and is ideal for a job such as this where specifications are tough. The hydrogen—and hence the ammonia from which it is made—should be free from moisture, oxygen, carbon dioxide, carbon monoxide, or any trace of oil. On each count, Du Pont ammonia is satisfactory. Furthermore, this product is available in cylinders, for the company with a small hydride descaling operation, and in tank cars for the larger concern.

Here again we have an example of how businesses, large and small, benefit from a new Du Pont development.



Snow didn't stay on this sidewalk during New York's blizzard of '47, for the pavement was "heated."

Freedom from Snow

By JOHN E. SLY

December 26, 1947 dawned gray and ugly in New York and soon snow began to fall. Before it stopped 16 hours later, New York City had recorded its heaviest snowfall.

For three days, New Yorkers shoveled and sweated and cussed at the snow. All, that is, except the maintenance men at the new store of Best and Company, on fabulous Fifth Avenue. These men whistled while they worked . . . for a snow-melting system was doing their shoveling for them.

New Yorkers were bewildered. Like a calm in a storm, Best's sidewalks were clear while streets and sidewalks everywhere else were drifted deep. Had something new been added to this New York sidewalk? Yes, it had!

When the new Best's was built, engineers had installed a snow-melting system. They laid a network of wrought iron pipes under the concrete sidewalks. Through some 4,000 feet of pipe, an electric pump forced a hot solution of water and permanent-type "Zerex" antifreeze. Winter's worst problem was licked.

Snow-melting installations like this aren't unique anymore. The new 26-story home office of the John Hancock Mutual Life Insurance Company in Boston has just installed one of the largest, and the new Stouffer's Restaurant in Detroit will have an easy time this winter keeping sidewalks cleared.

Snow-melting systems have spread to other fields. Large manufacturing concerns, like American Cyanamid Company, Bridgeville, Pa., and Bethlehem Steel Company, Lackawanna, N. Y., have found them useful. They keep roads leading to main highways snow-free at small cost. Pipes are needed only under the wheel tracks to do a thorough job of snow melting.

Gas stations and car agencies, too, have found that a small snow-melting system saves hours of labor...and that's money in their pockets. Clear driveways keep old customers happy, and invite new customers in.

Even home-owners are going for these installations. A group of them near Boston got tired of being marooned atop Snake Hill in heavy snowstorms. So they got together, and buried heating pipes under the wheel tracks of a twisting, winding quarter-mile stretch

of road. Now, when it starts to snow, one of them flips a switch. An oil-fired boiler and a small pump do the rest, and Snake Hill's residents keep in touch with the world when winter storms hit.

You may have wondered why permanent-type antifreeze is added to the water in the pipes. It's there for two purposes: first, to keep the water from freezing when there is no snow and the heat is off; second, to help keep the pipes from rusting. Du Pont "Zerex" antirust antifreeze, as the name implies, is especially formulated to do both jobs.

Whether or not you figure snow-melting systems are expensive to install depends on how serious you consider the snow and ice problem. Some systems—including labor, pipe, pump, water heater, and incidentals—have been installed for as little as 30 cents a square foot of heated surface. Others have cost more than a dollar a square foot. Whatever the cost, though, you can be sure that it will save you money most winters. Next time you come to a sidewalk, a driveway, or a stretch of road that is clear—when everything else is covered with snow and ice—you can bet that someone has installed a snow-melting system for his comfort and convenience as well as yours.

A snow-melting system consists of a network of pipes laid beneath the pavement. Here is one being installed.





Paris Deadline

"Photolith" lithographic film is a key aid in helping Time's overseas editions meet a split-second production schedule

By JAMES H. McCORMICK

It's early Friday morning when Pierre stops at the bookstall on the Champs Elysées for a copy of *Time Magazine*. There is nothing extraordinary in this purchase to Pierre. Since soon after the war, he has been one of the 100,000 readers who each week have bought their copy of the Paris edition of *Time*. But the story of how Pierre gets his news from *Time* as soon as you or I is indeed a remarkable one of modern repro-

duction technique and of split-second timing with a deadline literally minutes away.

It's bedtime on Monday when compositors in Philadelphia at the Cuneo Eastern Press start setting the magic words of a new Atlantic Overseas edition. Almost at once proofreaders begin to pore over the copy. Take out a broken letter here, add a comma there, correct the spelling of a word . . . moments slip by. Other men are after copy for additional pages to paste them up into a layout with the pictures, ads and captions. Grab a second for a cup of coffee while tired eyes rest and then pick up another sheaf of copy. Check again. Double check . . . until the clock on the

wall says 2:30 A.M. It's so early the morning papers are still on the presses, but the copy for a whole magazine is done.

Meanwhile, staff workers position the first four pages on a cardboard sheet. This process is repeated until 32 pages of the issue are completed. As fast as they are mounted, sheets are being photographed on Du Pont "Photolith" film. By 3:30 this is done, and the 20 by 24 inch sheets of film are being developed, washed and dried.

"Photolith" can be exposed, developed and dried quickly enough to fit into such a tight timetable. This film assures sharp, clear reproduction of both type and illustration. Its opacity of background, ease in retouching, and freedom from buckling and pinholes are exceptional.

Now it's 4:00. Artists touch out paste-up marks on the negatives and the studio printer begins to make film positives from each of the negatives. More developing, washing and drying. More retouching . . . and the pouch for the Paris plane at the New York airport some 100 miles away is already being filled.

By 5:40, the positives have been cut into individual page size, carefully inspected, put into page sequence, slip-sheeted, packed and rushed by motorcycle to the train station.

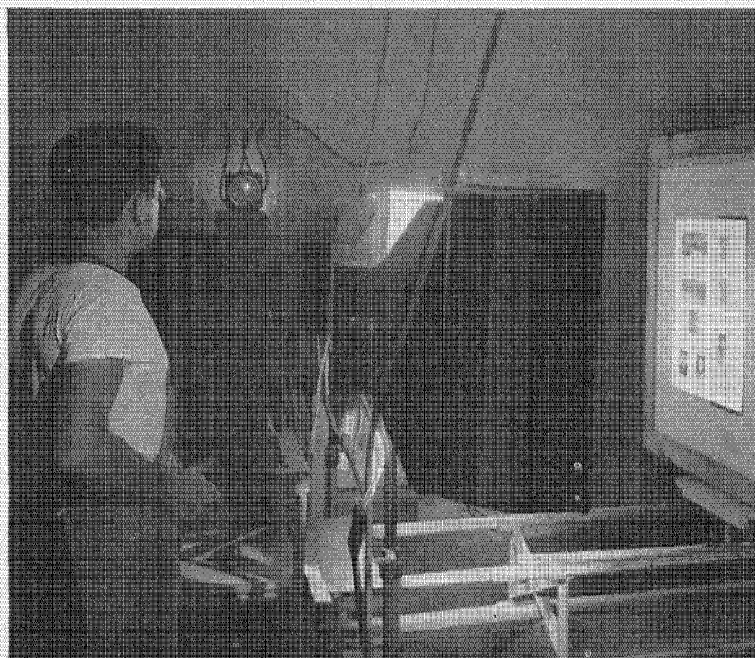
In New York's Graphic Studios there's another battle against the clock. Here copy in four colors for the front cover and advertisements are getting the same treatment . . . the same mounting, photographing, hurrying and sweating to make the Paris flight.

The magazine with its pages on "Photolith" film arrives in New York at 7:47 Tuesday morning—if the Philadelphia train is on time—and a special messenger with a jeep roars across the city, this time on the final lap to Idlewild Airport. Now the job on this side is done and everyone relaxes. In the French capitol, printers will take over on schedule and Pierre will have his magazine Friday morning as usual. Operation *Time* meets another Paris deadline.

Today you can buy *Time* in many foreign countries. European issue is just one.

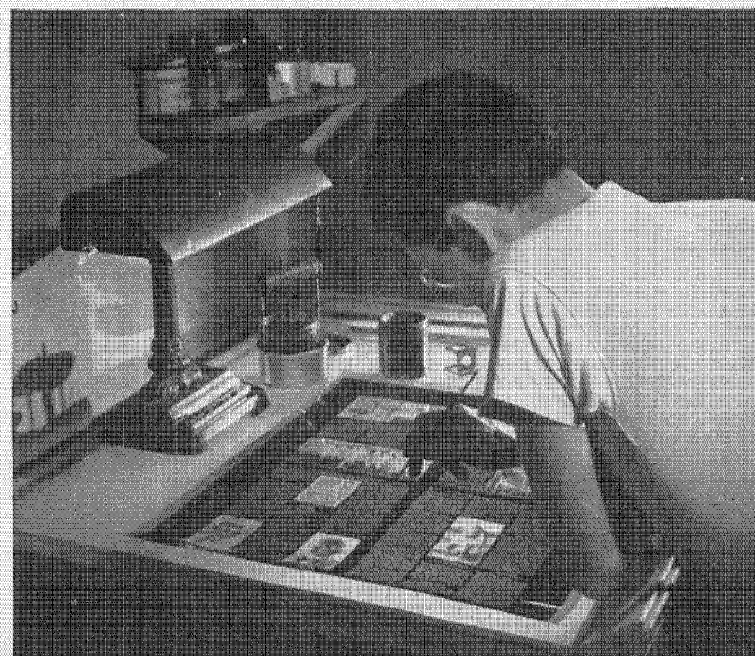


In Philadelphia, editorial pages of *Time's* Atlantic Overseas edition are being mounted for photographing.



