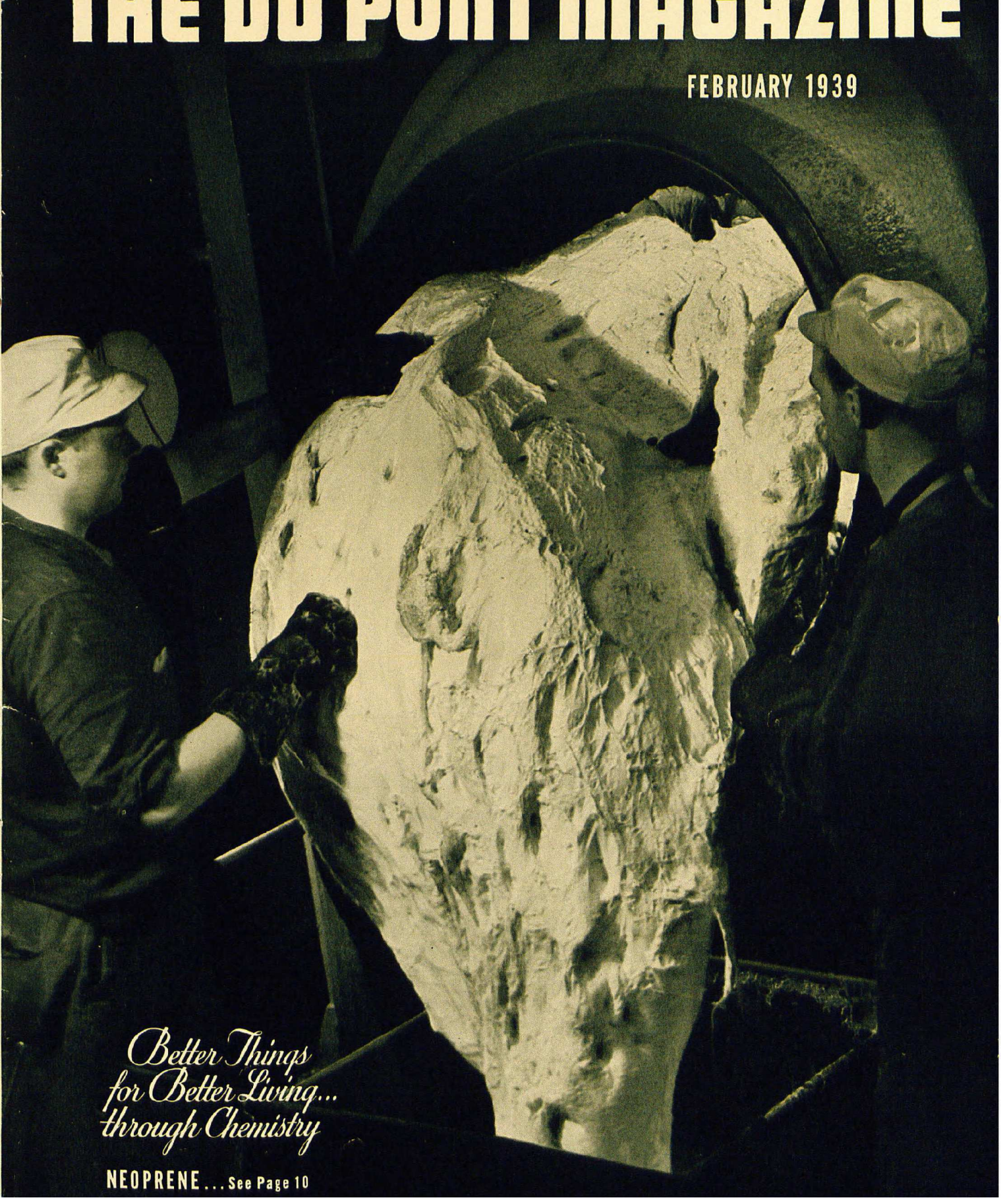
THE DU PONT MAGAZINE

FEBRUARY 1939



Better Things for Better Living... through Chemistry

NEOPRENE ... See Page 10



1. Tough luck, Billy. But this lacquer isn't for small boys and stray dogs. It's for manufacturers who want a package coating that keeps outside moisture from getting into products that should be kept *dry* . . . and keeps the moisture *in* products that should be kept *moist*. Assurance of prolonged factory-freshness may be an extremely important point for his advertising.

2. This new Du Pont Moistureproof Paper Lacquer gives a manufacturer's package more *beauty*, too —a crisper, cleaner look—with a brilliant new sparkle to colors and label design. His package will literally *stand out* on store shelves and counters, wherever it appears.

3. And this new lacquer is exceptionally strong and *durable*. It is hard to mar, hard to scuff, hard to scratch. Also—it can be made to resist alcohol, greases, and other reagents . . . can be modified to give heat resistance, or can be used for heat sealing. And it prevents offsetting and smearing of inks on labels of products that must be packed while hot.

* * *

● For manufacturers whose products might be made more attractive, better protected and more salable through moistureproof packaging . . Du Pont will be glad to create lacquer formulas best suited to each particular need.

DU PONT
REG. U. S. PAT. OFF.

E. I. DU PONT DE NEMOURS & CO., INC.
Finishes Division, Industrial Sales
WILMINGTON, DELAWARE

THE DU PONT MAGAZINE

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Prices, Wages and Hours

CONDENSED FROM AN ADDRESS BY ALFRED P. SLOAN, JR., AT A RECENT MEETING OF THE BOSTON CHAMBER OF COMMERCE

In his introductory remarks, Mr. Sloan mentioned that five years ago, when he addressed the group, our nation was just emerging from one depression. Since then he observed further progress toward recovery had been intercepted by another severe crisis, again leaving the world to face grave dangers.

Notwithstanding the most generous national expenditures and the adoption of numerous ambitious experiments, we have not yet established an economy of plenty. Scarcity still prevails on far too broad a front. Too many have too little. Too many have not even the opportunity to work.

Clearly now the community has a right to demand that the intelligence of the nation's representative leadership be brought to bear in the closest coöperation. Our whole economic position should be appraised and readjusted so as to promote and make possible "the essential objectives of more things for more people and the opportunity to work."

He defined coöperation as "working together for a common cause, but with mutual confidence and respect," declaring that it is not promoted when attempts are made to discredit honest achievement or to question unfairly sincerity of purpose. It is a two-sided continuous relationship that improves with time and cannot be turned on and off at will. Neither does it contemplate the relationship of master and servant. It is a democratic relationship which is necessary if we are to perpetuate our democratic institutions and inject into our economy the desired element of stability.

Coöperation is particularly important between government and the management of industry, he declared, for only thus can the most effective rules be established under which the component parts can function among themselves and an economic balance be maintained with other groups comprising the economy as a whole. "And this can —and must be—accomplished without prejudicing the full opportunity of free and individual enterprise."

What is needed, first, is a spirit of friendly coöperation. Then we must examine calmly, with an open mind, all the facts relating to the management of the world's greatest business—the American national economy. We must separate the good from the bad, and then determine what will promote the economic and social progress of the greatest number of our people—particularly those who have the least. This can be done if we have the will to do it. But no such effort can succeed if approached from the standpoint of an appeal to the mass emotions of the uninformed, or by sacrificing business to political considerations, for no nation, no individual can build permanently upon a foundation that is not supported by economic law.

Mr. Sloan believes that if the government-announced plans of the recently-organized Temporary National Economic Committee are predicated on a real desire to seek the facts, political considerations aside, industry should coöperate fully. He maintains, however, that industry has its own responsibility to set forth the facts about the evolution and operation of the American system of production, which has brought within the reach of the many, the motor car, the radio, the telephone and innumerable other conveniences that have contributed importantly to our nation's well being and added to the comforts and pleasure of living . . .

"Business is better than it was a year ago," he says. He is encouraged by the reception of the 1939 models and by the better demand for cars. Employment is expanding in the automotive industry. Payrolls are increasing. The influence of this industry, contributing as it does on a broad front to the productivity of other industries, is being superimposed upon the improvement already manifested in business in general. Thus, everybody feels better. And from a superficial view we appear to be well on our way again. But those who are required to project their vision into a more distant future, have reason to be appalled at the problems and dangers that confront us—problems that must be solved before we can feel that we

are even on a safe and stable foundation.

"With the most diversified and richest of natural resources, an unequaled manufacturing technique, a highly effective producing plant, a people willing to work for the things they want, and with all the other requirements of a sound prosperity, it seems contrary to common sense that millions remain unemployed year after year. It seems contrary to common sense that a favorable business outlook at the moment should depend upon the size of the government's deficit. It just can't be true that the American economy can only be sustained by consuming our national assets. Under such circumstances it is foolish to expect a permanent prosperity.

"The measures to promote prosperity are well known. But so long as they are not recognized as the necessary ingredients of a sound and advancing economy, so long as there are superimposed on it policies that never did and never can stand the acid test of truth, however politically desirable they may seem to be, the results can only be what they are. Sooner or later we must learn that to reduce the rich to the status of the poor is to reduce the poor to a still lower level of poverty; that what the economy needs is still more success if it is to have less failure. And when there appears a disposition to stop the extravagant spending of public funds, to put taxation on a basis that will encourage private enterprise, to discontinue political reprisal, to relieve the national economy of the things that are essentially wrong, and substitute the things that will stand scientific analysis, then there is certain to be a real forward movement in this country . . . such as we have never seen before."

With a view to stimulating progress we need first to determine our forward objective. That might be stated as follows: "Progress is measured by the advancement, socially and economically, with stability, of the American workers—those who work for wage or salary—those who are dependent upon their own individual effort. I believe this to be in harmony with the desires, hopes and ambitions of everyone—the most selfish, the most liberal . . ."

It is important, too, that we be guided intelligently in our efforts to insure industrial stability with progress. The formula for that might be expressed in two simple sentences:

"Progress toward our objective is measured by our ability to reduce the real prices of goods and services.

"We must maintain the broadest possible spread between annual income and the cost of the necessities of life."

With our objective stated and a formula to guide us in attaining it, we are ready to build a "Pattern for Industry."

Now, what are the components of industry? First, the workers, productive and administrative. Then the stockholders—and the government has a part. Together, they constitute perhaps the most important group—the consumers.

Industry's real problem today is the establishment of the rules of procedure, and the more intelligent distribution of the productivity among all of these groups.

"First, we must recognize that more cannot be taken out than is put in. We cannot get something for nothing. Too few apparently appreciate that fact. Next, there is a true economic balance among the various groups described. The economic forces are undergoing constant change, but that balance, when once established and maintained, leads to the maximum productivity. Then all get the most."

For the benefit of those who think that a wage scale merely reflects the generosity of the employer, suppose, for illustration, we increase the participation of the workers' group through an increased hourly wage. What happens? Unless some other share is reduced prices must rise, and if they do, there is no gain to the wage earners, for the increased pay will be absorbed by the increased prices. Moreover, the ability to buy of a large group of consumers—the farmers, salaried and professional workers whose incomes have not been increased—will be impaired. Thus, contrary to the common belief, an arbitrary increase in the wage rate very seldom actually increases purchasing power, because prices invariably rise.