Cameraman uses Du Pont "Photolith" film to "shoot" the pages. This film assures him sharp, clear reproduction.

Artist touches out paste-up marks on the film. In New York City, the Graphic Studios follow same procedure with ads and other color work, including the covers.



A Lesson from Santa

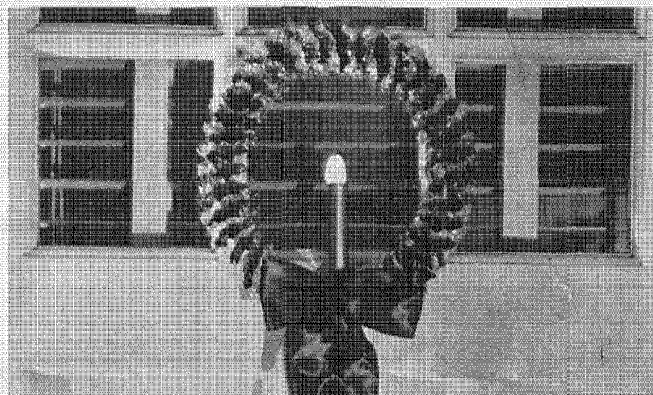
*Cellophane adds glamour
to his Christmas gifts*

Santa Claus is just a chubby, jolly fellow who isn't too old-fashioned to learn some new-fashioned tricks about Christmas gift wrapping. Why even now he's busy at the North Pole wrapping gifts with Cellophane. No wonder. Santa's job is to deliver extra thrills for the entire family on Christmas day.

Just in case Santa doesn't personally climb down your chimney, you'll find many gifts already wrapped in Cellophane at your favorite stores, or you may easily add this touch of glamour yourself. Any department, stationery, ten-cent store or gift shop will provide you with the necessary materials: colorful sheets and rolls, Cellophane tape, and tying cords, ribbons and transparent drinking straws for decorative effects.

The choice is yours. Buy your gifts wrapped in Cellophane or wrap them yourself. And when you present your gifts—don't be surprised if the recipients catch their breaths.

Sparkling, star-lit Christmas decorations help to impart Yuletide cheer. Department and variety stores offer such Cellophane decorations as garland and roping, snow, bells and wreaths. Many are made of flame-resistant Cellophane.



To make a Christmas angel for table or tree decoration, make a cardboard cone and then slip a circle of Cellophane over it.



Draw features on marshmallow "head" with crayon. Shape arms and neck out of pipe cleaners. Fasten with a piece of spool wire.

Insert neck into the cone. Attach two small cones for sleeves. Draw pieces of Cellophane at front, back and side for skirt.



WHAT DO YOU KNOW ABOUT



1 The first toothbrush used by the ancients was the "chew stick"—a pencil-size twig with one end beaten to a soft fibrous condition.

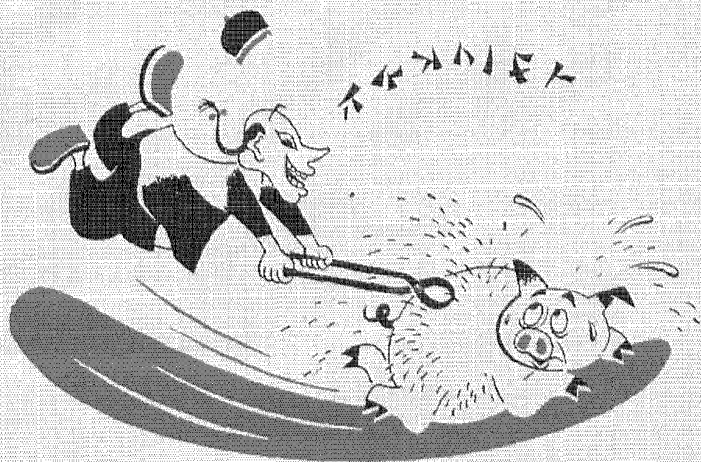


2 Handles of toothbrushes, before colorful and durable plastics came along, were made of bamboo or bone.

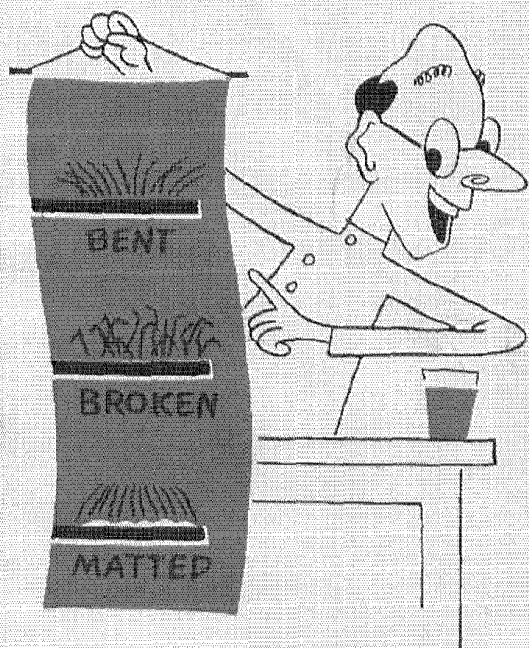


4 Four out of five Americans should go out and buy new toothbrushes, according to a study reported by dentists in the September, 1948 issue of "The American Medical Journal." A whopping 80% of brushes checked by these authorities were not fit for brushing teeth.

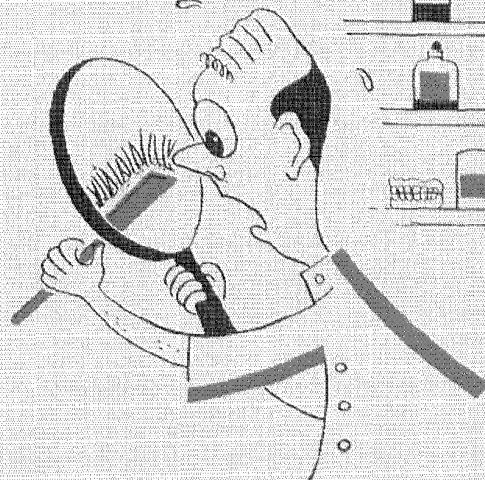
TOOTHBRUSHES?



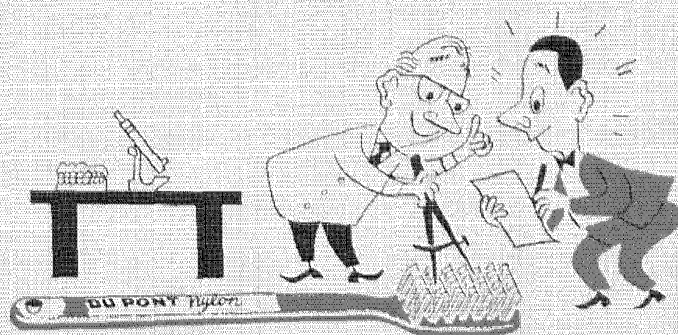
Most toothbrush bristles were once made from the hair of hogs living in the cold regions of Siberia and China.



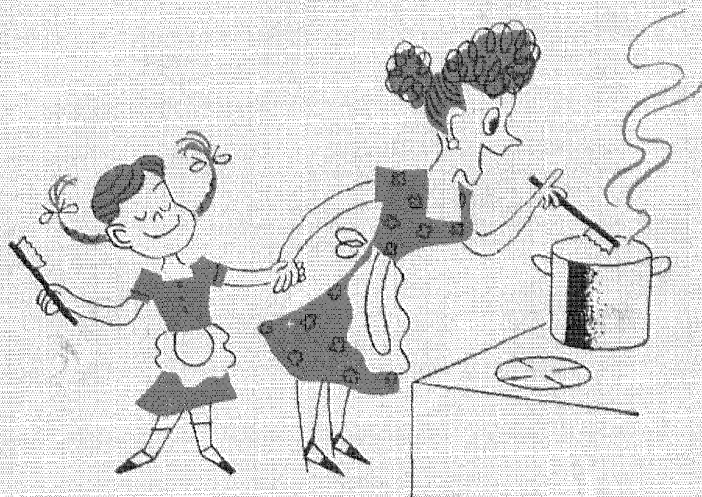
Why were these brushes classified as unfit? Investigation disclosed that there were three primary reasons; bristles were bent, broken or matted.



The study also disclosed that a large percentage of all toothbrushes should be discarded because dentifrice or food debris was caked at the base of the bristles.



Be sure the brush you now use is in good condition—and be sure, too, that it has Du Pont nylon bristles. They clean teeth properly, dry quickly, and are available in three textures—soft, medium and hard.



A newly-developed toothbrush is made entirely of nylon, from its long-lasting bristles to the pastel-colored handle. This brush can be sterilized by boiling—a wise precaution at any time and especially so in hospitals or sick rooms.



Acetate rayon being sized with a solution of "Ethanol" which puts a protective coating on every single thread.

An alcohol as dry as dust helps manufacturers turn out better yarns and fabrics

Your wife's nylon hosiery, the rayon curtains in your home and even the cords in your automobile tires are all typical examples of products that have been improved by "sizing" during their manufacture.

What is sizing and what does it do for you?

In its simplest terms, sizing is a protective chemical coating that is put on rayon and other yarns. The coating helps the yarn go safely through modern high speed looms with a minimum number of defects or imperfections in the fabric. Flexibility, abrasion resistance and strength are all necessary requirements for this protective size coating.

After the size has done its job in the transformation of yarn to fabric, it must also be easy to remove in preparation for dyeing. Complete removal is essential to uniform dyeing.

It is a relatively simple but vital operation in textile manufacture. Sizing, as one mill superintendent explained it, "is responsible for the marriage of quantity production and quality fabric." This marriage is essential to bring you fabrics at today's low cost.

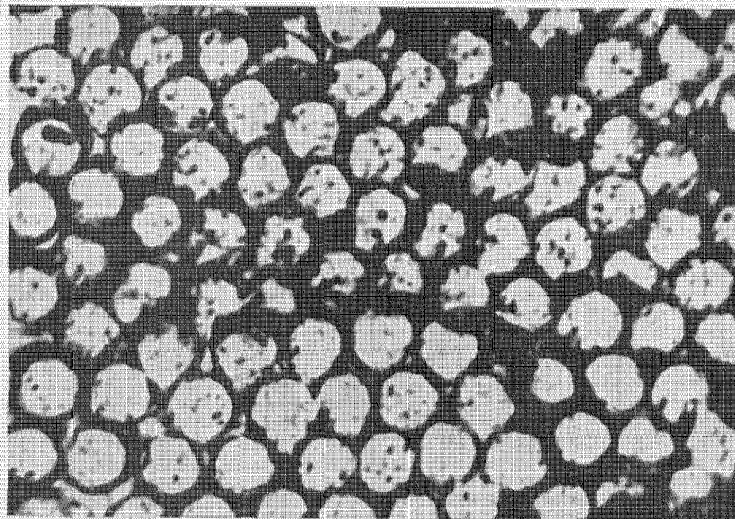
In the manufacture of rayon dress fabrics, such as crepes and taffetas, sizing plays an important role. First, it tends to bind together the numerous fine filaments in each thread of rayon yarn. It also affords the protection needed. Without sizing, excessive breaking of these fine yarns would take place. Result? An increased rate of "seconds" or imperfections and a decreased rate of production—both expensive items.

Rayon dress fabrics are woven from yarns which have been sized by a slasher such as the one illustrated on the preceding page. The operation is simple. The yarns pass through a water solution of the size, followed by squeezing through rollers, and drying over steam heated metal cylinders. Then it is ready for the weaving operation. Following this, the dress fabric is scoured in water to remove the size, and then dyed the desired color.

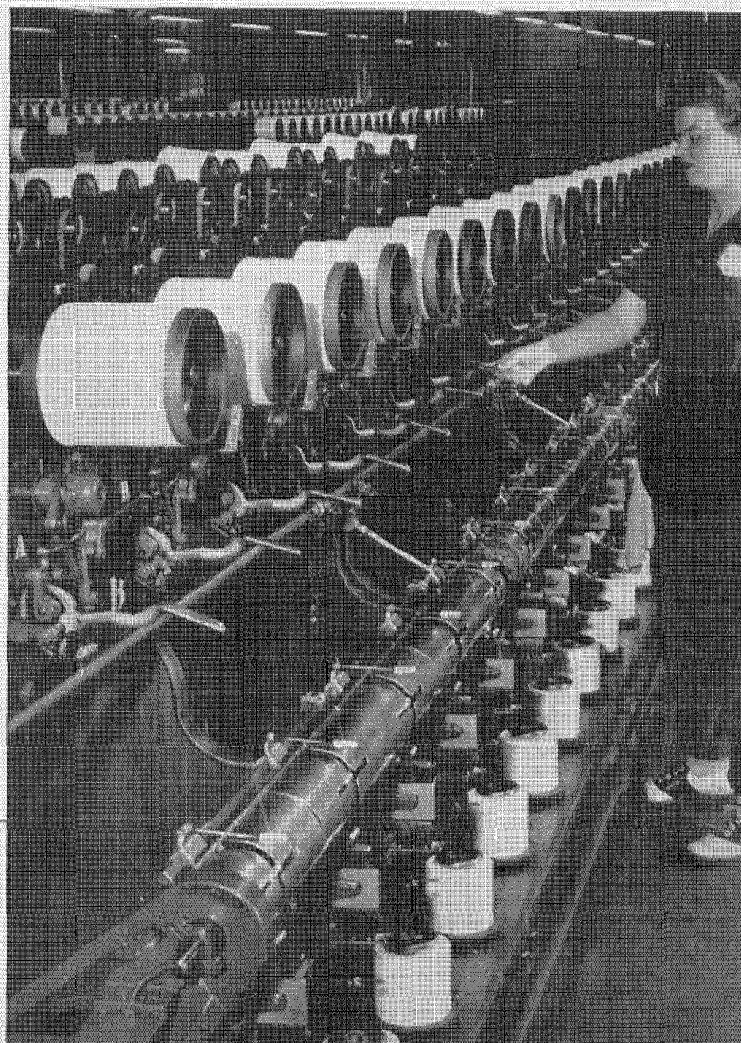
Tops as a sizing material is "Elvanol" polyvinyl alcohol. Widely used by the textile industry, it imparts the necessary binding and protection to the yarn, and makes possible quantity production of quality fabrics. Yarns sized with "Elvanol" are strong and abrasion-resistant, yet retain their flexibility and elasticity. Fabrics produced from these yarns can be uniformly dyed and finished because this alcohol is easy to remove completely.

You may think of all alcohols as liquids, but polyvinyl alcohol is actually a white powder that can be stored for months without lumping, molding, or deteriorating. Solutions of this synthetic Du Pont product are easily prepared and handled, and will not mold or gel when stored over weekends, holidays and other shutdown periods.

In addition to being what one prominent plant engineer called "the foolproof textile size," "Elvanol" has many other major industrial uses. Adhesives and binders, paper coatings and sizings, plastic film and molded products, emulsifying and thickening agents, temporary protective coatings . . . the A-to-Z list of applications already fills a small book. Every little while some company finds a better way to improve its line—or add a new product—with the aid of this versatile chemical.



This is a cross section of a thread of nylon magnified 400 times. Dark areas show penetration of size in and around tiny filaments.



Here each thread of nylon yarn is being sized separately. Without sizing, excessive breakage of yarns would occur.



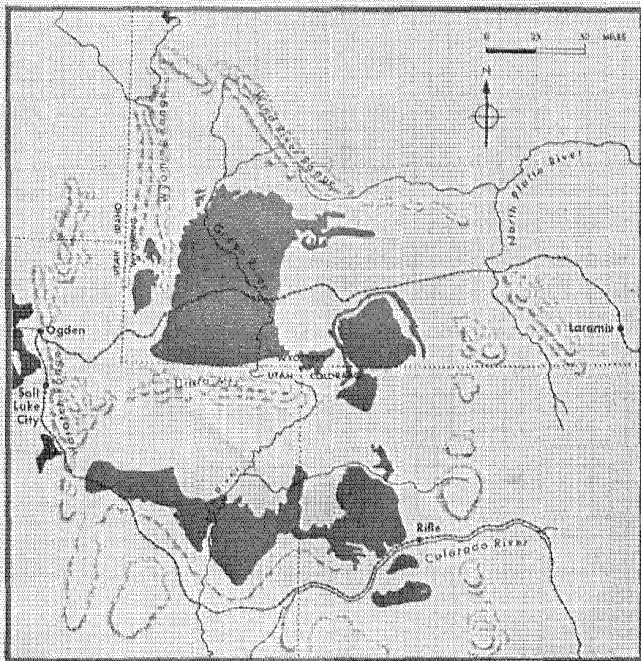
A shale retort in Colorado dumps crushed ore after oil is extracted. Scientists seek continuous extraction process.

Tomorrow's Oil Well

*"Gelex" No. 2 dynamite found best for mining
oil shale*

By R. H. SUMMER

Out in the Colorado Rockies, engineers of the U. S. Bureau of Mines have been trying for five years to pick a time lock. The vault is a mountain of marlstone and the contents Nature's fabulous storehouse of dry oil, large enough to run a machine civilization for a thousand years.



Dark areas of this U.S. Geological Survey map show deposits of oil-shale in Utah, Colorado and Wyoming.

The big news is that an estimated 300 billion barrels of oil are trapped in one Colorado shale formation. That is six times as much oil as the whole planet has used since Drake's discovery well in 1859. If all of this treasure could be recovered, it would be worth 700 billion dollars at present prices. This is about seven times as much as the estimated total investment by the industry in the first 88 years of its life.