"While we cannot take more out of any production unit than we put in, we can get more out, *if we put more in.*" That is the way to an economy of plenty, the only way. "This approach demands both a higher standard of operating technique and more efficient instruments of production. In other words, we must encourage a more intensive capitalization of technological progress. We must increase the productivity per worker. Then the higher wage rate can be sustained without increasing prices, and should result in reduced prices. Increased wages then buy more. Lower prices bring goods and services within the reach of more buyers. Industry is expanded. The standard of living advances. An acceptance of this simple economic truth would be a real forward step.

"Now suppose we determine the relationships within the groups so as to insure maximum productivity. Suppose we aggressively capitalize technological progress, thus making possible higher wages and lower prices." Important questions still remain. How are we to distribute the workers' share, whatever it may be? How many workers shall there be and how many hours shall they work? The answers are broadly indicated in the formula: "We must maintain the broadest possible spread between annual income and the cost of the necessities of life."

Sharing the work is a deflationary policy, justified only in a great emergency. It is economically unsound, socially undesirable, most unfair to all workers. It tends to reduce all to a level of mediocrity; all have less. It reduces the spread between the essential cost of living and income. And to that spread we must look for purchasing power to make possible more things for our workers—more luxuries—and for increased employment for more workers who will be required to produce the additional goods and services incident to this higher standard of living, and to absorb the job losses due to better technology . . .

"We must distribute the available work among that number of workers, and no more, who can be assured the desired standard hours of employment for the maximum possible part of the year. Only thus

can we insure the maximum employment for the greatest number. As we reduce the standard working week, while we move toward greater leisure, we must accept a lower standard of living, unless again, the economic effect is otherwise offset, unless productivity is increased . . ."

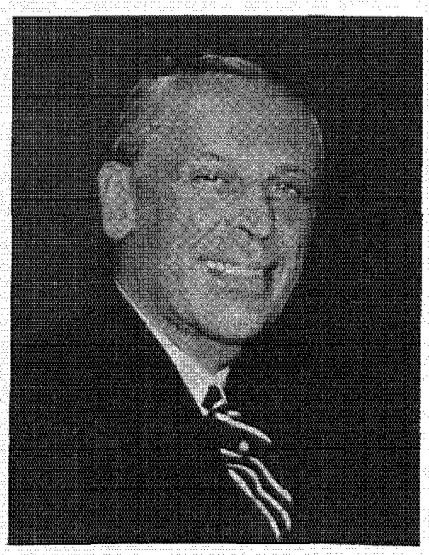
Another important phase of the workers' participation concerns the hourly wage rate and the annual income. We must think more in terms of annual income, for too high an hourly rate may well mean less annual income. Between wages and prices there must be an essential balance for the maximum production of wealth.

Now, what about the consumer's economic position? How determine the prices he shall pay? Some think, in depression periods, prices should be reduced to stimulate demand. But when industry moves down the business cycle, Mr. Sloan doubts if lower prices can greatly stimulate consumption until some point of stabilization is reached. He considers it unsound and impractical to superimpose upon industry, in times of stress and simultaneously, the economic impacts of lower prices and reduced volume. He does not believe that sufficiently higher prices could be obtained in good times, due to the competitive factor, to offset the serious losses entailed by such a policy in bad times.

"Others think that prices should be increased in times of depression to maintain profits or reduce losses. This throws the entire impact, as to prices, on the economic system as a whole. It tends to accentuate the depression, and magnifies unemployment. It may well increase industry's losses. Still others think that in times of prosperity industry should charge all the traffic will bear.

"Prices are based on costs and profits. In times of subnormal activity costs and prices also must fall, expenses must be reduced, labor should accept a lower hourly wage." The maximum flexibility is vital; otherwise, depressions are prolonged and severe. We must work toward the highest possible annual income through the maximum productivity, even though for a time that may well mean a lower wage rate in order to maintain or increase workers' annual income, and as a matter of fact, it usually does.

"I believe the true economic formula to establish industry's prices should disregard the movement of the business cycle. I believe the impact of a depression, from the profit standpoint, should be thrown upon the capital employed in industry, having in mind the necessity of an essential profit over the business cycle. Without that the



ALFRED P. SLOAN, Jr.

capitalistic system cannot endure." The formula insures a reduction in prices in periods of depression in direct relation to costs, unaffected by the adverse effect of volume.

"There are three factors to consider: First, the effective capital employed in the business. Second, volume in terms of unit output on a yearly basis taken over a period of time—standard volume, let us call it. Third, the percentage profit return on the capital employed."

The first two are factual. The latter can only be determined by the judgment of management after considering the many factors involved, such as the standard of technology employed; the character of the product produced; the nature of the market available; the general position of the producer; the state of competition. But basically there is involved the principle that the return on capital should not be more than will insure—all factors considered—the maximum productivity of the enterprise over the long range position.

"Now we have our formula. Unit prices must be set at such a point with relation to current unit costs as would result in the predetermined return on the capital employed at the rate of standard volume. That, according to my belief, leads to a truly economic relationship at all times. In periods of prosperity aggregate profits will be higher than the standard return because of the increased volume over standard volume. . . . In periods of depression profits will be less than at the standard rate, and it is likely that losses will be sustained as a result of the failure of volume to reach the standard level.

"Thus my 'pattern,' as it relates to industry's prices, contemplates (a) throwing the impact of the business cycle upon the capital employed in industry, so far as profits are concerned; (b) insuring an average rate of profit to the enterprise over the business cycle determined by individual circumstances, and (c) eliminating in the factor of cost as affecting prices, the influence of varying rates of volume. Thus, in depression periods prices would be lowered because the base factors, such as wages, expense, materials, are normally lower, and the cost and profit factors disregard varying volume. Conversely, in prosperous times prices would increase only as the base factors affecting costs increased, and only to that extent. Hence, such a formula as I suggest stimulates demand in the lower part and permits sound expansion in the upper part of the business cycle. That is as it should be."

Now, besides the workers, customers and other groups, what is the province of the government? It should be to maintain an equal opportunity for all concerned in an industry and other forms of enterprise. Government, occupying a more or less judicial position, should not compete. It should establish just, clear and definite rules to insure fair dealing—rules defined by law—not by bureaucracy. Government should make a minimum charge for this service, but the bill should be rendered in such form as to encourage the establishment and

(Continued on Page Sixteen



Open displays like this are fast disappearing from the American scene. Today, even the gobblers are being wrapped in "Cellophane"

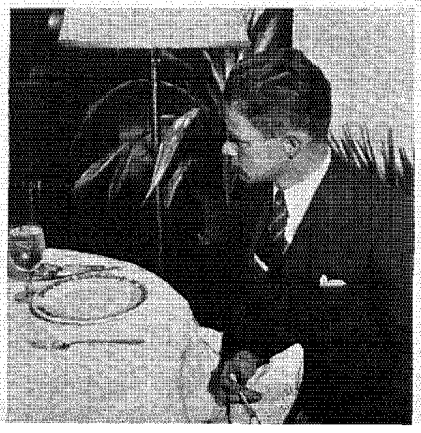
Emphasis on Health

The use of "Cellophane" cellulose film for packaging is an important factor in the widespread campaign for cleanliness and sanitation

By H. D. CHICKERING

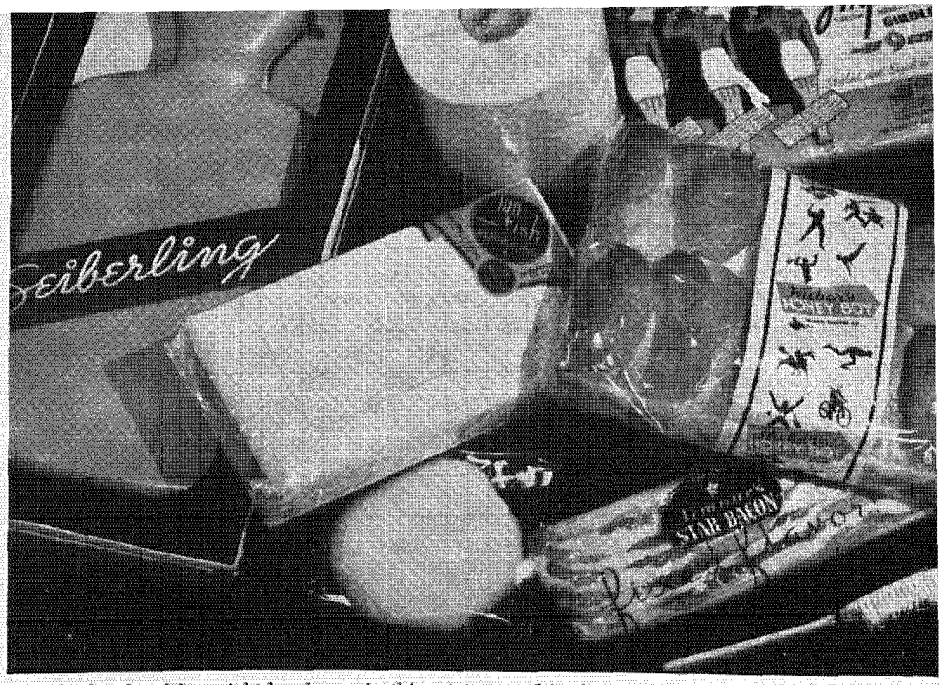
WITHIN the past few decades, people have become conscious of many things—some new, some old. For example, public interest in better sanitation and public health has developed amazingly in our generation. This sweeping trend has been manifested in many ways, notably in America. Perhaps it started as far back as the days when the old saying, "You have to eat a peck of dirt before you die," was accepted as a fact. An awakening from this lethargic attitude toward dirt and germs may have prompted the formation of present-day health inspection departments in many cities. One of their duties is to grade restaurants according to the degree of sanitation in kitchen and service.

People wipe off table silver, unconsciously, when dining in a strange place; they demand spotless dairies, bakeries and laundries, too. Americans long ago realized the dangers inherent in the old oaken bucket and the public drinking cup. Office and factory workers can now use individual, disposable paper cups. The public roller towel is generally held suspect, and in its stead clean paper or linen ones are supplied, whether in giant airliner, railway station or other public place. Rest rooms in service stations are required to be sanitary. Many city

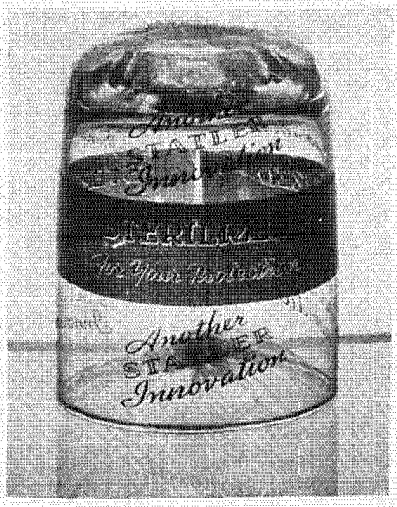


regulations forbid open displays of food on sidewalks. And Americans have more bathtubs, toothbrushes, screened windows, incinerators and municipal water-purifying plants than can be found elsewhere in use in any part of the world.