Shale oil is not a recent discovery, nor is it peculiar to the Rockies. What is new is the staggering immensity of these deposits, and the likelihood that we may have to depend on them if we are to continue as a nation on wheels and wings.

Scientists are not agreed as to the first cause of oil in any natural state. Best opinion seems to be that

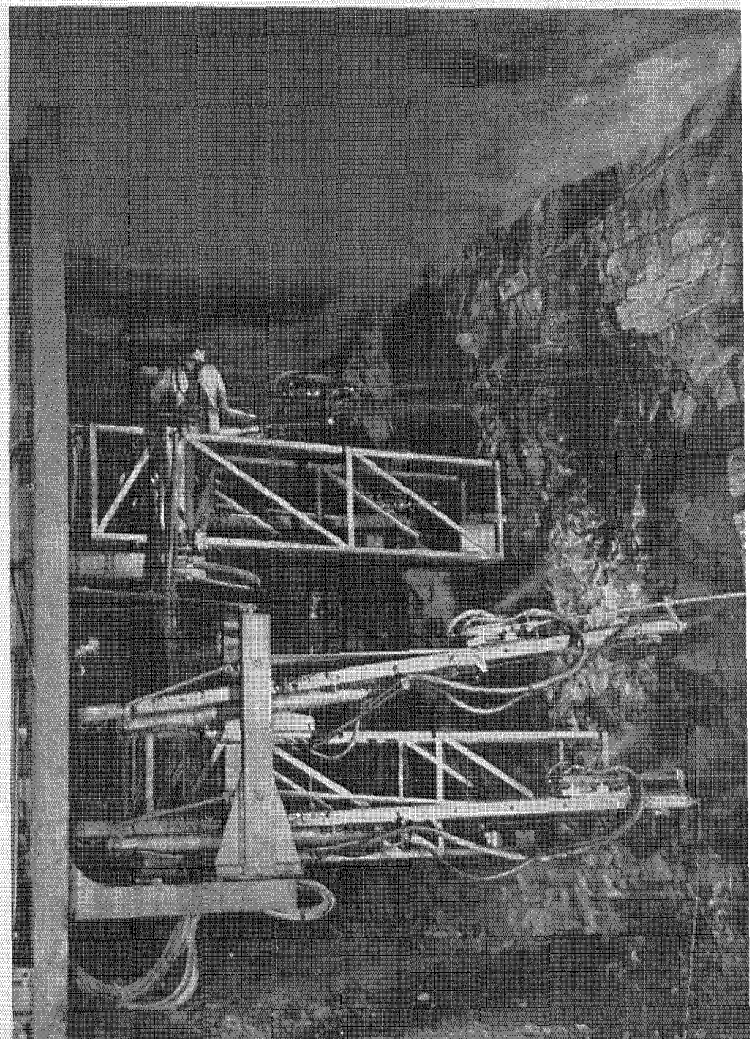
the oil of the Green River shale, or marlstone, in the Western Rockies is a product of ancient organic matter that once existed in the waters of inland seas. In some past age, the solid hydrocarbons became locked in stone. Heat of 800-900 degrees F. distills shale oil from the stone. The shale is actually rock that burns, as one man discovered after he had built a fireplace out of it in a rustic lodge. The walls caught fire and burned down the house.

OIL SHALE AREA LARGE

U. S. Bureau of Mines men began an intense development at Anvil Point near Rifle, Colorado in the middle of World War II. Core drilling revealed that the principal shale formation was 500 feet thick, and many times that at some points. A yield of 29 gallons to the ton of rock meant that 100 billion gallons of shale oil were stored in the lower 70 feet of that one huge formation. Previous work by the U.S. Geological Survey showed 16,500 square miles of shale land in the Green River formation of Colorado, Wyoming and Utah. It is not surprising that the geologists were excited. Like Balboa, they had found a new ocean.

The Synthetic Liquid Fuels Division proceeded to open a great cavern at a point in the mountainside where the shale outcropped. They built a pilot retort plant at the base of the mountain, hauled the ore down from an altitude of 9,200 feet, and cooked it in ovens to extract the oil.

Deep inside shale mine, men are drilling a round of holes for loading with Du Pont "Gelex" No. 2 dynamite.

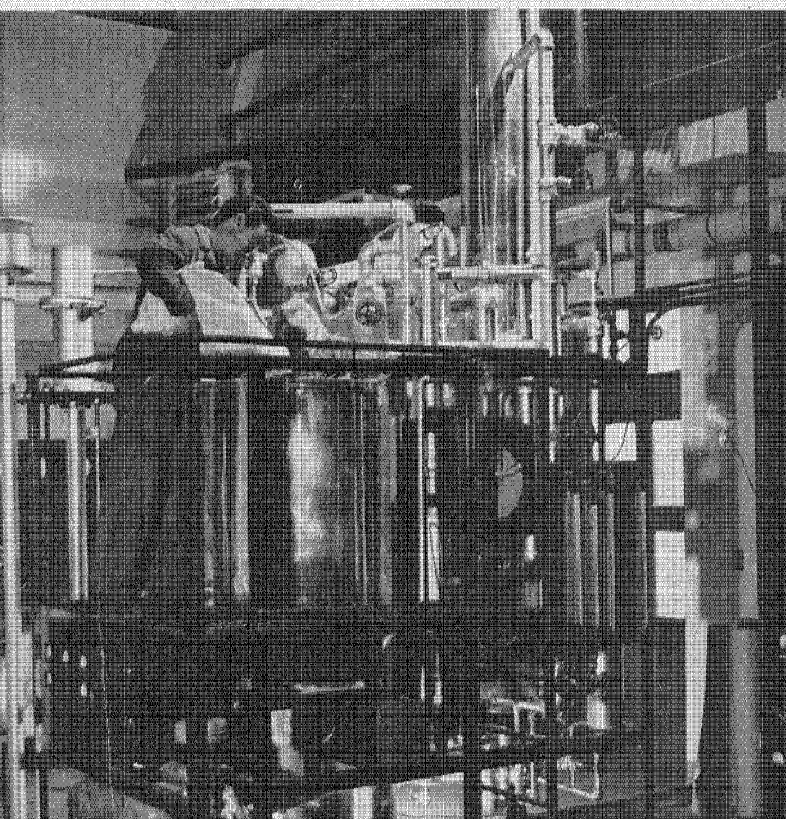




This is an overall view of the plant, near Rifle, Colorado, for heating the crushed shale to extract its oil content.



Road to the oil-shale mine snakes upward 2,300 feet from the recovery plant on floor of the Colorado River valley.



The project demonstrated that even if this country could conceivably be so fenced in during a war that not a drop of petroleum were obtainable from outside the homeland, we would have nothing to worry about. Our defenses would not be stilled for lack of fuel. The wheels of industry would continue to turn.

But hard-headed scientists dash a bit of realistic cold water on this perhaps so bright picture. They grant that the oil is there, and also the possibility of converting it into heat for your home or fuel for your son's jet plane to come. But is it economically feasible to tap this resource in a big way? Before that question can be answered, they say there are about three lions in the path to be subdued. The first is to get the ore out of the earth in sufficient quantities and at a low enough cost. Then a practical process of roasting the oil out of it by mass method must be found. Finally, there is the question of how to refine a product that is not the same thing as petroleum.

DU PONT EXPLOSIVE USED

No. 1 seems to be in the way of solution at Rifle. Inside the 70-foot-high tunnels on Anvil Point Mountain, pneumatic drills bore holes for dynamite shots in salvos. After experiments with 11 grades of explosives, Du Pont's "Gelex" No. 2 dynamite was found best suited to the blasting job. Loading is with electric shovels. Ore production has reached 50 tons per man day (average in coal mines is only 5.4 tons) at a cost of 59 cents a ton.

The system used at the demonstration plant for "cracking" the ore and forcing it to yield up its "kerogen" proved incapable of large-scale operation. Now experiments are being made at Rifle, and by some of the large oil companies. One commercial petroleum company has already devised a process that will yield a premium grade Diesel-type fuel.

Refining creates several difficulties, particularly in the number of unwanted elements in "kerogen" that are not found in petroleum. Its sulfur content, for instance, gives the crude product a disagreeable odor. On the other hand, it is rich in phenols from which plastics are made.

None of these problems appears harder to solve than those met by the petroleum pioneers. The future of shale oil adds up to this: Petroleum reserves will probably become more depleted before commercial mining for oil will begin to compete with the liquid oil industry. Significant is the fact that the oil companies have acquired most of the Green River oil shale land readily accessible for exploitation.

So the optimists have the last word in the oil reserve debate. America will not join the extinct civilizations for lack of life-sustaining oil.

Refining oil from shale involves several new problems, and chemists are experimenting to purify the valuable mineral.

Shooting Togs

The grass in the fields is brown . . . the trees are almost bare . . . and winter snows are not far off. All this means that the hunting season is here.

Perhaps you'll go to Canada for wild geese, North Dakota for pheasants, Pennsylvania for deer, or you may not have to venture much farther than your own back yard. But wherever you hunt, you'll be more comfortable if you wear the right clothes.

The garments pictured here are sensible and practical. Of brown or tan, wind-resistant, cotton poplin, these togs are not only comfortable, but rugged. And both jackets and trousers are made of fabric treated with "Zelan" durable water repellent. This makes the fabric shed water and resist non-oily spots or stains. "Zelan" protection lasts through many washings or cleanings.

Fabric of Drybak coat, treated with "Zelan", sheds rain.



This new lightweight Masland hunting coat is treated with "Zelan".



"Zelan" neither coats a fabric nor affects its porosity. Drybak made this jacket.





Terminal of Teche Greyhound Lines, New Orleans, Louisiana . . . one of the *Bus Transportation Award* winners.

First at the Finish

*Du Pont finishes were used by
13 of 18 transit companies which received
1949 Maintenance Efficiency Awards*

By ARTHUR M. VALZ

Americans seldom miss an opportunity to honor a winner. Here in the U.S.A., as you well know, prizes are won for unusual feats. Hollywood confers "Oscars." Sports experts award the All-American title to outstanding football stars. Even animals and plants win blue ribbons at county fairs.

Since 1930, a trade publication, *Bus Transportation*, has bestowed upon 167 city and intercity transit

companies its Maintenance Efficiency Award for an outstanding job in upkeep of their equipment. More than 1,200 firms have competed for the coveted ME pennant during the past 20 years.

Thirteen of the winning contestants keep their rolling stock spic and span with "Duco" lacquers, "Dulux" enamels and other Du Pont finishing materials. These champions, operating 4,066 buses last year, carried more than 700 million passengers nearly 200 million bus miles.

They operate 62 garages and shops representing a total investment of more than \$15 million. At a moment's notice, they are ready to supply anything from a rivet to a refinishing job on a damaged panel.

Motor coaches are subject to the toughest kind of automotive service. Intercity buses, for example, are exposed to snow one day and sunshine the next as they roll along the nation's highways. The average bus piles up over fifty thousand miles a year as compared to the average car that travels about 7,500 miles.

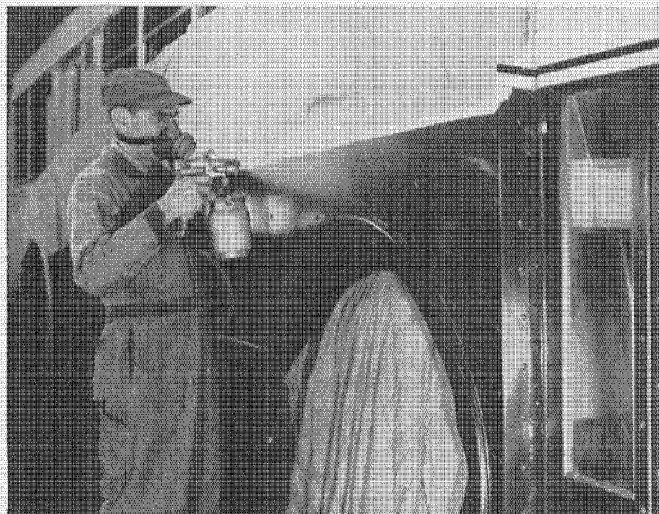
The appearance of buses is important because they are constantly in the public eye. They face keen competition with other modes of transportation, and it takes a lot of paint materials to keep them in A-1 condition.

Presentation of the ME awards pays indirect tribute to Du Pont's contribution in the field of automo-



Production-line techniques, plus ample light and ventilation, are features of the modern automotive paint shop. This one is equipped to refinish ten coaches at a time.

tive finishes. For example, the use of "Preparakote" primers creates a foundation that inhibits rust, adheres well and provides a good surface for the topcoats.



Close-up in spray booth shows skilled worker applying "Dulux" top coat to bus exterior. This enamel provides a long-wearing finish for severely exposed rolling stock.

Du Pont "Duco" lacquers and "Dulux" enamels are color-matched to exacting specifications, and their use insures durability and beauty.

But there is another reason why these products were selected by the pennant winners. Du Pont representatives help solve their refinishing problems. That's why more and more automotive maintenance men rely on this Company for the winning finish.

Recipients of 1949 ME Awards who use "Duco" and "Dulux" are: Atlantic Greyhound Corporation, Charleston, West Virginia; Bristol Traction Company, Bristol, Connecticut; Charleston Transit Company, Charleston, West Virginia; Connecticut Company, New Haven, Connecticut; Dixie Greyhound Lines, Inc., Memphis, Tennessee; Dixie Traction Company, Elsmere, Kentucky; Harrisburg Railways Company, Harrisburg, Pennsylvania; Houston Transit Company, Houston, Texas; Johnson Bus Lines, Inc., Milford, Massachusetts; Portsmouth Transit Company, Portsmouth, Virginia; St. Louis Public Service Company, St. Louis, Missouri; St. Joseph Light and Power Company, St. Joseph, Missouri; Teche Greyhound Lines, New Orleans, Louisiana.

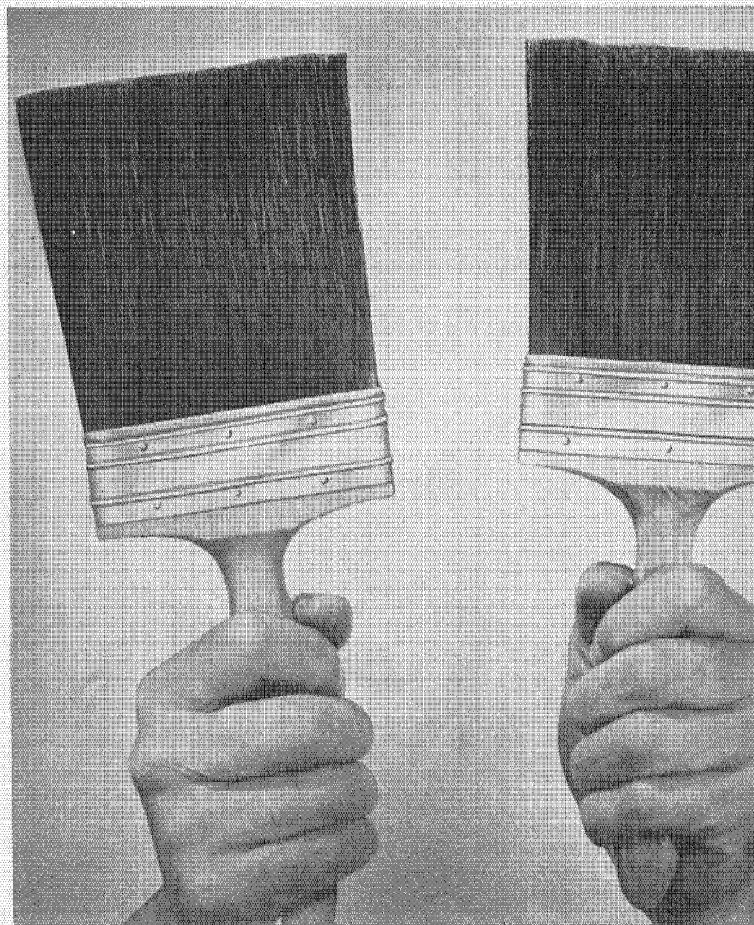
Which Brush Covered 19 Acres?

If you interpret the headline literally, you probably will think it's a mighty big brush to actually cover 19 acres. What we mean, of course, is that the nylon-bristled tool on the right has brushed over a surface equivalent to 19 acres in a control test. Yet it shows only $\frac{1}{8}$ " of wear. Compared to the brand new one on the left, that's almost no wear at all.

Specifically, nylon bristles outwear the best grades of ordinary ones from 3 to 5 times, and give outstanding performance on the roughest surfaces. In addition, these professional brushes cost less than others made for master painters. They can be used in lacquers, varnishes, enamels—in fact, they can be used or cleaned in any product except creosotes containing coal tar acids. Methyl or ethyl alcohol soften them temporarily, but this is not harmful. Unlike ordinary brushes, they are particularly durable when used in calcimine or other water-vehicle paints.

Nylon bristles for paint brushes are tapered to give improved paint pick-up and better retention and spreading properties. As the bristles are made in many sizes, manufacturers can include in each brush the proper proportion of short and long ones. They also grind the bristle tips to sharp points, which make the brushes spread a smoother film of paint.

Nylon-bristled paint brushes, available for every type of job, are made by leading manufacturers throughout the country.





Technical service man advising operator of a galvanizing machine on the use of a Du Pont product.

At Your Service

While Du Pont sells industrial chemicals, its technical service men are selling extra customer satisfaction

By PEG MINER

When a car owner drives up to a service station and says, "Fill 'er up," he likes a little extra attention. He's come to expect the attendant to clean his windshield, and check the oil and water. It's often the determining factor in where he goes to get his gasoline.

Service, Du Pont feels, is just as important in the chemical industry. A good example is found in the Grasselli Chemicals Department's sales of industrial, or large-volume, chemicals.