Our interest, as individuals, is naturally directed toward sanitation problems that confront us personally. We practice selective buying and demand that articles of personal use shall be clothed in sanitary packages. One seldom sees a toothbrush on sale without some sort of protective container. The same is true of scores of other home accessories. Hotel men, quick to sense the trend, are wrapping the drinking glasses in rooms—see illustration



Hundreds of articles might be shown in this picture and in the one below to illustrate the point that clean products stay clean when wrapped in "Cellophane" cellulose film.



above—and even the rolls on dining tables, to insure cleanliness.

Mothers, vitally concerned with their children's health, insist that toys be sanitary and packaged in as nearly a germ-proof manner as possible, and they encourage the youngsters to ask for wrapped candy. Schools and colleges and women's clubs are all active in promoting better sanitation methods. At a recent meeting of the National Retail Grocers' Association, a prominent clubwoman said, "The first thing a woman looks for in her grocery store is cleanliness. You are selling health along with your groceries; cleanliness is a necessary part of your business."

In general, foodstuffs, especially the perishables that are handled many times on the way from producer to consumer, are susceptible to contamination. This problem has largely been solved by the use of "Cellophane" cellulose film for packaging. Bread, cake, meats, poultry, cheese, honey, butter, vegetables and many other foods now reach the market as clean and free of germs as when they left the plant or producer.

Aside from foods there are many other products, chiefly for personal use, packaged in "Cellophane." Toothbrushes, powder-puffs, facial tissues, lingerie, baby bottles and hair-nets are only a few of them.

Sanitation and "Cellophane" are to many people almost synonymous terms, because both have become deep-rooted in their minds. In years to come, even greater strides will undoubtedly be made in sanitation methods; and at the same time new applications will be found for "Cellophane" in the broad field of safeguarding public health.



Natty Knitwear

Caltex Sportswear Company turns the spotlight on Du Pont Rayon in Fabrics for high-style clothes

By STELLA EPSTEIN

FOURTEEN years ago the Caltex organization was started with a view to giving discriminating, hard-to-fit women of America individually-styled, custom-tailored garments at prices within the reach of all.

Because it was felt that this could not be accomplished by following the accepted retail methods of distribution, the company early began to establish its own accredited representatives, and now there are almost two thousand of them acting in the capacity of stylists, designers and personal fitters to countless women in cities and towns throughout the country.

Every fabric is a Caltex origination. In the plants at Los Angeles, materials are designed by Hollywood artists, knitted by a staff of experts, then fashioned in high-style dresses, suits, blouses, coats, ensembles and even hats under the supervision of a group of Hollywood designers.

Looking forward to spring, Hollywood leads in the prediction of a glorified color season. Caltex has in preparation material covering the advance shades and tones on knitted fabrics of Du Pont Rayon. They vary from intricate surface textures to fine sheers, from crisply-tailored materials to softly-draped novelties. All have the advantages of moulding without stretching or clinging and of draping without even a tendency to sag. Rayon contributes much to these new effects obtained in fabrics of du Pont standard-quality yarn.



Embroidered panels of Du Pont Rayon, giving the effect of Persian Lamb, form a stunning trim for this grey, two-piece suit. Buttons are covered in self material, and the sleeves are gracefully extended at the top.



A striking Caltex-Hollywood creation, in powder blue. The jacket has a military collar, neat slide-fastener closing and tie belt. Crochet braiding in soutache effect cleverly conceals breast pockets, and the modified extended shoulders are high-fashion.



This model is unusually effective for its design and trimming. The collar, upper side panels, upper back, and sleeves have an all-over pattern of appliqué crochet braiding, combined with an openwork appliqué crochet design. The vogue for slight bust fullness is carried out in the styling of the bodice.

Mining "Black-Jack"

Brief notes about underground operations in the world's greatest zinc-production region

By CLYDE E. LONG
Technical Representative

ALTHOUGH it sounds fantastic, the fact is that when miners first encountered lead-zinc ore in southwestern Missouri, they considered the zinc component an unmitigated nuisance. They did not realize its value and were much disgruntled to find that it was very difficult to remove the lead from the unwanted material which, for lack of a better name, they called "Black-Jack."

California gold was headline news in 1848 when lead ore was discovered in outcroppings near Granby, Missouri. Work was started in these surface deposits and before long another problem loomed up—seepage water. The miners did not know how to cope with it. Apparently someone suggested that Cornish miners might know what to do, and so an advertisement for their services was inserted in a St. Louis newspaper. In a short time some Cornishmen arrived on the scene, inspected the workings, identified "Black-Jack" as zinc blende, and, without disclosing this fact to anyone, proceeded to lease the land and to mine the ore. Thus a deposit first worked for its lead came to be developed for its zinc, and the Tri-State District, now embracing some 2,000 square miles in Missouri, Kansas and Oklahoma, eventually became the largest zinc-producing area in the world.

For ninety years minerals—chiefly zinc and lead—with a value of more than $850,000,000 have been mined in this region. Official reports for 1937 show that thirty-eight per cent of the world's entire output of zinc came from the Tri-State District.

During the early period of development mining methods were crude. Holes were drilled by hand, their depth depending on how fast the water flowed in. The maximum penetration was about fourteen inches. At that time only one hole was loaded and shot at a time, and with black blasting powder wrapped in a paper cartridge. Naturally, such a charge would remove only a small amount of ore, and following each blast the miners resorted to picks and gads to enlarge the openings. Later, when dynamite was introduced, the miners purchased one cartridge at a time and made it serve for shooting four or five holes.

Safety practices were then conspicuous by their absence. For example, the first explosives dealer in the community is said to have been a saloonkeeper who supplied his customers with drinks or dynamite from stocks kept behind the bar. And when shooting scrapes became a bit too frequent, he moved his dynamite magazine to a safer place—beneath his bed.

About the year 1900 prospectors located a more important deposit of ore in Jasper County, Missouri, and shortly thereafter another one near Galena, in Cherokee County, Kansas. This deposit was of a flat formation and was termed "sheet ground." The vein, some thirty to thirty-five feet in thickness, was worked with a ten-foot heading and a stope. Piston drills were used to make the boreholes, which were sprung, then loaded with from twelve to twenty-five pounds of dynamite and shot one hole at a time. Stope holes, when chambered, were loaded with 200 to 500 pounds of dynamite and these also were shot singly.

Development work in Missouri and Kansas continued, and in 1904 another immensely valuable deposit was discovered in Ottowa County, Oklahoma, and became known as the Picher Field, the third area of the Tri-State District. The mineralized bodies here are different from the others mentioned in that the ore lies in vertical or pitched veins and in water-course ground, and they are invariably found in a flint rock formation, not in lime rock as in the other fields.

Mining practices are quite similar to those employed in sheet ground, for the operations are worked on a heading and stope system. The boreholes are made with water Leyner drills. In the headings, loads average about eight pounds per hole, and in the stope holes the charges range from fifty to two hundred pounds of dynamite. Individual holes are fired in both places.

The importance of the Picher Field, which embraces parts of Oklahoma and Kansas, is indicated by the fact that more than half of the zinc output of the Tri-State District has come from mines in this area. Some years ago, during the height of production, the operators in this section found use for twenty million pounds of dynamite annually.

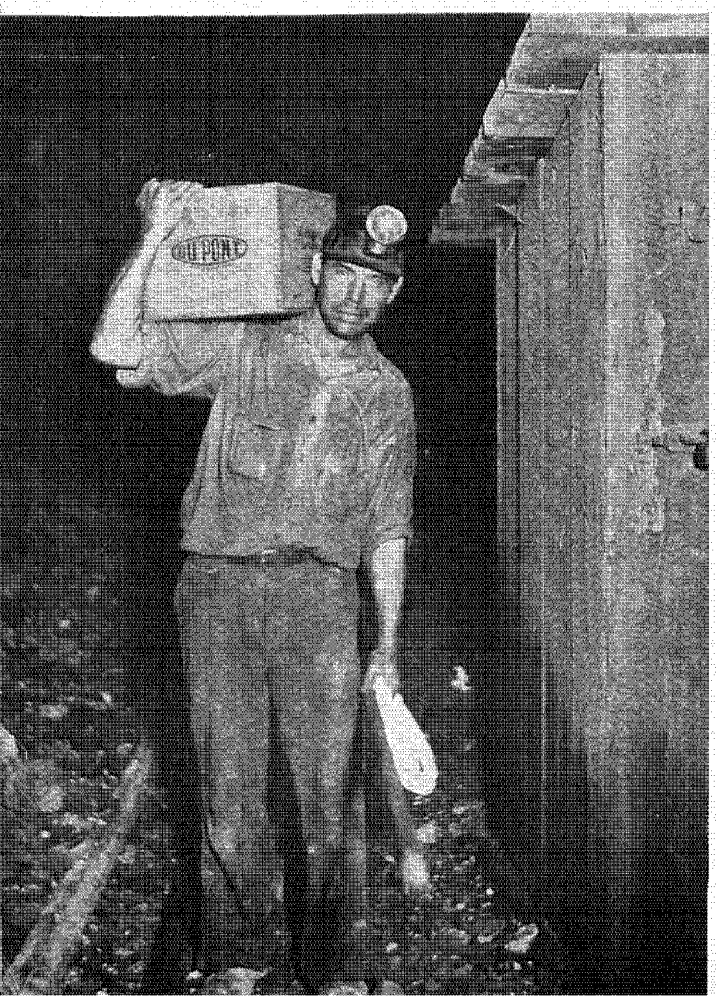
In the early days zinc was recovered merely by crushing the ore and subjecting it to a jigging operation. Water was pumped into the jig boxes in sharp surges, thereby causing the waste material of light weight to rise to the top where it washed over the lip of the box. The heavier ore mineral settled to the bottom of the box from which it was withdrawn. Later, shaking tables were introduced for recovery of finer-ground

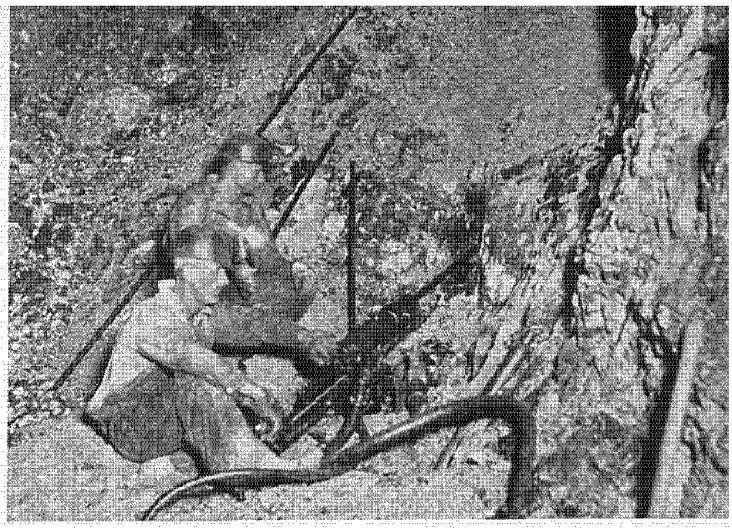
material. Nowadays, the ore is crushed and milled to a fine sand, then put through improved concentrating and selective flotation processes, with the result that much larger yields of concentrate are obtained for shipment to the smelters.