If you picked up the Company's *Products Index* and leafed through the Grasselli industrial products, you'd find silicate, acids, fluxes, and many types of salts. But hardly an inkling of the part played by a friendly policy of assistance that benefits customers and Du Pont alike.

For instance, here are the cold facts you'd find in the index listing under

Sodium Phosphate—Di—Crystal Technical . . .

Use: As an emulsifier in the manufacture of processed cheese. . . .

But let's read between the lines. A year ago Company A, a cheese manufacturer, was having trouble. It was following the usual procedure of adding disodium phosphate to the cheese it produced, as an emulsifier.

But the desired results were not being obtained; the cheese was coming out gritty. Du Pont was called in for consultation. "Your difficulty," the service men told Company A, "seems to center around the method of adding the chemical. Why don't you give this other way a try?" The new procedure was used, the cheese came out grit-free, and everybody was happy.

In another instance, a concern had been having a different kind of trouble. This time it was with sodium silicate, used as an adhesive for corrugated paper board. Their costs for adhesive were running considerably above the average for the industry, and was one reason why their operation was unprofitable.

"Well," thought the box board people, "here's where we switch to other adhesives." At that point the sales representative learned of the problem. A complete study of the operation was made by Grasselli Chemicals Department Technical Service and a number of changes recommended, including the use of a different grade of our silicate.

After the suggestions were adopted, adhesive costs dropped by about half and the yearly production of excellent board was increased. The customer was delighted to find that he saved over \$1,000 a month. Of course, Du Pont came out with a very satisfied customer.

Some of the best work done by technical service has started with a complaint about a Company product. Take the case of a large steel concern. In 1946, they realized that they were using too much flux in the sheet galvanizing operation. So, they called in our technical service men and asked, "What's wrong here?"

we had been supplying them flux for some time, and the yearly consumption had risen to about two million pounds. So our representative reviewed the galvanizing process and suggested cutting down the size of flux boxes, decreasing the strength of the acid pre-dip, and making certain other changes.

After just one week of supervised operation, flux consumption was cut 23 per cent. It kept going down. Say our men, "Ever since then, we get a call every year to check on their operation to see if further savings can be made."

Occasionally technical service work ends in new products. That happened in the case of a concern making coated welding rods. This company was using Du Pont potassium silicate for binding purposes, but found the particular grade of silicate impractical. It over-dried and gave rod coating cracks and weak bonds.

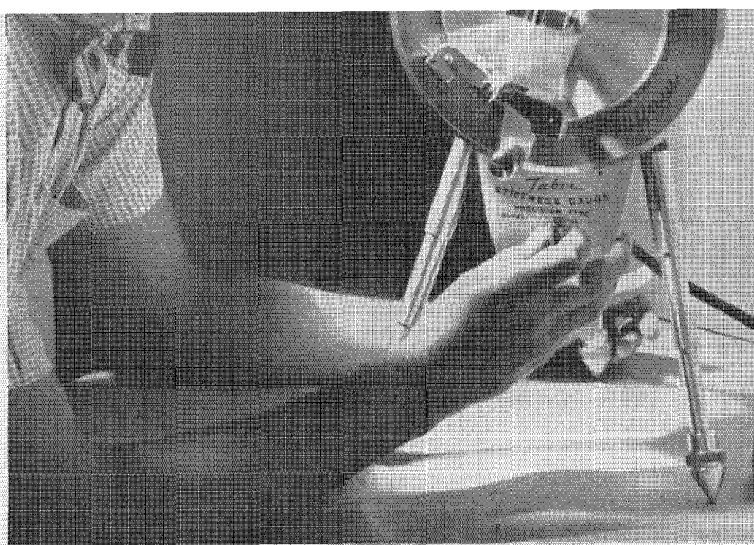
"How about our making up a special grade of silicate?" we suggested. Soon a new grade was being used with satisfaction by several customers in the welding-rod coating field.

It's not unusual for technical service to recommend a switch from one established product to another. By doing that, we were able to save a soybean processing company considerable money. This concern was using chemically pure (C.P.) hydrochloric acid in a soybean protein processing operation. It took lots of acid. They were aware of the desirability of changing to a less expensive grade, but had been unable to find a source of supply.

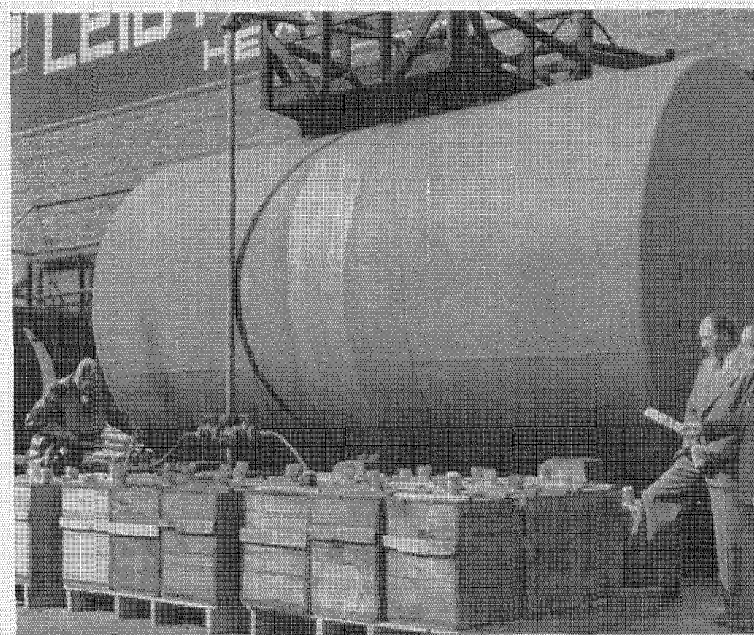
The service men determined that another grade, which they could furnish, was really what these people should be using. So, in spite of the fact that selling C.P. acid would have meant more, dollar-wise, they offered to supply the other. Samples were furnished, and trial runs and test procedures discussed. The soybean company proved the acid made a good product—and appreciated the help. They made the change.

It's extra service like this that has made so many industries spread the welcome mat for Grasselli Chemicals Department sales and service representatives. They know that these men don't consider a sale closed until the customer is satisfied in every possible way. In the long run, everybody wins.

The problem of this Philadelphia concern is, "How should we apply silicate adhesive to get the best corrugated boxboard?"

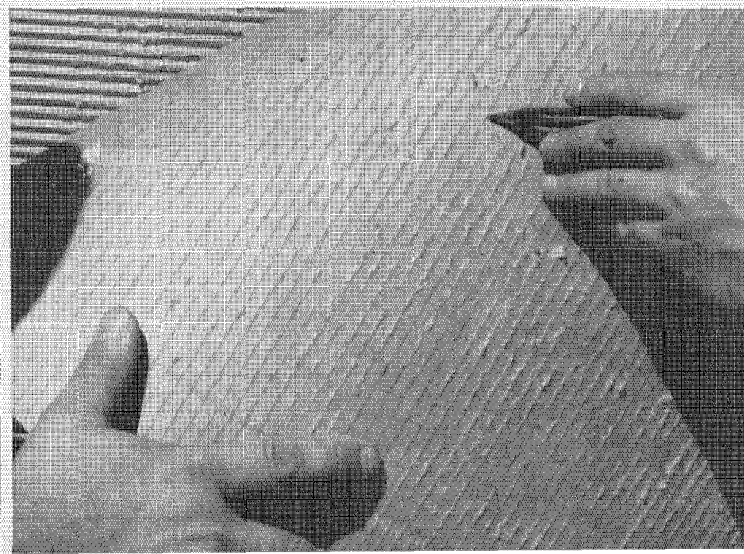


Problems of the paper industry are studied in the Grasselli Paper Laboratory. Here the stiffness of a paper sample is being tested



Owner of a Baltimore industrial chemicals business consults with service man on the most efficient method for handling acids

As boxboard comes off the production line, it is pulled apart to study the application and performance of the silicate adhesive





Yes, Better Mops

Here's the development story of another useful postwar product—Du Pont cellulose sponge yarn

A few years ago a cotton yarn salesman in Boston was worried. Too many mop users were complaining about cotton yarn, and some plaintively asked: "Can't something be done to make them more serviceable, so that they wouldn't unravel, wear out prematurely, and leave lint on floors?"

He resolved to see if there was any way to answer that question. Perhaps some reinforcing fiber or other material might be combined with the yarn to improve its properties. He did some experimental work of his own, and obtained a patent on it, but finally decided to ask Du Pont textile chemists to help him.

So he came to Wilmington to discuss mop yarns and their shortcomings; said he had tried and discarded latex and other coating materials. "Would it be possible," he asked, "to coat the cotton strands with cellulose sponge?" That challenging suggestion led Du Pont to a new program of research on the reinforcement of mop yarns.

The problem was to find some way to extrude a tight-fitting cellulose sponge jacket around each strand of the yarn. Could this be done? The only answer was a conditional "maybe so." Any spongy material would have to be adapted for use in an extrusion machine designed and constructed especially for that purpose. It was worth a try. So Du Pont chemists and engineers tackled these problems with the zest of men pioneering in a new, untried field.

The first laboratory-made cellulose sponge yarn proved the method feasible and the product one of merit. Mops made of this yarn were strong and durable. They absorbed more water and held it better than cotton yarn did. They were easy to keep clean and were free from unraveling and linting troubles. Then these mops were put through grueling service tests in places where cleaning tools get the hardest usage. They performed so well that it was decided to build a pilot plant to perfect the process further and, under a license from the salesman who had the original idea, to manufacture the product on a small scale. This establishment at the Yerkes Works near Buffalo was a busy one during the first two years, and was the

forerunner of a full-scale plant that has been in operation for about a year. Thus, after three years of chemical and engineering research, a really superior mop yarn was produced commercially.

This product consists of a core strand of strong cotton, with the cellulose sponge material extruded around it, forming a jacketed yarn about 1/4-inch in diameter. Like spaghetti, it comes out of the machine continuously, ready to be cut to specified lengths for packaging and shipment.

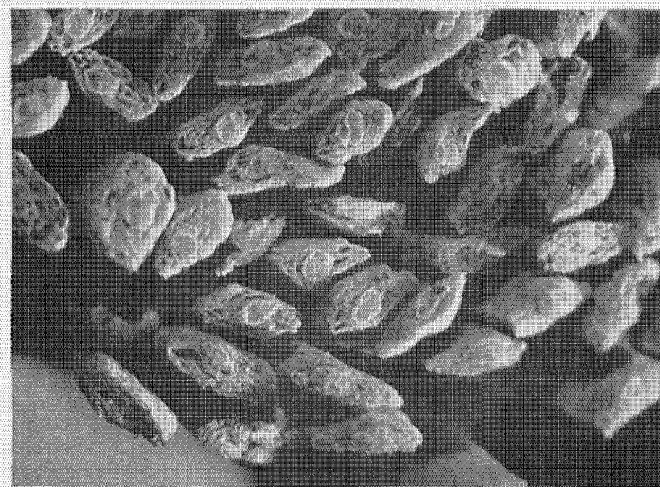
Both in form and substance, cellulose sponge yarn has gone far to solve the problems of mop makers and their customers. It absorbs two to three times more water than ordinary mop yarns do. It picks up dirt readily, rinses out clean, dries quickly. It doesn't scratch or tangle, resists chemical attack by ordinary soaps, solvents and oils, and doesn't become sour. What's more, this yarn in a mop outwears the old mop yarn three to five times.

Considering such advantages, it is not at all surprising that 20 mop manufacturers from Massachusetts to California are already using the new cellulose sponge yarn, and that the trade and consumer demand for their finished products is growing rapidly. That's just what you would expect to follow the introduction of truly better products of this kind.

Du Pont, we hasten to add, does not make any mops, but does supply the sponge yarn to mop manufacturers, though not exclusively so. You may recall that recently in this Magazine we described and illustrated a car-washing mitt faced with this yarn. Some other practical uses for it are still in the experimental or development stages, and doubtless more will be.

Nobody knows how far this better product can go in the industrial fabrication field. But cellulose sponge yarn is off to a good start. That's gratifying to all who have had a part in the research, development and production work. For out of their efforts have come more efficient and economical cleaning tools for use in homes, garages, factories, hotels, schools, hospitals and other institutions.

Cross section of the new mop yarn. Note that each cotton fiber strand is jacketed with cellulose sponge material.



Going places . . .



Tough, handsome luggage made of DuPont "Fabrilit". These bags were made in Chicago by the Platt Luggage Company.

When an enterprise is expected to ring up about \$15 billion in one year, that's big business, which is just what American tourists and vacationers are. With four-fifths of all those employed by private industry—and 97 per cent of all office workers—getting paid vacations nowadays, the tourist is an important factor in our national economy. In Marshall Plan language, he's also an inexhaustible invisible export.

But during the past year he has shown signs of keeping an unusually cold and calculating eye on the budget. To give him more for his money, many resorts had to spruce up their service and accommodations. In New England last spring, resort operators at meetings even studied how to be nicer to their guests.

The big items for tourists, of course, are always transportation, hotels, food and entertainment. But getting the most out of the travel dollar applies to other things, too, among them luggage. A suitcase that resists dirt, grease and scuffing—like the new ones made with "Fabrilit" supported plastic sheeting—is a boon on any trip, business or pleasure. This new luggage has a smooth, rich surface that can be cleaned quickly with a damp cloth, and it comes in a variety of colors. It's the new look for the smart traveler.

What's New



• **FOR COWHANDS UNDER FIVE.** Any youngster will be overjoyed to find this handsome steed standing beside the tree on Christmas morning. Its head and body are of fiber-plastic construction. The legs and rocker are hardwood. The "Happitime" playhorse is finished in white baked "Dulux" enamel with blue and red trim. Moulded Products, Incorporated, Spring Park, Minnesota, is manufacturing several models for Sears, Roebuck and Company.

• **THE NEOPRENE MERCHANDISER** is a new Du Pont publication featuring consumer products made of neoprene. Its purpose is to assist buyers and purchasing agents of wholesale distributors and retail outlets. To receive it regularly, write the Rubber Chemicals Division, D-44, 8545 Nemours Building, Wilmington, Delaware.

• **A NEW DU PONT COLOR FILM** was announced and demonstrated recently in Hollywood by the Photo Products Department. It is for use by the motion picture industry to print 35 mm. positives for showing in movie theatres. This development, after years of research in Du Pont laboratories, makes use of a synthetic polymer that serves both as a carrier of the sensitized layer and as a color former.

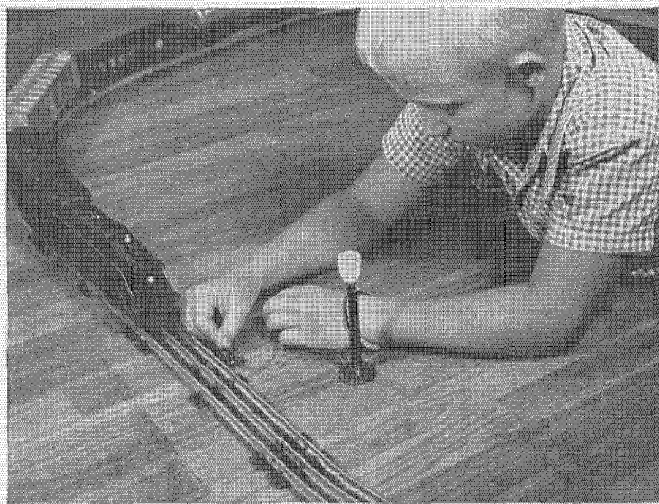
• **TWO DEPARTMENTS MERGED.** The Ammonia and Plastics departments of this Company have been consolidated under the name of the Polychemicals Department. All product lines now manufactured by both departments will be continued, and the business will be handled through the already established organization.

• **SAFE CANDY FOR YOUNGSTERS.** The Toy Pop Corporation, 522 Fifth Avenue, New York City, now makes lollipops with flexible sticks of brightly colored Du Pont polythene plastic which can't crack or splinter. The top of each "Toy Pop" forms a toy, which not only anchors the candy but after the last lick provides an amusing plaything. It's a timely suggestion for Santa.

• **THE PIGMENTS DEPARTMENT** recently announced production of a green-shade "Monastral" light-fast blue pigment for printing inks. It's suitable for poster and display work, food and soap labels, tin decorating and similar applications.



• **LIGHT, STRONG AND DURABLE.** This new nylon bag is easy to take shopping for it folds neatly into its own tiny pouch for carrying in purse or pocket. The sturdy, washable holdall has been tested by the manufacturer to hold 160 pounds, yet it weighs a mere two ounces. "In-A-Purse" bag is made by the Lowenthal Manufacturing Company, 5635 South Harper Avenue, Chicago, Illinois, and comes in gray or brown.



● **TIP FOR SANTA.** Junior's miniature railroad will take on added realism with this accurately-scaled street light. It is a green metal lamppost capped with a one-inch nylon globe. In making this model, the H & H Sales and Manufacturing Company, 835 West North Avenue, Pittsburgh, Pennsylvania, used this Du Pont plastic because of its non-shattering and heat resistant properties.



● **KEEPS LITTLE HANDS DRY.** Mothers will welcome a new type of snow mittens for their children. They're coated with a red neoprene composition and have a fleece lining to keep hands warm and dry. The neoprene coating is tough, long-lasting, waterproof and flexible. "Eskimitts" are made by the Pioneer Rubber Company, Willard, Ohio.



● **BREAKFAST-NOOK SET.** Here's a space and time saver. Benches are upholstered in serviceable, colorful Du Pont "Fabrillite" vinyl plastic sheeting, which is easy to keep clean with a damp cloth. Between meals, benches can be stored on tracks under the table top to save floor space. Sets are made by the Doepler Metal Furniture Corporation, 192 Lexington Avenue, New York City.

● **A NEW APPROACH** to prevent fires in homes and hotels is "Erifon" flame retardant for treating cotton and rayon fabrics. It's an aqueous solution of titanium and antimony salts containing free hydrochloric acid. When properly applied by textile finishing mills, it gives adequate protection to these materials against spread of flame and afterglow. This resistance is maintained even after repeated normal household washings or cleanings and exposure to weather. The processing doesn't change appreciably the appearance or feel of the treated fabrics. "Erifon" is manufactured by the Du Pont Pigments Department.