Considering that the average crude ore in the Tri-State District contains about 4 ⅓ per cent metallic zinc and only .06 per cent metallic lead, a very large quantity of material must be processed to make up even the 1937 production of 236,585 short tons of recoverable zinc. It represented the combined output from scores of mines and, in average figures, the employment during the year of about 6,000 men.

The industrial uses of zinc are too numerous for more than brief mention. By far the largest application is in galvanizing, although in brass-making and die-casting many thousand tons of zinc are required annually. Rolled zinc, too, is produced in large quantities.

The du Pont Company is interested in this metal, not only as a supplier of explosives, but also as a seller and a consumer of zinc products in its own chemical manufacturing plants. Merely to mention the many du Pont products in which zinc is used would be to extend these notes far beyond the allowable space limits. Anyway, that's another story; this one deals with underground workings. The pictures accompanying were photographed in the Barr Mine of the Vinegar Hill Zinc Company near Treece, in Cherokee County, Kansas. This mine has been operated by that company since 1916 and is one of the oldest in the Picher Field.

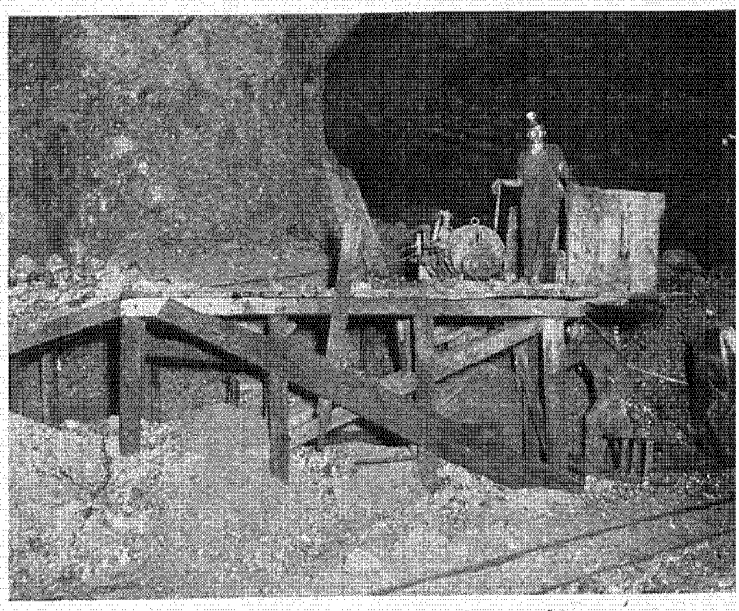




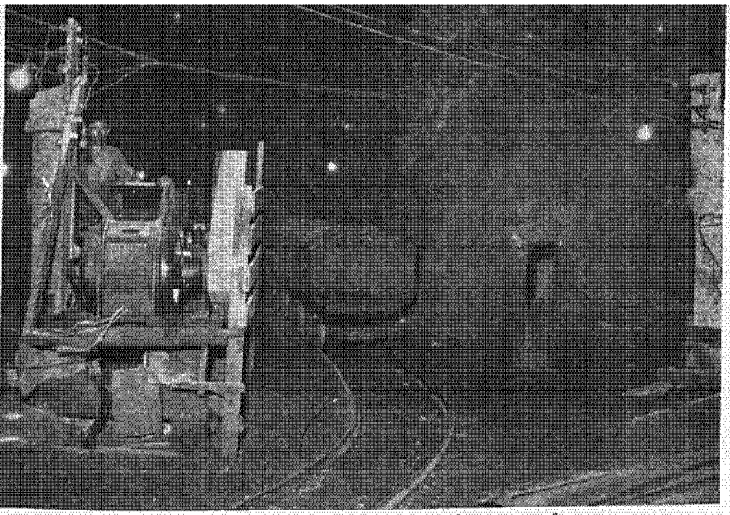
1 *This is the type of drill used for drilling stope holes. The charges vary from fifty to two hundred pounds, with an average of one hundred pounds per hole.*



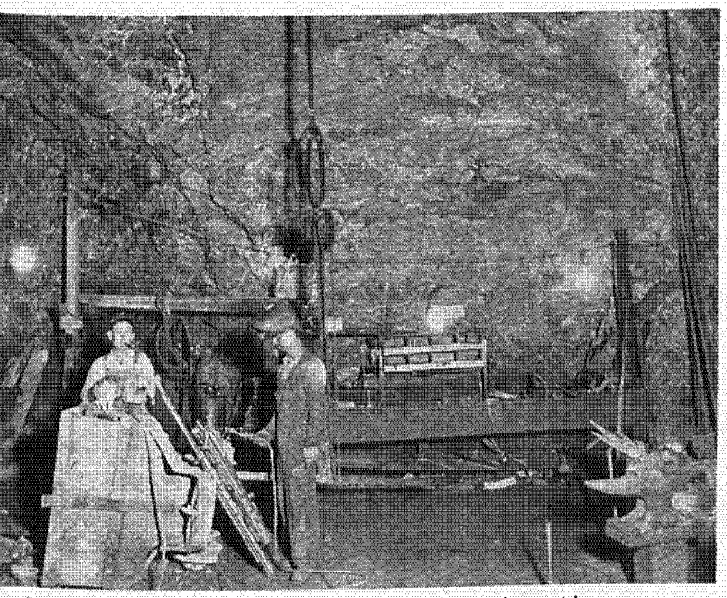
2 *The ore yields to the persuasions of dynamite. Here we show you two miners getting ready to make up the required charges for a few rounds of holes.*



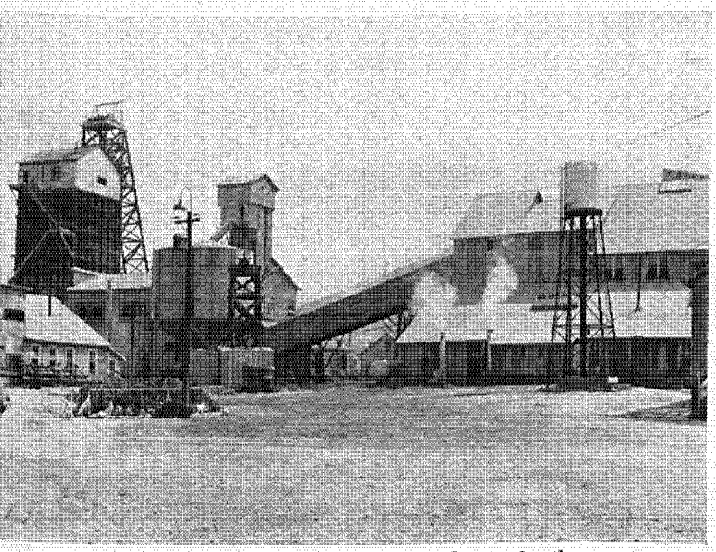
3 *The ore is dragged from the working place to this platform and dumped into the mine car below for the transfer by mule power to the main haulage line.*



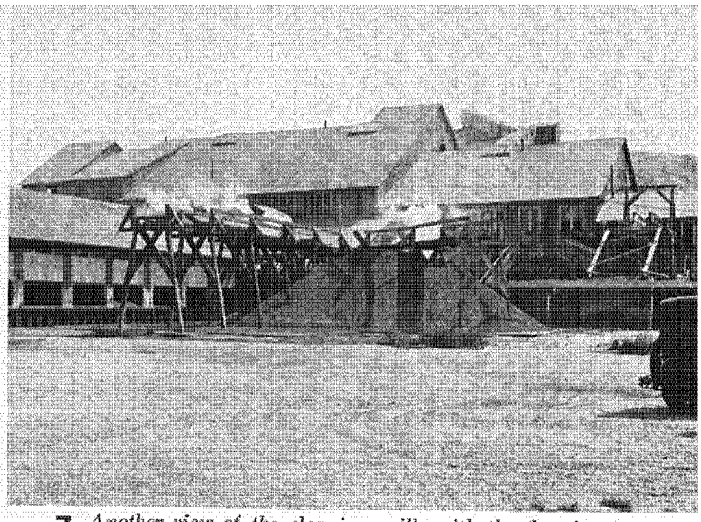
4 *An incline hoist pulling a train of loaded ore cars from one of the lower levels to the main haulageway. From this point the underground railway leads directly to the shaft.*



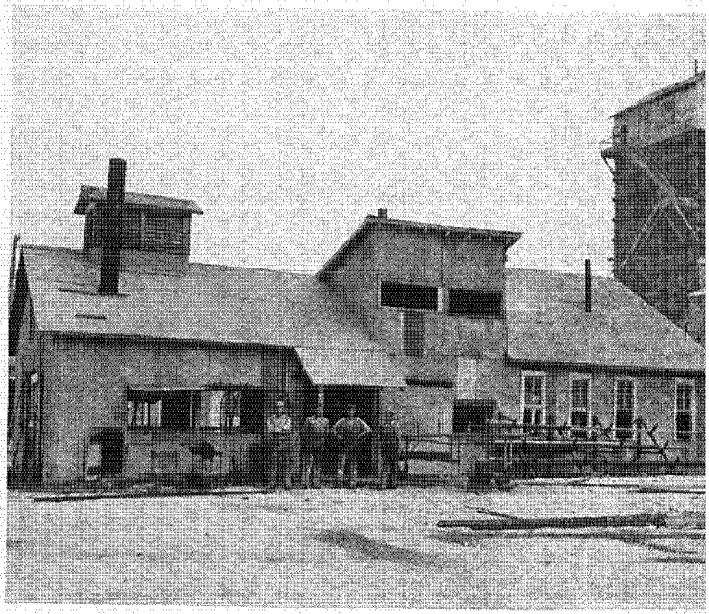
5 *A view of the underground shop where mine equipment is repaired. The pet cat strolled in when this picture was being taken and was persuaded to pose on the crippled car.*



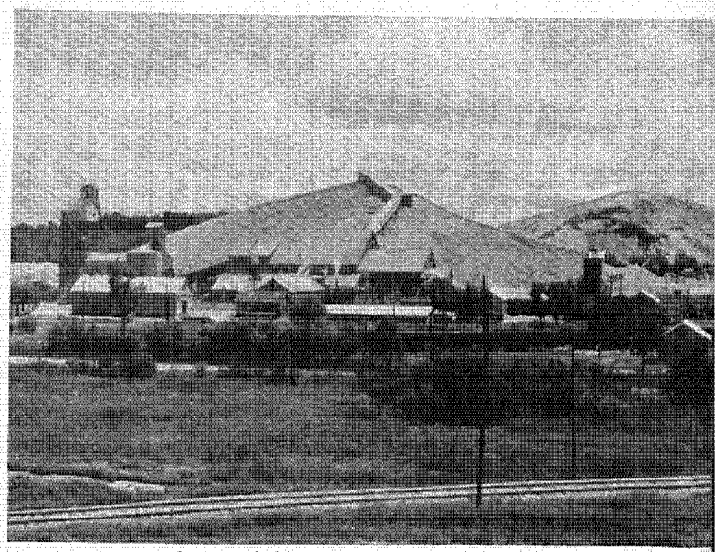
6 *Left to right in this picture are shown the tipple, the crusher and the conveyor line leading to the cleaning mill. The smaller building in front is the power plant.*



7 *Another view of the cleaning mill, with the flotation plant at the right. Note the end of the conveyor on top of the dump, and the pile of concentrate in the yard.*



8 *Typical of the plant structures is this one of the blacksmith shop and machine shop sheathed with corrugated sheet iron which is galvanized, of course, with zinc.*



9 *A general view of the Vinegar Hill Zinc Company's Barr Mine near Treece, Kansas, one of the oldest properties in the Picher Field. Note the "chat" piles.*

THE DU PONT MAGAZINE

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Vol. XXXIII February 1939 Nos. 1-2

Neoprene

TWENTY-FIVE YEARS AGO a noted German scientist and educator, Dr. Wolfgang Ostwald, was lecturing before a student group in one of our American universities. After discussing some technical applications of colloid chemistry in processing rubber latex, he referred briefly to synthetic rubber, in part as follows:

"It seems to me that interest in artificial rubber does not center in the possibility of finding a substitute for the natural product, but more in the possibility of making a decidedly better one. . . .

"By the synthesis of a 'noble rubber' materials might be produced which would not only show properties superior to the ordinary article, but of a marketable character."

At that time no one had succeeded in making chemically a really good rubber, much less a "noble one." A new approach was needed, and the one suggested by Dr. Ostwald, when viewed retrospectively, proclaims him as a prophet. For in later years, when du Pont chemists undertook to develop what is now known as neoprene, they did not aim to duplicate natural rubber, but rather to "build" a better one for modern needs.

Chemical science disclosed the way to synthesize this material, which is basically derived from coal, limestone and salt, and du Pont research chemists and engineers spent six years in developing the process before a chloroprene rubber of "marketable character" was produced. In November, 1931, the story of their success was featured in many newspapers and trade publications throughout the world. Again, four years later, when the du Pont Company received the highest award for chemical engineering achievement in recognition of this and other contributions to industry, the public learned more about the significance of neoprene as a new engineering material.

Properties determine the scope of practical uses for materials of all kinds. Nature richly endowed rubber by making it strong, abrasion resistant, tough and elastic—properties that account for the "thirty thousand uses" it is said to have. Nature, however, was not concerned about the conditions under which rubber would have to serve in a man's world, exposures that sooner or later cause deterioration. It remained for man to make a material as serviceable as rubber is for ordinary uses, and less vulnerable than rubber is to the attacks of destroying agencies under severe conditions.

Neoprene does meet these specifications. It is unique in that it resists deterioration to a remarkable degree when exposed to oils, greases, many chemicals, heat, sunlight, ozone and the ravages of time. These are the special properties that make this material so valuable.

The differences between rubber and neoprene are interesting. Consider their sources—growing trees on Far Eastern plantations, inert minerals from American mines. In chemical composition they are different, and as stated, neoprene possesses plus properties not found in natural rubber. Yet, it would be difficult to find two dissimilar products that resemble each other more closely than these do. They appear to be identical twins, and sometimes even experts have trouble in determining which is which. Moreover they act alike and perform the same kinds of work with equal facility. But under severe exposures the man-made material is much more durable.

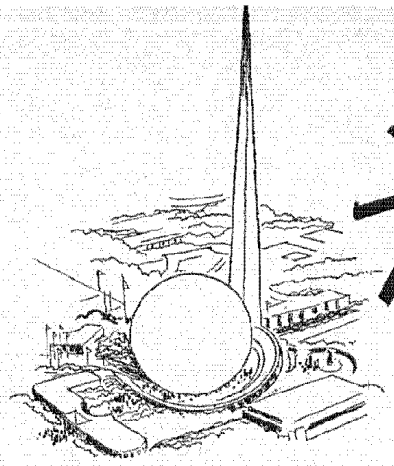
Compared with natural rubber, neoprene is relatively expensive, because it is made by an involved chemical process. Significantly, too, when neoprene was introduced at $1.05 per pound, crude rubber was selling at three cents, the lowest price in history. Only because neoprene possessed exceptional properties was it worth while for rubber manufacturers to buy and try out this new material. On merit alone it gained acceptance in the trade, even at a price thirty-five times higher than that of rubber.

Since 1932 the demand for neoprene has grown steadily, and as increased volume has made possible production economies, the du Pont Company has voluntarily reduced the price three times during the past six years as follows: From $1.05 to $1.00, then to 75 cents and now to 65 cents, which compares more favorably with 16-cent rubber at the currently quoted price.

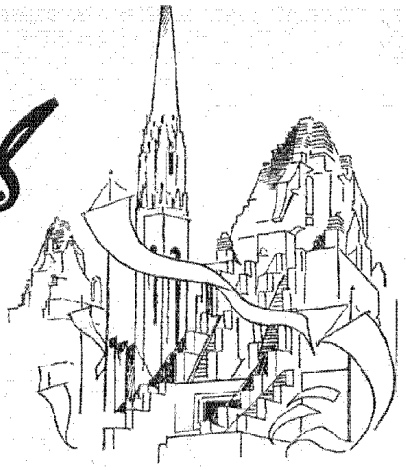
It should not be presumed that manufactured articles made from a neoprene compound are four times as expensive as those made of rubber alone, for the cost differential applies only to the resilient materials. The other ingredients—compounding and processing chemicals—and the labor charges are the same. This, of course, considerably reduces the differential between the costs of a finished neoprene product and one made of rubber, and the longer service life more than justifies the difference.

Resistance to deterioration sums up the outstanding virtue of neoprene that has enabled rubber manufacturers to improve their products by making them more durable. This material has greatly broadened the field of use for all resilient products.

The cover illustration this month portrays one stage in the manufacture of neoprene at the Deepwater Point plant in New Jersey. Operators have polymerized a free-flowing liquid and are preparing to dump a batch of chloroprene rubber from the huge kettle. The transformation wrought by chemistry in a few short hours is strikingly apparent in the dough-like substance the men are removing with the aid of a long, sharp knife. Other treatments are required before the product is ready for shipment, but the details do not belong in this story, which is merely to cite another instance of a du Pont product development that in one broad field has redeemed the pledge, "Better Things for Better Living . . . Through Chemistry."



Fair Doings



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

THE NEW YORK SHOW

Previous issues have presented clear pictures of the distinguished outer appearance of the Du Pont "Wonder World of Chemistry" Building. Only by a visit to the Fair itself can one appreciate the flashing animation of the brilliant tower which symbolizes Chemistry and the wonders of research displayed inside the building. Work on interior exhibits is progressing and we can now tell you some of the interesting things you may expect to see when you visit there.

* * *

On entering the curving exhibit hall from the Court of Chemistry, one is first attracted by a striking mural executed entirely in plastics, which gains depth and beauty from hidden illumination.

This hall is divided into three sections, the first of which is devoted to Research. Here are shown assemblies of chemicals with their raw material sources—coal, cotton and wood, vegetable oils, ores and salt. On a lecture platform, working models and lecturers' demonstrations point out the background stories of developments by du Pont.

An eight-foot spiral carries examples of the twelve groups of products developed or improved since 1929. They account for forty per-cent of the Company's total sales and vividly exemplify the slogan covering the wall in six-foot letters, "Out of common raw materials du Pont research produces a multitude of better things for better living."

In the second section, devoted to Pre-Testing as an important part of manufacturing, another lecturer carries on. The demonstrations are most interesting. For example, he cuts in the amplified sound of a caseful of Japanese beetles at their destructive work. In a lethal chamber of a small pest control laboratory he shows du Pont's preventive measures against insects.

Next, the chemist in charge of a small finishes laboratory explains the significance of the rigorous tests being conducted.

A working model demonstrates the "sink-and-float" process. Nearby, neoprene is made and tested, ceramic colors are fired, vat dyes are presented.

* * *

The third and largest section tells the manufacturing story through actual processing of a number of du Pont products. As an example, a machine casts "Cellophane" cellulose film and beside it another wraps individual pieces of candy. Close by, a dramatic presentation of du Pont X-Ray and motion picture film catches the eye. An injection molding machine turns out articles of du Pont plastics. In a bristling machine, "Exton" bristles are inserted into the brushes and then trimmed.

* * *

Over the entrance to the spacious central hall, a mural symbolizes Chemistry's contributions to the modern age. A motivated display shows what du Pont buys from and sells to the farmer.

Five large marionette stages occupy this hall. Marionettes depict in high-spirited fashion a day in the life of a young married couple, dramatizing Chemistry's contributions to their well-being. Employing a novel departure in stagecraft, the characters change stages instead of settings, and the audience moves along from one stage to the next.

* * *

THE SAN FRANCISCO SHOW

A roofless "building within a building," the du Pont exhibit in the Homes and Gardens Building has porthole-type windows with animated displays suggesting even more fascinating things to be seen inside. Here, mounted on step-back platforms, miniature assemblies dramatize the story of du Pont's contributions to better living, as told by the lecturers.

Some Highlights: Mounted in a lump of coal—raw material source of aromatic bases—a perfume dispenser automatically sprays perfume on articles held close to the nozzle.

The construction of Grand Coulee Dam is shown in a diorama.

A huge "Lucite" diamond is mounted upon a lump of coal behind which is arranged, fan-shape, a series of "Lucite" rods; the entire assembly is illuminated by varicolored lights.

Alongside a diorama showing a typical du Pont paint farm is a fountain of flowing paint. Upon a panel of Marine "Dulux," boiling water is poured next to a block of dry ice, showing the durability of the finish under the severest conditions.

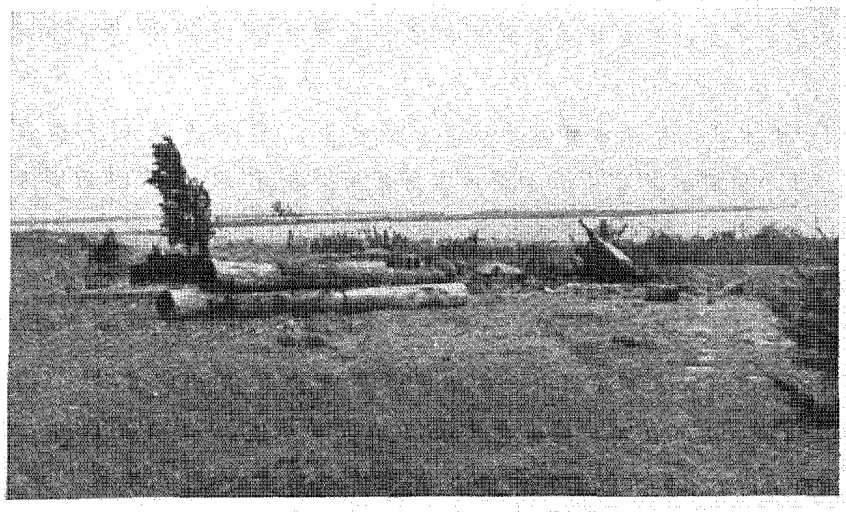
Of two dioramas on photographic film, one shows a scale reproduction of a movie set used in making "If I Were King"; the other is a model of a theater in which a scene from this picture is projected.

(Continued on Page Sixteen



# of Tidal Waves and Pennies

. . . wherein a copper coin, cemented to a brick, survived the hurricane



By C. A. WESLAGER

IT was an informal party at which Mrs. J. Harry Holmes entertained a group of ladies one afternoon, seven years ago. The setting was her attractive summer cottage on Knollmere Beach, Fairhaven, Massachusetts, the atmosphere one of gay camaraderie and good humor. After sharing the expenses of the day, two odd pennies remained blinking up from the table and one of the departing guests laughingly presented them to her hostess as a "souvenir" of the occasion.

With a smile, Mrs. Holmes accepted the gift, stepped out of the room and returned with a tube of "Duco" Household Cement, and then mounted the coins on two bricks over the mantel, one on each side of the chimney.

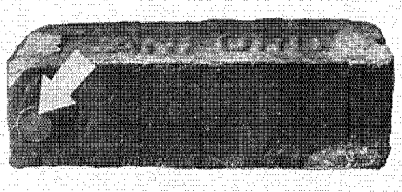
Days, months and then years passed by and still the pennies clung to the chimney bricks. Neither the damp salt air, the summer heat, nor the extreme cold of a house closed up for the winter could loosen their hold. And a household tradition grew about the lowly coins.

Then, last September, the elements loosed their fury as up from the tropics swept a hurricane, a monstrous tidal wave in its wake, ravaging the eastern seaboard. Lying directly in its path, the Holmes' cottage, too, felt its force. The walls were blown apart and carried as far as an eighth of a mile in four directions, the roof rode the winds, furniture was demolished, fireplace and chimney became a shattered pile of bricks. A single tree beside the house was alone left standing to guard the ruins, as can be clearly seen in one of the accompanying illustrations.

When the storm had subsided, workmen began to clear away the debris and found one of the bricks. Firmly adhering to it, just as it had been cemented there seven years before, was one of the pennies! The second brick, which could not be found, was apparently blown far away—perhaps even now it is lying at the bottom of the ocean, with its penny still clinging.

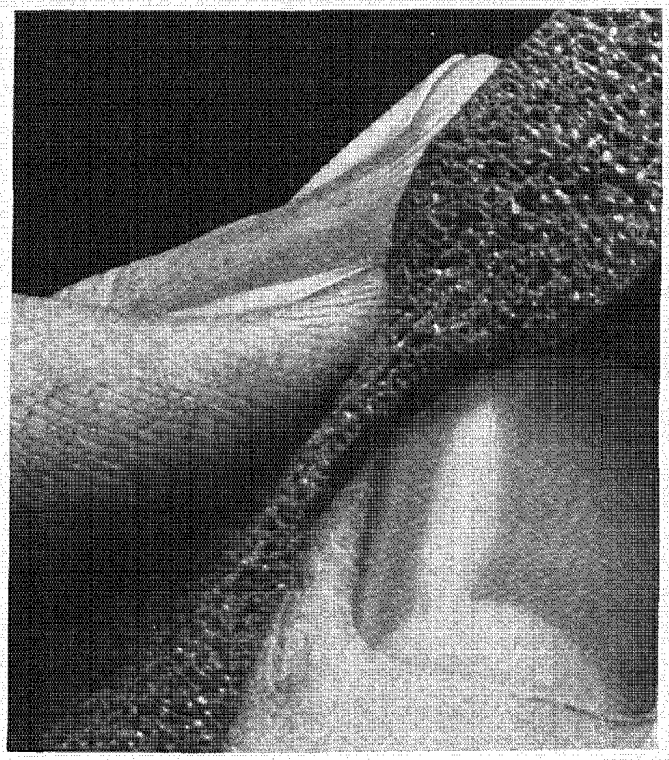
Already making plans to rebuild her house, Mrs. Holmes writes: "We have saved the brick with the penny attached and will have it laid in the fireplace of our new cottage, and I assure you its history means more than ever now. We think it a remarkable example of the tenacity of 'Duco' Household Cement."

We appreciate this story of Mrs. Holmes' interesting experience as a further demonstration of how well a creation of modern chemistry can withstand severe exposure to Nature's most untamed elements—the hurricane and the tidal wave.

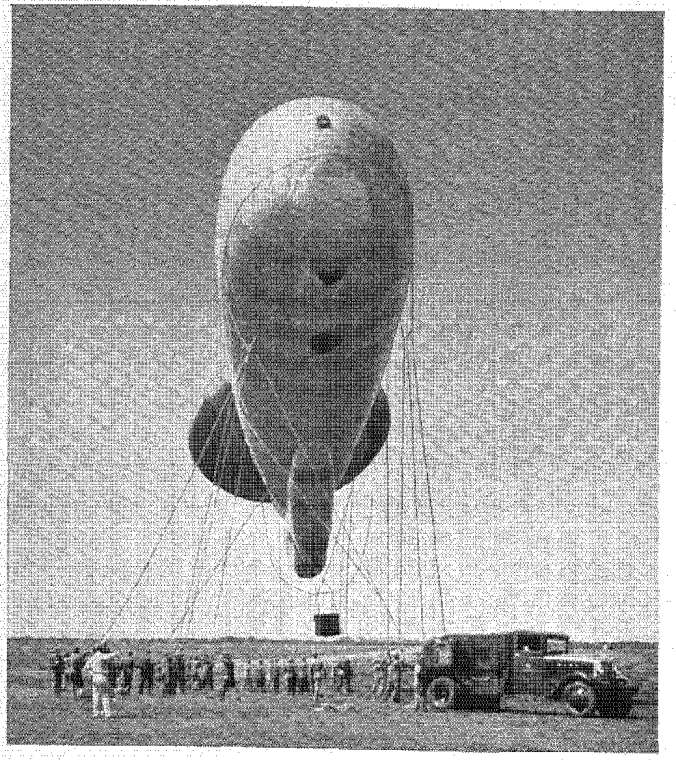


The chimney brick found in the ruins, with the penny still cemented to it.

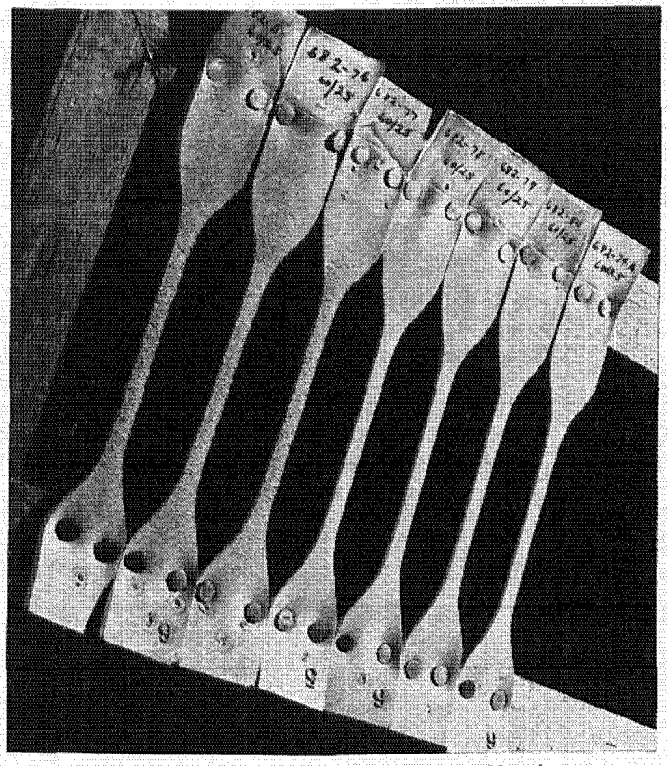
Cellular neoprene is an excellent cushion for both men and machines. It is resistant to oxidation and oils and does not support a flame. Moreover, it is a safe and economical material for many purposes because of its fire-resistant and durable properties.



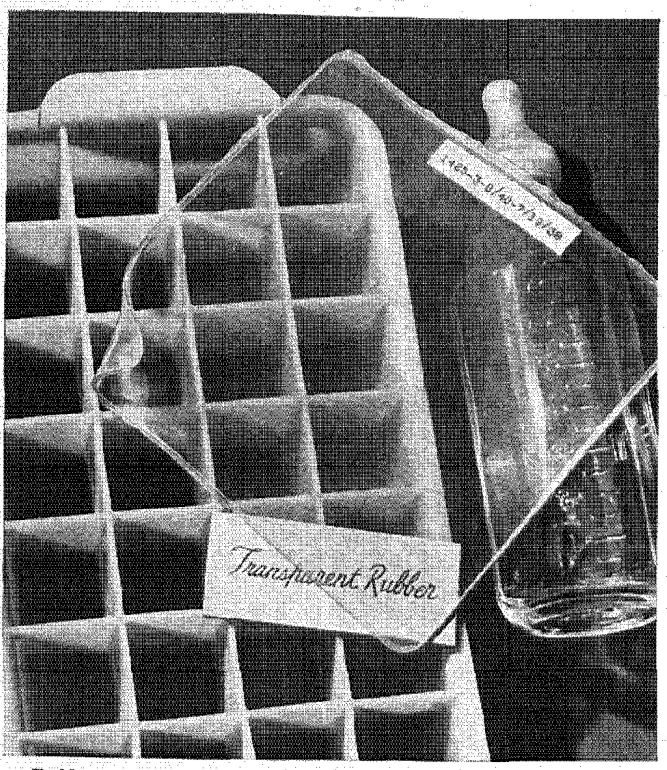
Neoprene-coated balloon cloth not only keeps hydrogen, helium and other gases "inside the bag," but also resists the deteriorating effects of sunlight and oxidation in outdoor service or in storage. Neoprene improves the serviceability of many inflated products.



Neoprene, Rubber and Rubber Chemicals



Du Pont "Heliozone" rubber chemical protects rubber from sunlight damage. Test strips shown here are all of white tire side-wall stock exposed under tension to sunlight for thirty days. They are identical in composition except that "Heliozone" is present in the four at the right, which did not reveal any tendency to crack.



Rubber ice-trays, nursing-bottle nipples and other products of personal use can now be made as transparent as the rubber sheet pictured here. Such articles must be free of odor and taste—and they combine all these advantages when made with du Pont rubber accelerators and antioxidants which are products of high purity.

TAGS!



Instruction tags attached to articles of merchandise are convenient for reference.



Candid fact tags readily enable shoppers to learn what's what about merchandise.

ONCE tags were used merely to mark and identify goods. Today, they also serve as advertising and merchandising aids; for manufacturers of consumer products know that well-designed, informative tags can do a real job at the critical time when help is most needed—at the point of sale.

In crisp, factual terms they can carry exact descriptions of materials, details of construction, recommendations for proper use, and guarantees; they can answer pertinent questions before they are asked, and a reputable manufacturer's "say so" is reassuring.

The Dennison Manufacturing Company, Framingham, Massachusetts, is probably our nation's largest supplier of informative tags and a pioneer advocate of their use. From the groups pictured here you will gather that the trend today is definitely toward greater helpfulness to consumers. And incidentally, Krebs pigments and dry colors play an important part in making Dennison's tagboard and paper stocks better suited to carry the printed messages with distinction.

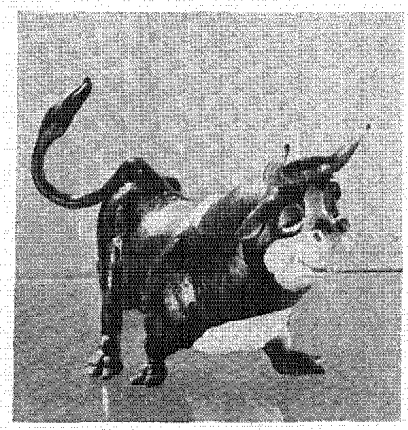


Merchandising tags are likewise informative in presenting the pertinent facts.



Specification tags give exact information as to size, style, color and other details.

WHAT'S NEW



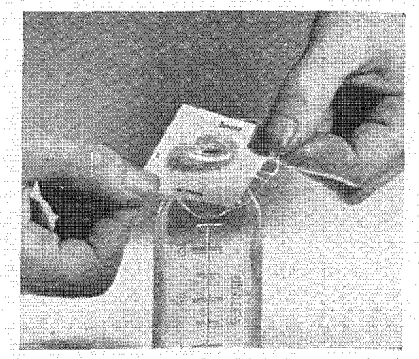
HAVE you met "Ferdinand, the Bull"? The story of this complacent animal has been made famous in Munro Leaf's juvenile book and also in Walt Disney's Technicolor film. This clever miniature, made of rubber containing du Pont rubber chemicals and rubber colors, by the Seiberling Latex Products Company of Akron, Ohio, is being sold in leading department, toy and drug stores.

TWO new products for the steel industry have been introduced by the Company's Metal Treatment Division. The first, Du Pont Carburizing Salt, is a specially-prepared cyanide mixture for the production of deep high-carbon cases on automotive and other small parts. The second, Du Pont Accelerated Salt, is a cyanide mixture of uniform composition for the production of shallow mixed carbon-nitrogen cases on plain carbon and alloy carburizing steels. Technical Service Bulletins are available on request to the Wilmington office of the Company.

EARLY in December the "Cellophane" Division of the du Pont Company announced another price reduction on "Cellophane" cellulose film—the 19th made since domestic manufacture was started in 1924. This reduction was made possible by the present and anticipated production economies and increased usage of "Cellophane" in a number of new directions, including wraps for biscuits, frozen foods, poultry and cheese, as well as expanded usage in established industries such as baked goods, candy and meat.

THE Fabrics and Finishes Department recently announced two new products for use in the automotive industry: A black pyroxylin enamel known as 251-2138 "Ebonblack" for touch-up and spot repair work where quick rubbing is necessary. It can be reduced in the proportion of two parts of Thinner to one part of Black and can be rubbed shortly after application without taking on a gray tone.

Automotive "Pyralux" Undercoat 233-1670 is light gray in color and is intended for use under Automotive "Pyralux" to prevent "sinking in" and to obtain a uniform gloss. Both of these products are packaged in quart, gallon and five-gallon cans.



NOW mothers can be sure of sanitary protection for baby's milk bottles after filling by using a Quicap. This is a small sheet of "Cellophane" cellulose film that can easily be adjusted over the bottle top. It is held snugly in place with a flexible collar, square in shape, that fits tightly over the lip of the bottle.

The retail package of Quicaps contains a month's supply of sheets and collars and is wrapped in moistureproof "Cellophane." They are manufactured by Butler Products Corporation, New York City, and are on sale at leading drug stores. Quicaps are already in use in many hospitals.



REMINGTON'S new and colorful 30-page ammunition catalog which is now being distributed, contains a résumé of outstanding developments and much valuable information about shot shells and cartridges. All products of the line are illustrated in actual size and fully described. Special charts list interchangeable cartridges and bullets, load combinations, recommended shot sizes, and one section is devoted to ballistic data of interest to sportsmen. You can obtain a copy of this catalog by writing to the Remington Arms Company, Inc., Bridgeport, Connecticut.

A NEW acid black trade-marked "Pontacyl" Blue Black RC, is announced by the Dyestuffs Division of the du Pont Company. This new color is of special interest for the dyeing of woolen piece-goods containing viscose process rayon effect threads, since it leaves rayon fibers white. It is also designed for application on wool in all stages of manufacture. The new color is slightly redder in shade than "Pontacyl" Blue Black SX but has the same strength and fastness properties. It presents no application problems since it levels, penetrates and exhausts well, and solutions of it do not gelatinize on cooling.

Prices, Wages and Hours

(Continued from Page Three)

maintenance of a truly economic balance between all groups at interest. That, in brief, is Mr. Sloan's conception of some of the functions of government in industry.

"But what about the capital group? The general impression is that the profits of American industry are so generous as to permit their distribution and dissipation in various ways—such as higher wages, profit-participation of workers, higher taxes, lower prices. Today, profits are a target, politically; large profits, particularly so. But profits, in dollars, mean nothing unless considered in relation to the business from which they emanate—the volume of that business and the capital employed. The facts are that in times of relative prosperity about 40 per cent of the corporations report no profit whatsoever. For instance, if we take a representative business cycle, such as from 1928 through 1937, the average annual return on capital employed of 400 representative industrial organizations in the United States, was 6½ per cent. Normally the return on capital over the business cycle of American industry is no more than sufficient to maintain the investment under the capitalistic system. There are exceptions, of course. Probably, if profits were greater, progress would be accelerated. An adequate profit is essential to the development and maintenance of a strong and virile business organization."

Considering the wonderful opportunities for accomplishment in this country, shall we be optimists or pessimists? That depends upon whether or not we believe there will come—before it is too late—an awakening of the consciousness of the American people as to what constitutes the truth in these great questions which so vitally affect their well being. Mr. Sloan believes the only real way to attain and maintain a higher standard of living with the greater stability that all so earnestly desire—is to demand those policies that truly promote the production of more and more wealth through work, greater efficiency and coöperation.

Fair Doings

(Continued from Page Eleven)

The actual manufacture of "Cellophane" is simulated by a small casting machine.

Tiny mannequins display dresses of "Acele" fabrics.

In an attractive exhibit, the transition is shown from raw materials to finished plastic products.

Coal is separated from shale by means of heavy parting liquids in a visual demonstration of the "sink-and-float" process.

The physical and chemical properties of neoprene are dramatically presented.

The remarkable change of color in ceramic ware during the firing process is shown through the use of a simulated decorating kiln.

DU PONT

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

General Executive Offices, WILMINGTON, DELAWARE

All Inquiries Regarding du Pont Products Should Be Addressed to the Nearest Office

ACIDS, HEAVY CHEMICALS, METAL AND ORE, AGRICULTURAL CHEMICALS, SPECIALTIES

GRASSELLI CHEMICALS DEPARTMENT

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Chemicals for leather, textile, paper, paint, rubber, battery, ceramics, sheet, tin plate, steel and petroleum manufacturers. Chemically pure acids, electrolyte, filter alum, spray products for fruit trees, vegetables and flowers, silicate of soda, soldering fluxes, zinc, detergents, wood preservatives, and pest control specialties.

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Cleveland, Ohio, 629 Euclid Avenue
Detroit, Michigan, 1530 E. Hancock Avenue
El Monte, Calif., P. O. Box 70
Milwaukee, Wis., 1503 W. Canal Street
New Haven, Conn., 46 River Street
New Orleans, La., 2431 Clio Street
New York, N. Y., 350 Fifth Avenue
Philadelphia, Pa., 3500 Gray's Ferry Road
Pittsburgh, Pa., 107 Sixth Street
Rensselaer, N. Y., 34 Riverside Avenue
San Francisco, Calif., 1400 16th Street
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ORGANIC CHEMICALS DEPARTMENT

General Offices, Wilmington, Del.

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

Wilmington, Del., Nemours Building

Dyestuffs Division

Dyestuffs, dyestuff intermediates, organic chemicals, chemicals and dyes for the petroleum industry, sulfur dioxide, and nitrated filter cloths.

(Inquiries for products other than dyestuffs should be referred directly to the Main Office at Wilmington.)

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New York, N. Y., 40 Worth Street
Philadelphia, Pa., 1616 Walnut Street
Providence, R. I., 709 Hospital Trust Building
San Francisco, Calif., 235 Second Street
Wilmington, Del., Du Pont Building

Fine Chemicals Division

Detergents, wetting-out agents, textile assistants, and finishing agents, solvents (Refer to offices listed under Dyestuffs Division).

Aromatics, perfume, photographic and pharmaceutical chemicals.

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New York, N. Y., 61 Thomas Street
Wilmington, Del., Nemours Building

"Cel-O-Glass," "Elmo Fabric," "Via-Ray Window Fabric," Ergosterol, Unirradiated Ergosterol, Vitamin D (Irradiated Ergosterol, a plant provitamin), Vitamin D (an activated animal pro-vitamin).

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Antioxidants, vulcanization accelerators, rubber colors, neoprene, "S. D. O." corrosion-resistant coating, and special chemicals.

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TEXTILE FIBERS & "CELLOPHANE" FILM

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Comprising Acetate Division, "Cellophane" Division, Nylon Division, Rayon Division

General Offices, Wilmington, Del.

Acetate Division and Rayon Division

Acetate Division ("Acele" acetate rayon yarn and staple fiber; commercial cellulose acetate flake). Rayon Division (Viscose rayon yarn and staple fiber).

Charlotte, N. C., 412 S. Church Street
New York, N. Y., Empire State Building
Philadelphia, Pa., 1616 Walnut Street
Providence, R. I., 15 Westminster Street

"Cellophane" Division

"Cellophane" cellulose film, plain transparent, moistureproof, and colored in sheets and rolls for wrapping purposes; "Cellophane" slit cellulose film for textile uses. "Cel-O-Seal" bottle closures and bands, transparent seamless tubing. Cellulose sponges.

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New York, N. Y., Empire State Building
Philadelphia, Pa., Delaware Avenue and Van Kirk Street, Frankford P. O.
San Francisco, Calif., 235 Second Street
Seattle, Wash., 525 Boren Avenue, North
St. Louis, Mo., 3600 N. Broadway

FABRICS—FINISHES

FABRICS AND FINISHES DEPARTMENT

General Offices, Wilmington, Del.

"Fabrikoid" Division

"Fabrikoid" pyroxylin-coated and impregnated fabrics, for auto and furniture upholsteries, bookbindings, luggage, novelties; Lacquered Fabric Tablecovers, etc.; "Rug Anchor" sponge rubber non-skid underlay and "Velvetex" sponge rubber rug cushioning; "Tontine" pyroxylin-impregnated washable window-shade cloth; "Ventube" rubberized flexible ventilating duct; "Cavalon" rubberized fabric for heavy duty chair and automotive upholsteries; "Cavaltex" rubberized fabric for outerwear garments; "Texon" latex-saturated fibre for midsole and innersole materials and quarterlining; "Cavalite" rubberized fabric for raincoats and hospital sheetings; du Pont Rubberized Hospital Sheeting; and neoprene-treated textiles.

Chicago, Ill., 2100 Elston Avenue
Detroit, Mich., General Motors Building
Newburgh, N. Y., Du Pont Avenue
New York, N. Y., 350 Fifth Avenue
San Francisco, Calif., 235 Second Street

Finishes Division

"Duco," "Dulux," nitrocellulose, solvents, leather cements, pyroxylin solutions, paints, varnishes, synthetic-resin enamels, bronze powder, and special finishes for automobile refinishing and all industrial purposes; paints, varnishes, enamels, and pyroxylin cement.

Atlanta, Ga., 619-21 Peachtree Street, N. E.
Everett, Mass., 59 Waters Avenue
Chicago, Ill., 2100 Elston Avenue
Dallas, Tex., 309 N. Preston Avenue
New York, N. Y., Empire State Building
Philadelphia, Pa., 1616 Walnut Street
San Francisco, Calif., 235 Second Street

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

Detroit, Mich., General Motors Building

"Duco" Household Cement, "Duco" Polish, "Duco" Wax, Auto Top Dressings, "Pro-Tek" protective cream, and other "No. 7" Line specialties.

San Francisco, Calif., 235 Second Street
Wilmington, Del., Nemours Building

PLASTICS

"Pyralin" pyroxylin plastic, "Plastacele" acetate plastic, "Lucite" methyl methacrylate resin in the form of sheets, rods and tubes and "Butacite" vinyl acetal resin sheets. "Plastacele" and "Lucite" molding powders. Also manufacturers of tooth brushes, "Pyralin" toiletware, combs, hair ornaments, toys and novelties fabricated from "Pyralin" and "Plastacele"; and "Pyraheel" plastic heel-covering material.

PLASTICS DEPARTMENT

Executive Offices, Wilmington, Del.

General Offices:

Industrial Dept., Arlington, N. J.

Products and Special Plastics Divisions
Empire State Building, New York City

Chicago, Ill., 36 S. State Street
Leominster, Mass.
New York, N. Y., Empire State Building
San Francisco, Calif., 111 Sutter Street
St. Louis, Mo., 1892 Arcadia Building

SPECIAL CHEMICALS

THE R. & H. CHEMICALS DEPARTMENT

General Offices, Wilmington, Del.

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

Baltimore, Md., 204 O. T. National Bank Building
Boston, Mass., 140 Federal Street
Charlotte, N. C., 414 S. Church Street
Chicago, Ill., 230 E. Ohio Street
Cleveland, Ohio, 1226 Guardian Building
El Monte, Calif., P. O. Box 70
Kansas City, Mo., 2018 Guinotte Avenue
Newark, N. J., 1060 Broad Street
New Orleans, La., 1140 S. Robertson Street
New York, N. Y., Empire State Building
Philadelphia, Pa., 1616 Walnut Street
Pittsburgh, Pa., 812 Fulton Building
San Francisco, Calif., 235 Second Street

Canadian Representatives:
Canadian Industries Ltd., 1135 Beaver Hall Hill, Montreal, Quebec
Canadian Industries Ltd., 372 Bay Street, Toronto 2, Canada

SEED DISINFECTANTS

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

BAYER-SEMESAN COMPANY, INC.

General Offices, Wilmington, Del.

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

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

REMINGTON ARMS COMPANY, INC.

General Offices, Bridgeport, Conn.

PETERS CARTRIDGE DIVISION

General Offices, Bridgeport, Conn.

Atlanta, Ga., 1518-19 Healey Building
Dallas, Tex., 1239 Liberty Bank Building
***Jacksonville, Fla.,** 1601 Barnett National Bank Building
Memphis, Tenn., 2201-2 Sterick Building
Minneapolis, Minn., 614 Plymouth Building
New York, N. Y., 350 Fifth Avenue
San Francisco, Calif., 55 New Montgomery Street
St. Louis, Mo., 1364-72 Arcade Building
**Peters Cartridge Division only*

INTERNATIONAL FREIGHTING CORPORATION, INC.

General Offices, New York, N. Y.

Chicago, Ill., 1324 McCormick Building
New York City, N. Y., 17 Battery Place
(Buenos Aires, Argentina, Av. Roque Saenz Peña 616)

INDUSTRIAL EXPLOSIVES

Dynamite, "Nitramon" blasting agent, black powder in granular and pellet form and blasting accessories—a complete line of products for all industrial and agricultural uses.

EXPLOSIVES DEPARTMENT

General Offices, Wilmington, Del.

Birmingham, Ala., 1030 Brown-Marx Building, 2000 First Avenue
Chicago, Ill., 1314 McCormick Building, 332 S. Michigan Avenue
Denver, Colo., 922 Midland Savings Building, 444 Seventeenth Street
Duluth, Minn., Hartley Building, 742 E. Superior Street
Huntington, W. Va., 1104 West Virginia Building, 4th Avenue and 9th Street
Joplin, Mo., Joplin Nat'l Bank Building, 402 Main Street
Juneau, Alaska, Blomgren Building, P. O. Box 582
Kansas City, Mo., City Bank Building, 1805 Grand Avenue
New York, N. Y., Empire State Building, 350 Fifth Avenue
Pittsburgh, Pa., 915 Gulf Building, Grant Street and Seventh Avenue
Portland, Ore., 405 American Bank Building, 6th and Morrison Streets
Pottsville, Pa., Schuylkill Trust Building, N. W. Corner Centre and Market Streets
San Francisco, Calif., 111 Sutter Street
Scranton, Pa., 703 First Nat'l Bank Building, Wyoming Avenue and Spruce Street
Seattle, Wash., 1108 Hoge Building, 701-705 Second Avenue
Spokane, Wash., 1326 Old Nat'l Bank Building, Riverside Avenue and Stevens Street
Wilkes-Barre, Pa., 902 Brooks Building, 15 S. Franklin Street

American Glycerin Division

General Offices, Wilmington, Del.

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

Bradford, Pa., P. O. Box 22
Tulsa, Okla., 720 Kennedy Building
Winchester, Ky., P. O. Box 116

SMOKELESS POWDERS

A complete line of smokeless propellent powders and black sporting powders.

Smokeless Powder Division

General Offices, Wilmington, Del.

FOREIGN OFFICES

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

Brimsdown, Middlesex, England, (Remington Arms Union Metallic Cartridge Co. Limited)
Buenos Aires, Argentine Republic, Industrias Químicas Argentinas "Duperial," S. A. Industrial y Comercial, Edificio Volta, Av. Roque Saenz Peña 832
Hankow, China, Postal R. & S. Bank Bldg., Faucheong Road, P. O. Box 69
Kobe, Japan, Crescent Building, No. 72 Kyo Machi (P. O. Box No. 384)
London, W. C. 2, England, Bush House, Aldwych
Mexico City, Mexico, Edificio Cidosa, Avenida Uruguay 55 (Office of Du Pont S. A.)
Montevideo, Uruguay, Industrias Químicas Uruguayas Duperial, Avda. Gral. Rondeau 2050
Paris, France, Paris Development Office, 52 Av. des Champs Elysées; Fabrics & Finishes, 14 Rue Lincoln, Paris VIII
Rio de Janeiro, Brasil, Industrias Chimicas Brasileiras "Duperial," S. A., Caixa Postal 710
Shanghai, China, Robert Dollar Building, 51 Canton Road (P. O. Box No. 393)
Tientsin, China, 52 Taku Road (P.O. Box 88)

Thanks, little light ...you've just prevented a smash-up———

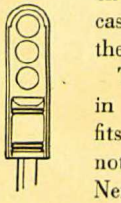


Everywhere new uses for Du Pont Plastics are making the highways safer

PERHAPS tonight or tomorrow your own safety will depend on one of the spectacular new automotive safety devices making use of Du Pont Plastics. A wizard-like directional signal, for example, will flash brightly in the black of night and warn you—in time—that the car ahead is just about to turn. (A signal like the one in the main illustration, made with Du Pont "Lucite," is now standard equipment on Buick automobiles*.)



Or a new, more brilliant road reflector—with discs of molded "Lucite" methyl methacrylate molding powder—will warn you of Dead Man's Curve a solid mile before you reach it. (This is the reflector which, according to the Michigan State Commission of Highways, reduced night accidents 79% on the new Detroit-Lansing express highway.)



Or you might be protected by safety glass—a feature made possible in millions of cars because interlayers of Du Pont "Plastacele" and Du Pont polyvinyl acetal plastic—made by the continuous sheeting method—helped bring down the cost of manufacture.

The manufacturers of these products chose Du Pont plastics because, in each case, the particular plastic chosen fitted their requirements exactly.

There may be—there undoubtedly is—in Du Pont's line of plastics, one which fits *your* requirements exactly. It costs nothing to find out. Write E. I. du Pont de Nemours & Co., Inc., Arlington, N. J.

AMONG DU PONT'S LINE OF PLASTICS ARE:

"Pyralin" cellulose nitrate plastic; "Plastacele" cellulose acetate plastic; "Lucite" methyl methacrylate resin. These plastics are available in sheets, rods and tubes. For injection and pressure molding, there are: "Plastacele" cellulose acetate molding powder and "Lucite" methyl methacrylate molding powder.

DU PONT
REG. U. S. PAT. OFF.

PLASTICS

*Other uses of Du Pont Plastics in Buicks: For the steering wheel—"Plastacele." For the cap, covering the Buick insignia, at the hub of the steering wheel: "Lucite."

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