REMINGTON Announces 2 NEW

The New Remington "Sportsman-48"

3-shot autoloader

The New Remington Model 11-48

5-shot autoloader

THESE two new Remington autoloading shotguns back up the promise of a lifetime of shooting fun! They're beautifully streamlined inside and out, lightweight, fast handling, fast shooting, rugged and dependable!

YOU CAN SEE—a streamlined flowing design of unbroken lines from muzzle to butt plate. Graceful stock and fore-end of genuine American walnut. Rich, black satin finish on metal parts. Handsomely checkered grip and fore-end. New style trigger and trigger guard. Large, easy-to-operate safety button. Sleek, smooth receiver with no screw holes.

HANDLE IT AND YOU'LL FEEL—lighter weight (it feels and is lighter). Amazing balance . . . the gun becomes a part of you. It seems to point itself! Action *glides*, it's so smooth. Trigger pull is crisp.

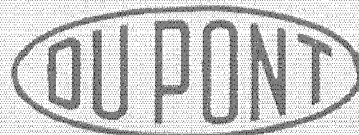
SHOOT IT AND YOU'LL KNOW—light recoil in a powerful, hard-hitting gun. Quiet action. Easy to carry; no sharp edges to hurt hands or bump the shoulder.

Its superb balance and light weight help your gun pointing . . . give you a natural swing, easy follow-through. Ideal for the snap shot or the deliberate pointer. Easy to load and unload.

Streamlined in construction as well as in appearance and performance, through new production methods, design of new parts and new styling. Solid alloy steel receivers give extreme strength and toughness, yet are lighter. Extra strength has been added at points subject to extra wear. For example, the inside of the fore-end is completely reinforced by a solid sheet of steel and a sturdy steel collar at the cap end.

The new lightweight Remington Model 11-48 and Sportsman-48 have been given merciless endurance trials in rain, dust, cold and ice. Gun experts have enthusiastically praised these guns after thorough testing in the field at game and clay targets. For detailed information and free literature, write Remington Arms Company, Inc., Bridgeport 2, Conn.

Remington

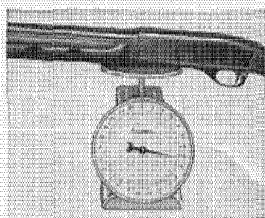


*"If It's Remington
—It's Right!"*

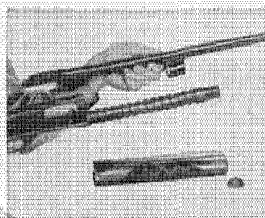
"Sportsman" and "Express" are Reg. U. S. Pat. Off. by Remington Arms Company, Inc. "High Velocity" is a trade mark of Peters Cartridge Division.

Streamlined Autoloading Shotguns

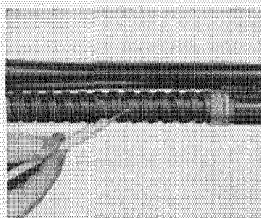
*Lighter weight
-light recoil!*



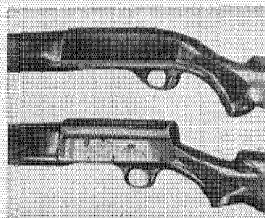
LIGHT WEIGHT—Combination of new material and advanced design has resulted in a definite reduction in weight amounting to a pound in 12 gauge gun.



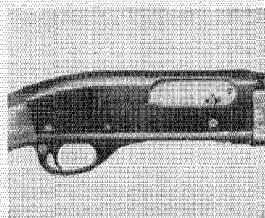
EASY TAKE-DOWN—No tools needed. Ready for cleaning in a jiffy. Easy to interchange barrels for different kinds of hunting. Complete fire control comes out as unit.



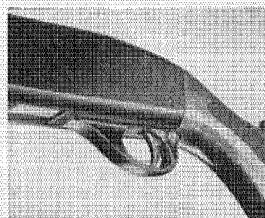
LIGHT RECOIL—New guns have shock absorber or braking device of improved design for easy adjustment to obtain minimum recoil for either light or heavy loads.



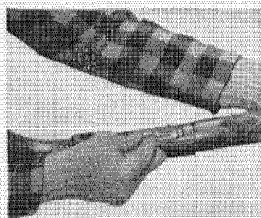
STREAMLINED—Compare the top Sportsman-48 with original. The new model offers you all the finest features of the original Sportsman and Model 11, plus many others.



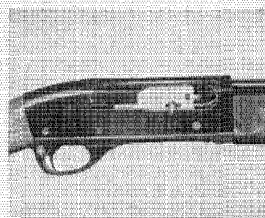
SAFETY FEATURES—Positive cross-bolt safety conveniently sized, easily located for quick operation. Trigger must be pulled for each shot. Extra safety in an extra-special gun.



ATTRACTIVE APPEARANCE—Streamlined receiver and trigger guard. Handsomely checkered fore-end and pistol grip designed for fast, comfortable handling.



LOADING—Extremely easy to load through exceptionally wide magazine loading port slot... even in cold weather and when wearing heavy gloves. Easy to unload.

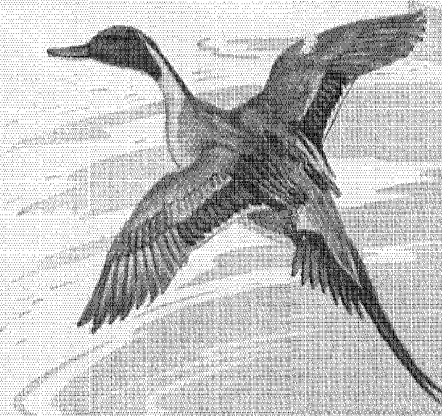


NO POWER LOSS—Barrel and breech bolt are locked together until shot leaves the muzzle. This gives maximum power with either light or heavy loads.

SPECIFICATIONS:

Sportsman-48A—3-shot capacity—take-down, solid breech. Wide selection of barrel lengths, 26, 28 and 30 inches; borings—cylinder, modified, full choke and Remington special skeel boring. Chambered for 2 $\frac{3}{4}$ " shells, 12, 16 and 20 gauges. Modern heavy loads such as Remington Express and Peters High Velocity may be used safely in this gun. Crossbolt safety. Top of receiver matted. American walnut pistol-grip stock and fore-end, both finely checkered. Pistol grip with decorative cap. Black butt plate. Standard stock dimensions—14" long, 2 $\frac{1}{2}$ " drop at heel, 1 $\frac{1}{2}$ " drop at comb. Weight: 20 gauge, about 6 $\frac{1}{4}$ pounds; 16 gauge, about 6 $\frac{1}{2}$ pounds; 12 gauge, about 7 $\frac{1}{4}$ pounds. The following extras will be furnished for an additional charge: special drop or special length of stock; recoil pads; matted top surface of barrel or ventilated rib; beavertail fore-end.

Model 11-48A—Same as Sportsman-48 except as follows: 5-shot capacity (3-shot plug furnished without extra charge). Walnut-colored butt plate. Full pistol grip with rubber cap furnished at an additional charge.



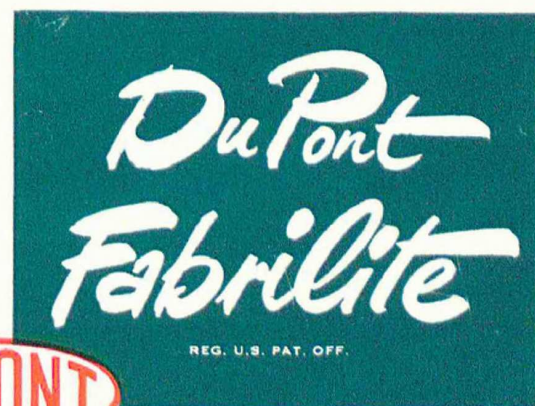


The PLASTIC UPHOLSTERY that serves best will cost less

Choose from the three types of Du Pont "Fabrilite"*... and be sure that you have the right upholstery for the specific job. Du Pont offers a new *supported* plastic sheeting in addition to vinyl plastic sheeting (unbacked) and vinyl plastic-coated fabric. All these types are made from carefully blended formulas that produce materials with *balanced qualities*. No one quality is sacrificed for another. All are in proportion to one another. Resistance to cracking, peeling, flexing, tackiness, aging, fading

and general wear... ease of tailoring... rich "hand"—all are balanced in "Fabrilite."

The Du Pont "know how" has produced this high-quality plastic upholstery with *balanced properties* to meet specific service conditions. Ask to see samples, and you'll know why "Fabrilite" is the upholstery that serves best—hence costs less. E. I. du Pont de Nemours & Co. (Inc.), Fabrics Division, Empire State Bldg., New York 1, N. Y.



**"Fabrilite" is Du Pont's registered trademark for its vinyl plastic-coated fabric and sheeting (with or without supporting back).*

BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY