



APRIL
1929

VINE HOLMGREN

Where even ounces count



"RULE of thumb" may have its merits—but not in a du Pont Rayon Plant. Right at the beginning, "du Pont control" takes a hand in the product.

Sheets of pure pulp from which du Pont rayon is made come especially wrapped and sealed. They enter the first manufacturing stage under precisely the right conditions—and equally important—in precisely the correct amount.

There is no guesswork. That is a word unknown to du Pont control men. Every batch of pulp must be weighed to the *ounce*, not today, or once a day, but every hour of every day in the year.

Unvarying precision—to the fraction of a pound!

This procedure typifies every step in the making of du Pont rayon yarns. It is a dramatic chapter in manufacturing that few people recognize. There is hardly an instant when the product is not passing under the watchful eyes of experts, or undergoing highly developed control tests. One word characterizes every operation conducted by du Pont. That word is *accuracy*.

Out of these highly keyed manufacturing plants come the branded du Pont yarns. Faithfully graded to meet every requirement, these yarns are today setting a new standard of excellence in American textile mills.

Du Pont Rayon Company, Inc., 2 Park Avenue,
New York, N. Y.



A Proven Yarn for Every Purpose

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LET'S STOP THESE ACCIDENTS

*Children find blasting caps and play with them with tragic consequences.
Make sure that no child is injured through your fault*

APPROXIMATELY five hundred children are crippled each year in the United States as a result of playing with blasting caps, according to records compiled by the Institute of Makers of Explosives. Children of tender years are usually the victims. Most of them do not know what blasting caps are like or that they are purposely made to explode. Playing by the side of a newly constructed road, or in a field where stumps have been blasted, or rambling about in the vicinity of a mine or quarry, they find a shiny copper capsule. To them it is merely a pretty plaything. And altogether too many youngsters learn too late its real character.

Even the knowing ones fail to realize that blasting caps are far more hazardous to handle than the paper caps they shoot in their toy pistols on the Fourth of July. And when they start to "shoot" a blasting cap by pounding it with a rock, applying a lighted match to it, throwing it into a stove or bonfire, or even when they attempt to probe the charge within the shell, the result is usually a tragedy.

It was the frequency of such accidents a few years ago that led the Institute of Makers of Explosives to launch a nation-wide campaign to teach children not to play with blasting caps. Posters and pamphlets were given wide distribution. Prize contests were staged in public schools, and motion picture films were circulated and shown before groups of school children in all parts of the country.

This campaign received the enthusiastic support of such agencies as the Bureau of Mines, the Surgeon General of the Public Health Service of the Treasury Department, the Department of Agriculture, the National Safety Council,

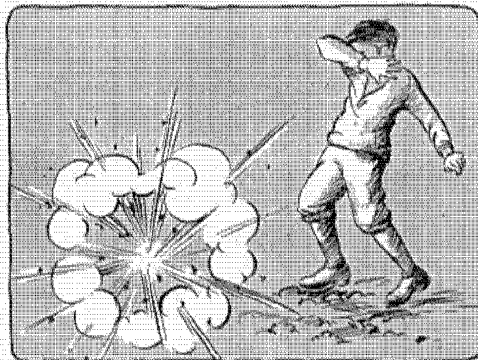
various mining institutes, and the school authorities of nearly every state in the Union. It has accomplished worth-while results and the Institute is continuing the program of education.

Children must be taught not to touch blasting caps. Adults must be taught not to leave caps where children can find them; and that is of major importance. If users of explosives and their employees measure up to their responsibilities in this respect, accidents from "playing with blasting caps" will automatically cease.

Aside from humanitarian considerations which should impel explosives users to aid the cause of child safety, the Institute has for some time past studied the reports of litigation arising from injuries sustained by children who have found blasting caps and played with them. Damage claims have been brought into the courts in a number of states where children have been maimed through blasting cap accidents. In four suits recently filed in as many different states, the defendants have asked for damages ranging from \$6,500 to \$50,000 because employees negligently left these accessories in places where children could find them.

Keep blasting caps in a safe place is always a timely warning, and particularly so at this season; for the records show that these accidents occur with increasing frequency during the spring and summer months when children spend so much of their time out-of-doors.

Mining, contracting and quarrying companies, as well as all others who use caps, are urged to coöperate with the Institute of Makers of Explosives in its efforts to reduce child fatalities and injuries to the minimum.



MINING GOLD IN THE RAND DISTRICT OF AFRICA

To supply cool, dry air to the men at the working faces in the mines is one of the serious problems confronting the managers

THE mining district in Africa, most commonly referred to as the Rand, has as its center Johannesburg, a modern, up-to-date city less than fifty years old, with beautiful homes, parks and driveways. It lies about one thousand miles northeast of Cape Town at the lower end of the African continent and four hundred miles northwest of Durban on the East African coast. From the area within a thirty-mile radius of Johannesburg comes more than half the gold produced in the world today.

The Rand district extends for approximately thirty miles east and west of the city. Mines and mills are at work over the entire sixty miles, with the exception of a break in the reef or gold-bearing vein of about two and one-half miles on the East Rand where ore has not been found in paying quantities. Most of the mines are very deep, ranging from three thousand feet to the famous Village Deep Mine, which is seven thousand four-hundred feet vertically below the surface—and now the deepest mine in the world.

The general scheme of mining is more or less the same throughout the entire field. Development places are driven from the shafts on each level to block out the ore, which is then mined between levels, using a system not unlike that employed in coal mines where the men work a retreating long-wall face.

By C. F. RANEY

will have only about three hundred white men to supervise the natives and

manage the different contracts.

All natives in Africa go under the general heading of Kaffirs and are usually spoken of as "boys" regardless of their age. When they arrive at the mines from their kraals or homes, they have very few clothes. They soon get together some garments, but usually their first attempt at dressing up is to procure a yard or so of calico from which they make a sort of skirt.

The mines have compounds where the natives live and are fed by the mining company. In addition to this, they receive a compensation of about fifty cents a day.



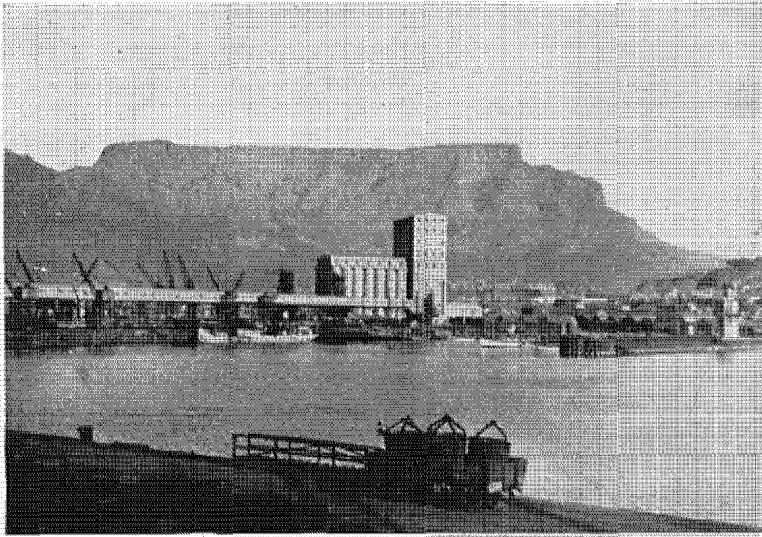
Above—A dance team resting between performances in the annual contest among various African mines

Left—Kaffir pianos are made by the natives to provide the necessary music for the dancers



At all the mines a majority of the men employed are natives recruited from the different tribes of Africa. Mines with a personnel of three thousand men underground

Many of the mines have dance teams and at least once a year a big contest is held between men from the different mines. Prizes are awarded to the team doing the most interesting dance. Each team carries a band of musicians who make music for the dancers on what are called Kaffir pianos. These instruments are not unlike xylophones, being made by the natives who use rawhide strips to tie pieces of hardwood over old carbide cans filled with water. Some of the more expert orchestras are able to make real music, and after a contest the members of the winning team enjoy great popularity among the other natives along the Rand.



A view of Cape Town, at the lower end of the African continent, showing Table Mountain in the background

The time is fast approaching on the Rand when the mines will be faced with a problem that will tax the ingenuity of the managers and engineers to the utmost. Not only are they faced with the problem of supporting shafts and workings at such great depths, but they must also supply enough cool, dry air to the men at the working face to enable them to work efficiently—and they must supply this air at a cost that is not prohibitive.

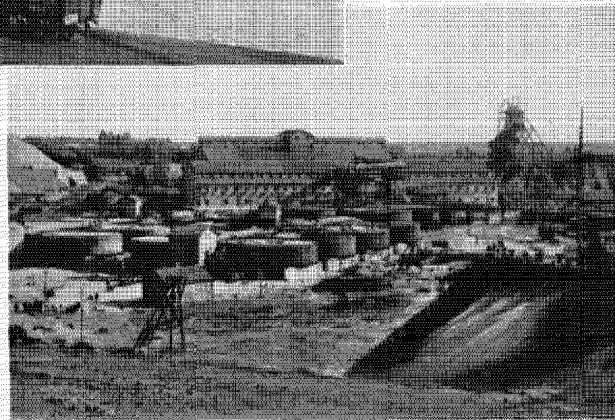
The effect on men working in hot, humid places, where there is little or no air moving, is to impair their efficiency and health very greatly. The fact that a normal man can work for an hour or so in a temperature of 150° F., when the air is dry, but quickly collapses in a saturated atmosphere of 90° F., speaks for itself.

As the air passes down the shafts on the Rand, it absorbs heat from the rock walls at the rate of one degree for each two hundred and fifty feet of depth. It also picks up moisture so rapidly that it is nearly saturated by the time it reaches the lower levels. At the Village Deep Mine the air picks up, in the course of a day, two hundred and forty-two tons of moisture, of which one hundred and twenty-seven tons are redeposited in the upcast portion of the workings and one hundred and fifteen tons reach the surface. Every possible effort is made by the operators to force fresh air into the working places, and this involves the use of many miles of tubing in connection with auxiliary blower fans.

DuPont Ventube has made a place for itself in this district on account of the ease of handling and the savings possible over transporting and erecting any other type of tubing.

Because of the laws governing mining in Africa, the operators are faced with two distinct problems: First, the removal of smoke and fumes after blasting; second, the maintenance of a healthy condition during the drilling shift. The dust causing phthisis, produced during drilling, will remain in suspension almost indefinitely if the air is in motion and there is no great change of temperature or pressure. The problem is to dilute this air by introducing a large volume of comparatively dust-free air so that it will reduce the actual dust content to the lowest possible point. They have found that the best way to accomplish this is to

keep the tubing within 25 or 30 feet of the face; also to have enough velocity in the incoming air to enable it to penetrate and break up the cushion of exhaust air from the drills, thereby reaching the face. With regard to this, they noticed that an installation capable of producing a comfortable condi-



The head frame and mill of one of the Rand mines, in the heart of the gold-producing district of Africa

tion at the face, when the drills were not running, was ineffective when the drills were operating, and was also deflected some ten feet from the face by the retreating exhaust air from the drills. In many places Ventube is solving this problem, as it is being taken right to the face, so that the men at work will receive full benefit from the air that is actually intended for them.

Ice is used near extremely hot working faces. A large block of it is placed so that the air coming from the end of the ventilating pipe passes over it. By this means the

(Continued on page 23)



Miners at work in a gold-bearing vein. Notice the pitch of the reef

THE PRODUCTION OF TALC

How the W. H. Loomis Talc Corporation mines the ore and mills it in the Gouverneur district of New York State

SINCE the days of the first Pharaohs of Egypt cosmetics with a talc base have been popular. Both men and women used them in large quantities when the Roman Empire was at the height of its glory. And they are not less popular today; in fact, their use is steadily increasing. A considerable tonnage of first-quality talc reaches the consuming markets in talcum powder cans, compacts and other packages found in retail stores. But strange as it may seem, only a relatively small part of the total production of this mineral is used for cosmetics.

Sixty-five per cent of the world's talc supply comes from the United States, and forty-six per cent of the domestic sales in 1926—the latest year of published record—came

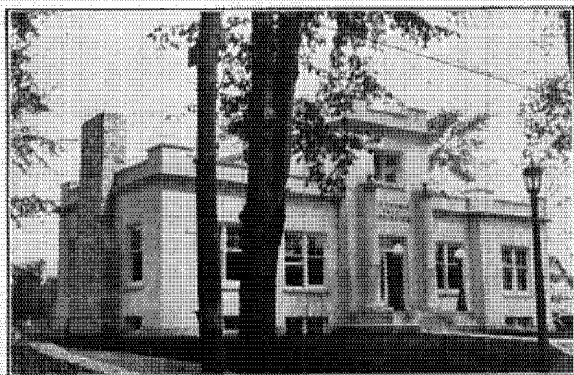
By M. HARRIGAN

afterwards others became interested in the possibilities of mining and milling

the product, and in 1877 and 1878 two mills were erected. Many operators entered this field during the next quarter of a century, which was marked by many consolidations. At present, the local industry is conducted by only a few strongly entrenched organizations, and one of them is the W. H. Loomis Talc Corporation.

This corporation was organized in 1919 for the purpose of mining and milling Gouverneur's short-fiber talc. The company purchased what is known as the "Arnold Mine" and constructed its first mill near the village of Emeryville. Mr. Loomis conceived the idea of producing a more finely subdivided product than had previously been produced, on the theory that paint manufacturers did not wish to be grinders, but mixers. He reasoned that if he could grind the product finer at the mill, the paint mixers would naturally experience a corresponding reduction in their production costs. He further conceived the idea of double-air flotation, which tends toward greater uniformity of product from the standpoints of fineness and oil absorption, and prevents the possibility that any coarse grits or foreign materials may get into the finished stock.

A ready market was soon found for the output of the first mill. In 1922, to meet the increased demand, another mill of greater capacity was built and more flexible machinery was installed in it. Since 1923 both mills have been producing a double air-floated magnesium silicate for all the industries using this material.

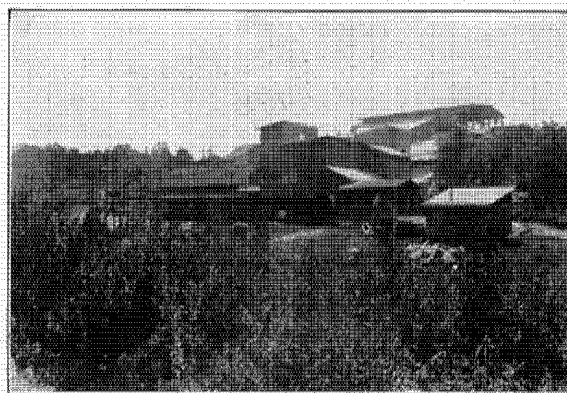


Talc products predominate in the construction of the home office of the Loomis Corporation

from New York State. It is estimated that the output of the Empire State in 1928 was 182,000,000 pounds, and most all of it originated in the vicinity of Gouverneur, New York. Although talc is not produced in that town, large quantities are shipped from there, and the products of the mines and mills of that region are well known as "Gouverneur talc."

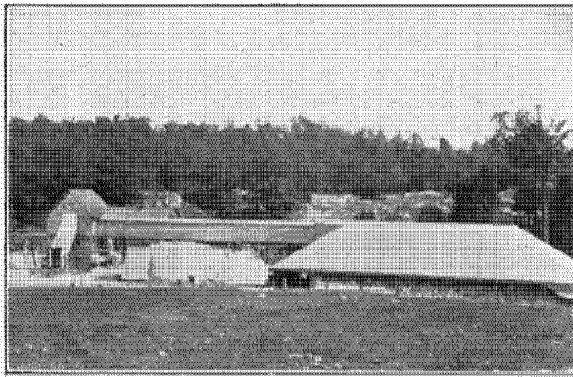
Now talc is by no means a rare mineral, yet the products shipped from Gouverneur have certain characteristics unlike any other forms of magnesium silicate produced elsewhere in the United States, Canada and several foreign countries. The differences are in physical make-up rather than in chemical composition. Gouverneur talc is a fibrous mineral and it retains that structure when broken down.

The discovery of this mineral in northern New York State is credited to S. C. Merritt, a veterinary surgeon. In 1873, he did some prospecting in the town of Fowler and called attention to outcroppings of short-fiber talc and other indications of its presence in that region. Soon

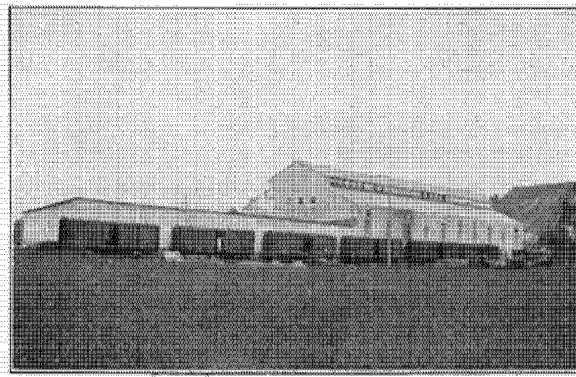


Mill Number 1 is the specialty mill of the corporation. It has a capacity of fifty tons a day

During the past nine years this company has acquired many valuable mineral properties, both by lease and purchase. It is now opening up a second mine to supply talc with physical properties differing from that found in the



The Number 1 mine can produce two hundred tons of talc ore every day



Mill Number 2—a model one—is described fully in the accompanying article

Arnold Mine. With two mines in operation, the company will be in position to supply the trade with talc of practically any physical structure that is found in the Gouverneur district.

Talc ore is generally found in strata varying from two feet to one hundred and twenty feet in thickness, between layers of limestone. The veins sometimes lie in an inclined position and sometimes vertically. In underground work the usual method is to run an incline on the dip and to stoop from levels.

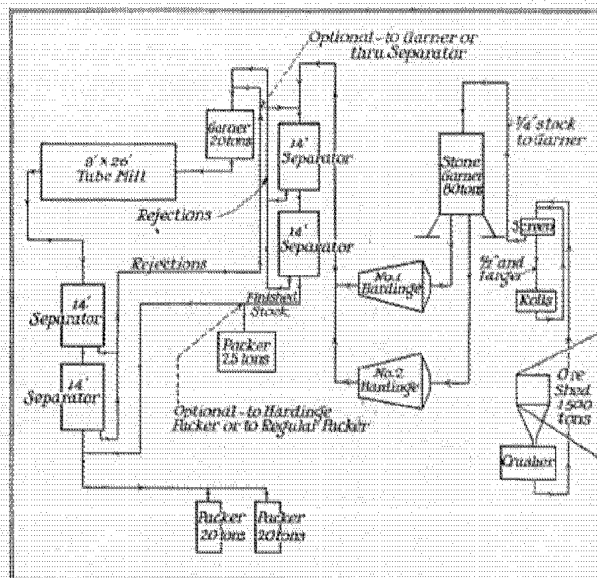
Talc mining has its own peculiar problems. Large pieces of ore can be broken up with a crowbar, but a sledge hammer has little effect on them. Augers like those used in mining salt are of practically no value. Small electrically driven drills, however, may be used to advantage. The drilling is not difficult, for it takes only about half as much time as is required to drill soft limestone.

The composition of talc, which is soft and yet tough, and the fact that it is mined underground leave little choice in the selection of a satisfactory explosive, which must be quick-acting to do the work well. Gelatin dynamite has proved to be best because it has the requisite strength and quickness to produce good results, particularly in wet holes which are often encountered in talc mining. Still another advantage is that plastic gelatin can be loaded in upper holes without waste. But it must be made on a well-balanced formula because smoke from an explosive that is deficient in oxygen stains the talc badly. Du Pont gelatin is free from this objection, and the Loomis Corporation uses large quantities of 40 per cent gelatin in its Arnold Mine.

After the talc is produced comes the task of sorting it. As color is an important factor in determining the grade, all off color material is rejected. Then the ore that is suitable for cutting and carving is taken out, and the remainder is set aside for grinding. It is fascinating to watch the coarse material enter the mill and to follow it through the various milling and screening operations until it emerges as a powder that is fine enough for specific commercial uses.

At the No. 2 mill the crude rock is unloaded from wagons into receiving bins of about 1,500 tons capacity. From here the ore passes into a 9- by 18-inch crusher, where it is broken into pieces of 1½-inch maximum size. Thence it proceeds by elevator to a revolving screen with holes in it one-half inch in diameter. The oversize pieces are returned to a pair of 16- by 38-inch Allis-Chalmers rolls, and after this treatment the material is again put through the screen previously mentioned. The finer talc passes on to a belt-and-cup elevator that lifts it to the top of the mill where screw conveyors move it to storage bins of 80 tons capacity.

From this point the stock passes through two 8-foot by 48-inch Hardinge conical mills and then into two Gayco-Emerick separators. The product, which is now fine enough to pass through a 325-mesh screen, is conveyed to a packer bin, while the coarser talc is sent to a garner to await further milling in an 8- by 26-foot tube mill. Following this operation, elevators carry the product to a pair of 14-foot Gayco separators, that pass the fine talc and withhold the coarser material for further milling and screening, until a finished product of the required specifications is obtained. The flow sheet



Flow sheet of the milling operations followed by the Loomis Corporation in its production of talc



THE PARAMOUNT HOTEL SETS A NEW STANDARD FOR EQUIPMENT

*And selects Duco-finished furniture made by the
White Furniture Company of Mebane, North
Carolina, as standard for
its guest rooms*

By J. L. MASTERSON

ON 46th Street, just west of Broadway, in New York, a beautiful hotel has been erected to serve some of the thousands of visitors that daily enter the city for amusement, entertainment and the transaction of business.

It is, in the words of the management of the hotel, "constructed on a site selected for the future. It is following the trend of business and amusement as it slowly but surely wends its way from the old Herald Square section towards Columbus Circle."

We shall let Mr. Thomas W. Lamb, famous New York architect, who designed the new Paramount Hotel, tell us something about it:

"For many years I have watched very carefully the new construction of hotel buildings and it has been my ambition to have the opportunity some day to plan and build a hotel along the lines I thought most suitable to the public need. This opportunity presented itself through the Paramount Hotel.

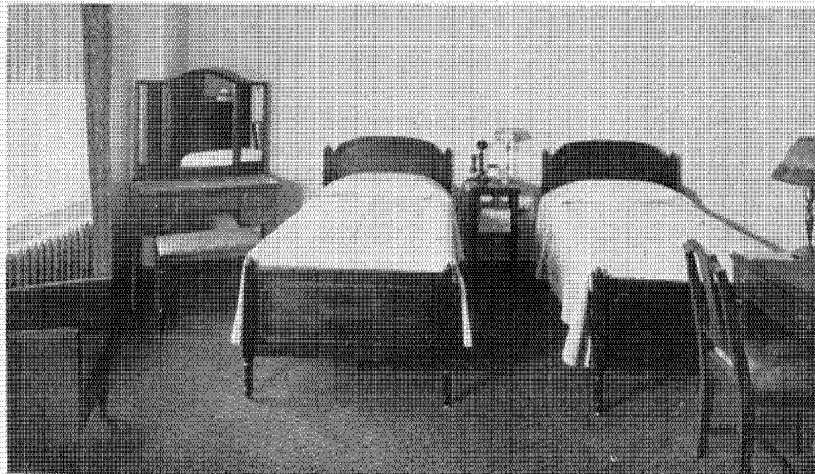
"On the first floor there are seven stores, aggregating 86 feet in width and $27\frac{1}{2}$ feet in depth, or approximately 2,365 square feet, in each one.

"Behind these stores, I have planned the lobby of the hotel. In other cities I noted, in many hotels of the type of the Paramount, that very little thought is given to the proper size of lobbies. They are either too narrow, too long, or square in plan, with a very low ceiling height. This lobby, within the inside of the columns, measures 51 feet by 51, and it is two stories high, permitting of a mezzanine overlooking this beautiful lobby. Underneath the mezzanine, on two sides, there are spaces for offices and concessions, such as telegraph, cigars,

magazines, theater tickets and jewelry. On account of its size the lobby seems to work out very satisfactorily."

One of the features of the Paramount Hotel is its famous grill, "conceded to be the most luxurious in the world." Mr. Lamb goes on to tell us something about it.

"There have been many different kinds of grill rooms designed with the idea of having entertainment, but they have been carried out in either a very pronounced architectural style or covered with a lot of silk to give atmosphere to the room. I felt that in order to get a very palatial effect, all of the decoration of the room should be in plastic relief, and I have chosen the modern Viennese style of architecture as the background for this room. When speaking of modern Viennese, I mean not the square or triangular type of modern work as evidenced in recent exhibitions, but the pure architectural meaning of the true Viennese modern period.



Cool gray walls in the guest rooms set off to advantage the Duco-finished furniture done in a delicate shade of green.

"This room is provided with a stage and dressing rooms and all the necessary public utilities such as retiring rooms. I think the room will set a new style of decoration for grills provided for entertainment throughout the country and I am quite sure its success will be phenomenal."

Mr. Lamb's prediction has indeed been fulfilled. With Arnold Johnson's Paramount Hotel orchestra furnishing the dance music at luncheon, dinner and supper, and a de luxe entertainment being provided at dinner and after the theater, the Paramount Hotel grill has become one of the popular gathering places in the Longacre district.

The average guest, however, is interested only indirectly in dining-room and lobby appointments. What he actually looks for in a hotel is comfort and convenience in the guest rooms. Here the management of the hotel has provided a large measure of comfort and convenience per dollar of the guest's money.

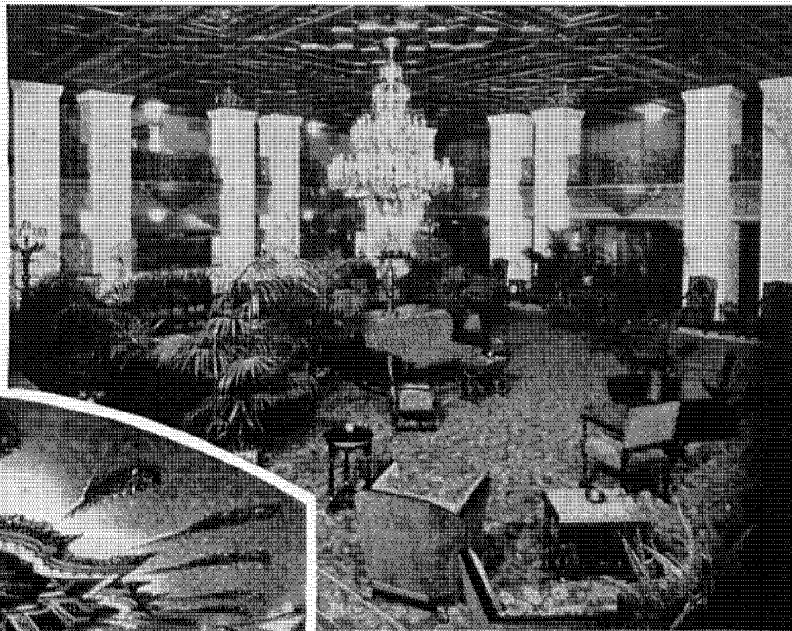
Bathrooms, for instance, show hints of the care and thought that also will be discovered elsewhere in the hotel. Every one of the rooms has a shower, and most of them have tubs. The shower curtains are of a handsome green tint, to match other furnishings throughout the guest rooms of the house. The floor mat is green, too—just a touch of distinction—with the name of the hotel woven into its pattern. The bathrooms have ceramic tile floors and glazed tile walls. Other conventional necessities of the first-class hotel are naturally to be found. These include medicine cabinets, mirror, towel racks, bathroom hooks, and each room has running ice water installed in the bathroom.

The guest rooms are of ample size and present a generally inviting air. Their walls

are paneled and finished in a cool gray that sets off nicely the delicate green with which most of the rooms are furnished. Some of the rooms, however, particularly those which are to be used as suites, are equipped with natural walnut wood furniture.

For the guest rooms, the management and architect selected furniture manufactured by the White Furniture Company, Mebane, North Carolina, we are told, for two reasons: First, because of the White construction which has become famous throughout the United States, especially among hotel operators; and second, because of the genuine Duco finish used by the White Furniture Company. Looking to the future, the management of the hotel expects service of many years from the furniture in the guest rooms. They believe they have secured it with this combination of the famous White construction and genuine du Pont Duco Finish.

In homes and hotels alike, as well as in many large office buildings, Duco is delivering remarkable terms of service. Its use in the new Paramount Hotel is just one of the numerous examples that might be cited to show its widespread popularity.



Above—Dignity is attained with a nicely blended combination of color, proportion and texture in the lobby of the Paramount Hotel. The marble pillars stand out against a background of somber walnut walls. The ceiling is in a pattern of gold relief on dull reds and greens.



Left—The grill room is pure modern Viennese in its decorative treatment, with a touch of underlying Oriental that takes it completely out of the ordinary.



LITTLE Tommy's table manners really are perfection for a four-year old. Most of the time he sails manfully through meals without striking a single snag. But after all, he's only a little fellow and his fingers *did* slip sometimes—with sad results to mother's table linen, until she bought a Fairy Damask table-cloth.

Now, when Tommy upsets his cocoa, no harm's done. Mother doesn't even have an extra item in the week's laundry budget, for Fairy Damask is the truly modern table-cloth. It never needs laundering, because it is made of a new material recently developed by the Fabrikoid Division of the du Pont Company. Like other Fabrikoid products, it is impervious to liquids and is easily cleaned with a damp cloth or a soft brush, soap and water.

The practicability, beauty and attractiveness of this fabric have won for it instant favor with women all over the country. They have welcomed it as a boon to good housekeeping and as a money-saver, too. To keep the cloth spotless, it's only necessary to wipe it after each meal with a clean, damp cloth. Nor will spilled liquids injure the table, if it's covered with a Fairy Damask cloth. They cannot seep through to mar the finish, which is further protected by the soft, felt-like reverse side of the material.

THIS TABLE-CLOTH NEVER GOES TO THE LAUNDRY

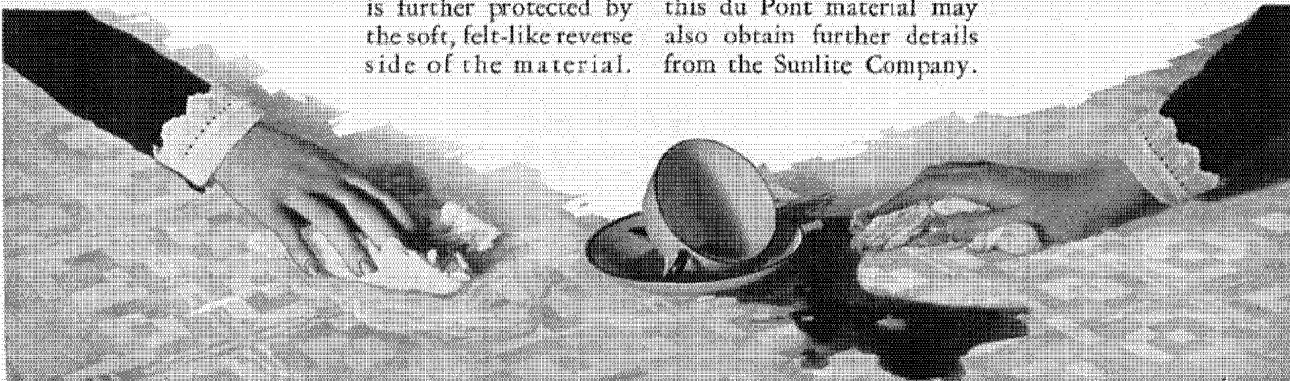
By C. F. THEISEN, JR.

A table-cloth of this kind is really beautiful. It has the luster, rich pattern and graceful draping qualities of fine linen. The edges are finished all around with a border of attractive hemstitching. For the breakfast nook, tea table or sun room, Fairy Damask in one of the five new pastel colors lends added charm to the table and harmonizes with the gaily colored modern interior. In addition to white, this cloth is supplied in peach, tan, blue, green and maize.

For the smart "bare" table so much in vogue, there are Fairy Damask

runners and also oblong and square doilies, in the same range of attractive colors and all beautifully hemstitched at the edges. These smaller pieces have a host of uses all over the house, from kitchen to bedroom.

The table-cloths are made in six practical sizes. The smaller pieces—doilies, luncheon sets, buffer scarfs and runners—are made in several sizes. All of these, and bridge table covers as well, are on sale at leading department stores, but if your local shops are not yet offering them, write for the name of the nearest dealer to the Sunlite Company, 280 East Water Street, Milwaukee, Wisconsin, manufacturing distributors of du Pont Fairy Damask. Merchants interested in the sales possibilities of this du Pont material may also obtain further details from the Sunlite Company.



ART MODERNE IN RAINWEAR

The newest vogue in design reaches rainy-day apparel and brings forth pleasing patterns that are colorful

WE moderns are always striving for something new and different—something that will stand out from the commonplace and be smart. No longer are we content to accept, either for our homes or persons, copies of what was considered *le dernier cri* of other years. We need, and demand, things more in keeping with our present mode of living in this twentieth century. And so there has been created, or rather evolved, what is known as art moderne to interpret the modes and manners of today.

In our household furnishings, our wearing apparel, even in the architecture of our buildings, we find this newcomer playing the principal rôle in design. From the huge blocks of massive skyscrapers to the trim lines of an up-to-date tea set, we find a new beauty and simplicity in the angles, lines and contrasts that characterize this vogue. This modern school of design is also distinguished by novel uses of color, and unusually pleasing effects have been obtained by the intelligent use of blends and contrasts in color.

Interior decorative art was the first to reflect this new style, for here was a field waiting for something new that would harmonize well with present-day ideas in architecture.

Designers in other fields were, however, quick to realize the adaptability of this new mode and its influence quickly spread. Although modern art has entered practically every phase of design, nowhere has its influence been felt more than in our wardrobe. Couturiers have turned to it for many of their most interesting and attractive creations. And as would be expected, this new style influence has touched practically all kinds of costumes. Designers of shoes, hats, dresses and accessories

By F. W. HOTCHKISS

have also turned to modernism for their inspirations, and now for the

first time you may see rainwear in art moderne.

How the old raincoat has changed! The former dull, drab, frequently despised garment has certainly stepped forward and assumed its rightful place. Several years ago it shook off its drabness and took on colorful hues that

now add so much to the appearance of the newer coats. Embossings followed, still further enhancing their good looks, and now comes this entirely new departure in finishes.

The art moderne design for raincoats was developed by the du Pont Company at its Fairfield plant. It is found exclusively in du Pont Fairfield Fabric, a rubberized material that manufacturers of raincoats and sportswear have used with great success. By a special process the modernistic patterns are fashioned into the material; that is, vulcanized in a solid unit of coating to assure permanence of design and of color. These designs are in tones that contrast and harmonize with the basic color, and overall is a crush-leather embossing that gives the finished material a distinctive appearance quite

unlike anything heretofore developed. Of course, it is absolutely waterproof, and, when tailored, the garments made of this fabric are so smart and serviceable that they will undoubtedly be the outstanding ones of their type during the coming year.

Thus du Pont ingenuity and research have again been instrumental in creating another new product to lead the field. This material is already being used by various manufacturers, and coats made of it are obtainable at high-class retail stores throughout the country.



Gloomy days become gay when a dainty Miss steps out in a raincoat like this one. The background shows the modernistic pattern, but not its rich colors

THE HANDWRITING ON THE WALL AND GAME CONSERVATION

*"The price of progress is research"—an interpretation that applies to industry,
and to game restoration work as well*

IN browsing through the pages of an old copy of *Industrial and Engineering Chemistry*, the opening paragraphs of an article by Arthur D. Little arrested my attention. They read:

"There is an intimate relationship between science and business. Only the other day I heard a man ask, 'Where would the suspender business be without the law of gravitation?' There is also some appreciation of the fact that we are living in a period of change in which only the resourceful can hope to maintain themselves in the face of the new conditions. Barber shops were once a haven of refuge for masculine humanity, but since they have become 'bobber' shops, so conservative a publication as the *Police Gazette* is reported to be printing two pages of embroidery notes.

"There is a tremendously dramatic element in the Biblical story of Belshazzar's feast. The mighty king was the central figure of a great spectacle, which included his lords to the number of a thousand, and his wives and concubines. They were feasting and making merry in the vast hall of the palace, and power and dominion seemed secure. Suddenly against the wall appeared the fingers of a hand, which wrote upon the wall above the great candlestick the momentous legend in which Daniel read Belshazzar's doom after soothsayers and astrologers had failed to make interpretation. Belshazzar had been weighed in the balance and had been found wanting, and that night the business of governing Babylon passed into other hands.

"There is a strange periodicity in the recurrence of this handwriting and a still more curious inability to perceive it on the part of those who sit down to feasts . . . I am willing to interpret the handwriting which confronts our industry. It reads—'The price of progress is research which alone assures the security of dividends.'"

Mr. Little's article, of course, refers to chemical research and he illustrates his topic with concrete examples which are very convincing but which are not necessary for us to read, if we but realize the correctness of his interpretation.

The "handwriting" is on our wall, and all who run may read. Mr. Little may be a modern Daniel; let us sincerely hope we may not be modern Belshazzars.

By L. W. T. WALLER, JR.

Sportsmen and conservationists who are not sportsmen desire one thing — perpetuation and increase of our wild life. This, then, is the "progress" we are after. Its price is unquestionably "research which alone assures the security of dividends" — improved hunting conditions.

Example after example indicating the necessity of research in conservation matters could be piled up:

Foreign bird species are planted in areas unfitted for their welfare, with consequent loss of time, money and enthusiasm; yet who can say what the requirements of such areas are?

Millions of wild fowl are lost as a result of "duck sickness." Why?

Quail are steadily decreasing in areas of intensive farming, and in overgrazed cattle land. Can we bring them back by scientific planting?

Quail, grouse and rabbits are ravaged by disease. Why?

Many more examples could be cited, but to what avail? Either we see the handwriting on the wall, or we do not, and it is to be feared that too many of us are modern Belshazzars.

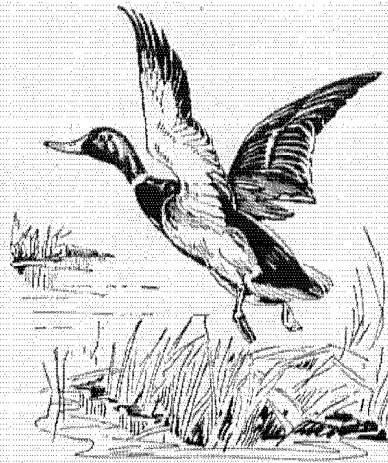
Every year millions of ducks and tons of game that could be saved are dying while we haggle over relatively minor questions such as seasons, bag limits or whether the game commissioner is a Democrat or a Republican.

We cannot legislate "game on the hoof." We have certainly demonstrated the utter failure of restrictive legislation, which, if it cannot save game, surely cannot restore it. Restrictive legislation is necessary; bag limits and seasons are essential, but certainly both must be more rigidly enforced. But we cannot rest there. The big thing is scientific research, adequately planned, painstakingly carried out, and the findings made use of by Federal, state and sportsmen's organizations to insure the "dividends" we want in the form of a continuing yearly game crop adequate to meet the needs—within reason—of the sportsmen of this country.

The Sporting Arms and Ammunition Manufacturers' Institute has read correctly the "handwriting" and is meeting the situation by a game survey conducted by Aldo Leopold of the University of Wisconsin.

The U. S. Biological Survey, too, is engaged in scientific

(Continued on page 16)



THIS SMALL, VITAL INDUSTRY

*American dyestuffs production may be insignificant in value
but its importance is far-reaching*

CONSIDERING dyestuff manufacture, there is scarcely another industry the value of the output of which is so small in comparison with that of the industries to which its production is so essential. Let us consider for a moment some interesting facts that bear out this statement.

Census figures on American manufacture for industries in general are not available for any later period than 1925. Although figures on dye production are available for later years, we shall confine ourselves to that year for accurate comparisons.

For 1925, the total sales value of all domestic dyes sold was approximately \$37,500,000. It should be noted that of this amount, approximately \$6,700,000 represented the sales value of the cheap tonnage colors exported; so slightly over \$30,000,000 represented the industry's sales of dyestuffs to the domestic consuming industries.

Compare this figure with the value of output of a few of the more important dye-consuming industries as given in the following table. The sales value of the output of all of them is largely influenced by the beauty and variety of the colors they possess.

Cotton Goods	\$1,789,043,000
Wool Manufactures	957,790,000
Knit Goods	810,000,000
Silk Manufactures	809,000,000
Carpets and Rugs	188,903,000
Hats and Felts	89,000,000
	\$4,643,736,000

In limiting our list as we have, there is not included the paper, leather, paint, printing ink, rayon material and the many other industries, in the perfection of the output of which dyes contribute their irreplaceable part.

Taking only this figure and comparing it with their total dyestuff bill, we find that the latter is but six-tenths of one per cent of the market value of the finished merchandise. Dyes are truly a small item of cost, but certainly a large factor in the sales appeal of the finished product.

Let us now consider the dye industry from another angle—that of invested capital—and compare it with the total assets of a few of the consuming industries.

An official estimate of the dyestuffs industry gives a figure of \$100,000,000 as its total invested capital. The following list shows total capital investments compiled by the Census Bureau from corporation tax returns. The dye industry becomes almost picayune in comparison.

Textile Industry	\$6,017,000,000
Paper Industry	1,483,000,000
Printing Industry	1,345,000,000
Leather Industry	1,157,000,000

By W. F. VAN RIPER

If one should still wish to have further evidence of the relative smallness of the dye industry, let him compare the total dyestuff sales value of \$30,000,000 with much larger figures representing net earnings of scores of individual corporations.

The question is therefore well asked, why do we hear so much about it, if, as an industry, it could easily be overlooked even in a grouping of corporations? There are several important reasons for this prominence.

The first and perhaps most fundamental one is found in the remarks of President Hoover, when as Secretary of Commerce he addressed the organization meeting of the Synthetic Organic Chemical Manufacturers' Association in Washington, D. C., on October 28, 1921. He said in part:

"... I do not think that it would be at all an overestimate to say that the wastes from wood, coal and other products upon which this industry is based have an annual value of upwards of a billion dollars if they could be turned to account. ... There is still an enormous field of waste to be overcome, of added value to be taken into the resources of our country. Today every coke oven that is not recovering its by-products is turning a loss into the air that can never be recovered. Your industries are the industries that take these wastes and turn them to account—add them into the total sum of our assets. ... An industry that is almost wholly founded on the recovery of those wastes naturally is worth cultivation and encouragement, not only by the public, but by the Government itself."

Of perhaps equal importance is the fact that nearly 100,000 separate industrial establishments must have dyestuffs for the completion and perfection of their output. Also, it must not be overlooked that the fifty-odd dye and coal-tar chemical plants employ regularly approximately 10,000 Americans.

Then, too, the huge textile interests of the country with their allied industries cannot operate satisfactorily without the dye industry. If you disbelieve this statement, look around you and endeavor to divorce color from all you see. Our world would become ghostly, figuratively and literally, were it attempted.

You cannot have failed to notice how the sales of colored handkerchiefs, bed linen, towels, table-cloths, men's underwear, and many other items of every-day use are rapidly increasing. All of it is possible by reason of the fact that research on the part of the dye manufacturers of the country has made available to our textile mills the necessary wash and sun-fast colors. Even hospitals are learning that it is now possible to have colored fabrics, uniforms and operating rooms without deviating from their usual sterilizing procedure. They welcome the ability of killing and washing out the germs without doing the same to the colors.

The future holds even greater dyestuff developments, so that our textile industry in its world leadership cannot afford to be without a dye industry *all its own*.

(Continued on page 24)

BLASTING IN THE MOTOR CITY

Du Pont dynamite was used effectively in breaking up some reinforced concrete foundations in the heart of Detroit's business district

TEAR down the old to build the new seems to be the practice in many large cities today. Office buildings, apartment houses and department stores that were amply large twenty-five years ago are now being replaced by modern skyscrapers. In Detroit, for example, the growth of the automobile industry has caused a rapid development of the city, and larger buildings have become a necessity.

As a case in point, the J. L. Hudson Company found that its old department store quarters were no longer spacious enough, and decided to add several units to the building.

In the Motor City little blasting is done for foundation work, because bed rock lies one hundred and thirty-two feet below the surface. But when the old buildings in the business section are torn down, concrete is encountered and it has to be broken up with explosives. That was the case in the J. L. Hudson Company department store work.

Bryant & Detwiler, general contractors of Detroit, let the foundation work to Spencer, White & Prentis, of the same city, and the latter firm employed the Michigan Foundation Company, Inc., of Sibley, Michigan, to remove the material. This concern specializes in breaking concrete, frozen ground and agricultural blasting, and has handled many large jobs of the kind. The work was under the personal supervision of Walter Ross, general manager for Spencer, White & Prentis, and E. E. Renaud, president of the Michigan Foundation Company.

Construction operations extended over a long period, because there were several units erected, and much more concrete, especially of the reinforced

By W. J. McHENRY

type, was found than had been anticipated by the contractors.

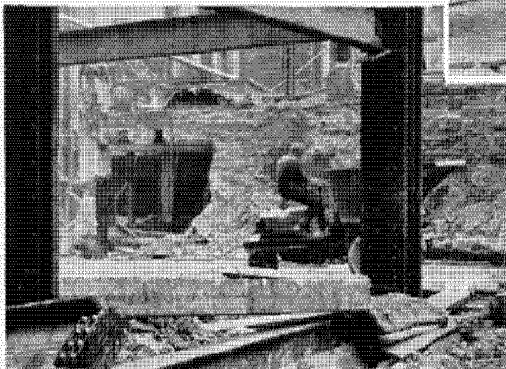
The use of explosives in the center of the retail business section on a scale such as this job required was a novelty. At first blasting between sunset and sunrise only was permitted, but as the work progressed without damage, continuous operations were allowed and the crews were double-shifted. The blasting contractors employed experienced men, and unusual care was exercised in the work. Small charges were used, the shots were covered with mats, and no one was permitted in the danger zone during a blast. In all the work neither men nor property were injured, although thousands of people were within a short distance of the blasting operations during the day.

The excavation made for the last unit erected was 220 by 176 feet by 61 feet deep inside the pavement. This included 70,000 cubic yards of earth, in addition to 4,500 cubic yards of reinforced concrete, the breaking of which required two tons of dynamite and 20,000 electric blasting caps. And an over-hanging ledge of rough clay had to be blasted, to save time and expense, before the shovels could dig to the required depth. In this work 122 caissons were sunk 120 feet.

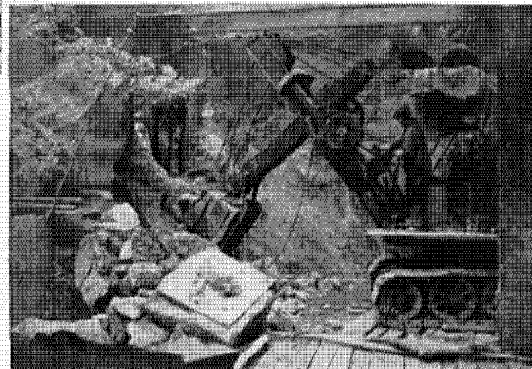
Picture an excavation of the size described . . . the work being carried on simultaneously in three levels . . . men busily occupied deep down in the ground . . . material being hoisted . . . pumps, shovels, trucks noisily laboring with their loads. If you can visualize that, you will understand better the conditions under which the drillers and blasters worked. Much credit is due the contractors for finishing the task safely and on scheduled time.



Above—This concrete wall had to be brought down



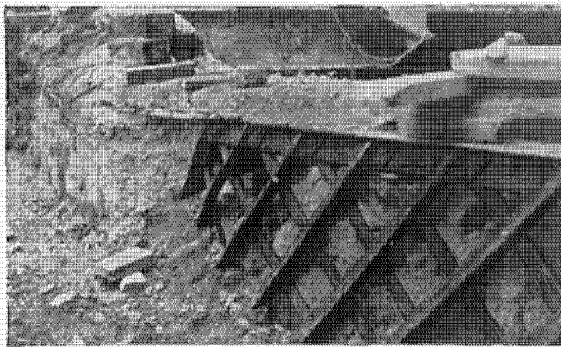
Left—Working in the first level



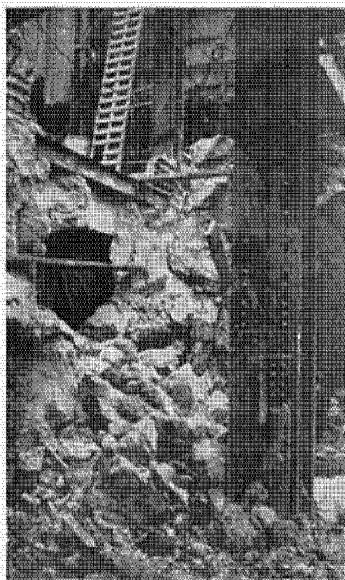
Right—An electric shovel taking out blasted concrete

Razing building foundations in the heart of the business section of Detroit, with thousands of people nearby, is not easy. These views show some of the materials encountered

Right—Where solid concrete in interlocking steel piling was blasted. Note the shovel marks in the softer earth at the lower right side of the picture



Above—In removing the old foundations, the drillers were up against a hard job when they encountered this grillage embedded in concrete



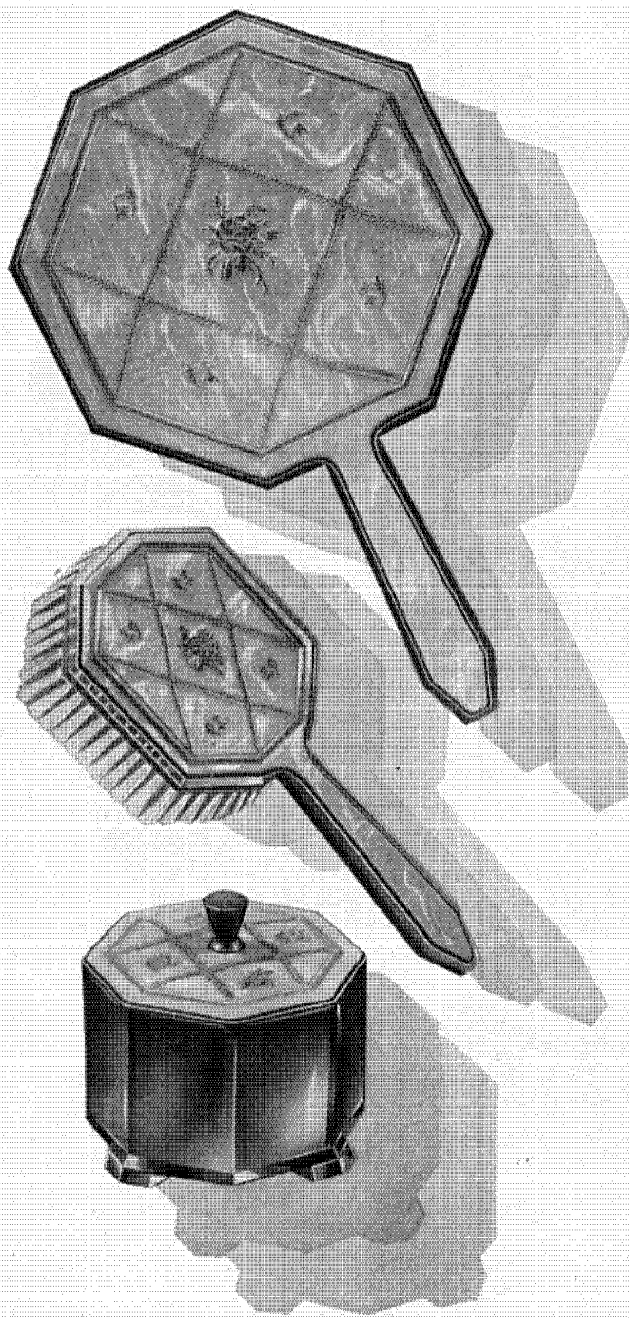
Above—Mats were placed over the charges of dynamite before each shot

Left—A blast has just broken through one of the concrete walls



Below—Somewhere up the line a shot will soon be set off. Meanwhile the cameraman snaps this picture of one of the magazines where explosives are kept





Both patterns in the new Pyralin toiletware—Sonya, seen above, and Navarre, shown at the right—are made in three-, ten- and twelve-piece combinations. They are thoroughly in keeping with the modern spirit.

PYRALIN PATTERNS ARE STYLED TO THE HOUR

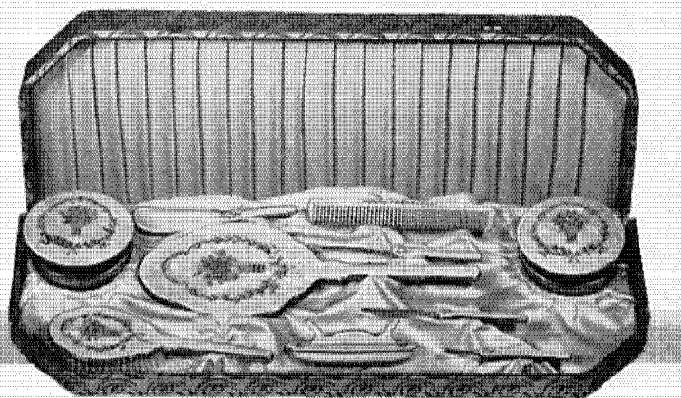
FASHION, capricious as a weather-vane about some things, keeps on insisting about boudoirs: "They must be colorful, they must be chic, they must be individually expressive." The modern boudoir demands modern colors, modern designs and modern patterns. And so it chooses, to complete its decorative scheme, exquisite accessories which du Pont has created: Lucite, the new favorite, or Pyralin, offering a variety of lovely pearl effects.

Of the several Pyralin patterns created for 1929, perhaps "Sonya" and "Navarre" are the most interesting. They bring a new note of style and beauty to pearl-on-amber boudoir accessories and offer fashion-approved articles, thoroughly in keeping with the dictates of style, at prices heretofore not available.

The basic design and decoration of the Sonya pattern were developed by Verna Cook Salomonsky, one of New York's leading stylists who created the beautiful Empire Lucite pattern. With its hexagonal shape and distinctive round mirror glass, Sonya features the simplicity of modern design. A new and beautiful type of pearl was developed exclusively for this set—with a black edge-stripe previously characteristic only of the high-priced Sheraton line. The decoration, delicate and feminine in feeling, is distinctly French in character.

The Navarre pattern, combining popular pearl-on-amber color effects with a graceful and well-balanced design, is offered at the lowest prices at which trade-marked Pyralin has ever been sold. With its distinctive bronze and black decoration, this new set is a remarkable value.

Both sets are sold in a newly developed and patented box, exclusive with du Pont, which raises the toiletware and displays it on an angle when the lid is opened.





Top, left—Where the right of way for the ditch was cleared. Top, right—Loading holes for the shot.
Center—The blast rose above the treetops. Below, left—The cut through the spoil bank.
Right—A section of the completed ditch. Note the Spanish moss on the trees

THROUGH A CYPRESS SWAMP

Du Pont dynamite constructed a ditch through a seemingly impassable barrier of heavy muck, stumps, logs and roots in Florida

LAST January some ditch-blasting work was done in connection with state highway construction near Lakeland, Florida, and it is interesting because it shows that dynamite can produce creditable results even under adverse conditions.

When the right of way had been cut through a cypress swamp, it was found that a lateral ditch about 900 feet long, ten feet wide at the top, six at the bottom and three feet deep, was needed to connect with a larger ditch to carry away the water from the road fill. The course of this lateral ditch ran through knee-deep water and soft, mucky soil.

A spoil bank, consisting of heavy muck, stumps and logs thrown up by the dragline, had to be blasted through to a depth of ten feet where these ditches met. And along the whole course we encountered logs that had gradually settled until they were three or four feet below the surface. Some of them were two feet in diameter. There were also a great many stumps on the surface.

By O. O'B. STRAYER

With charges of from four to eight dynamite cartridges to a hole, we blasted through the spoil bank, securing a good, clean cut ten feet deep and fifteen feet wide at the top. Then we loaded 100 feet of the ditch for a test shot, with holes spaced eighteen inches apart and with three cartridges to a hole. The great number of stumps, matted roots and sunken logs made close spacing and large loads necessary. After the test shot, Mr. Carl Schriber of Baird and Schriber, a local company, completed the work.

An unusual feature was the use of some old 40 per cent straight dynamite, which for five months had been stored in an open shed, exposed to heat and dampness. It showed some leakage, but Mr. C. F. Williams, superintendent in charge for Gilbert and Hadsock, contractors for the road building, did not wish to waste it. And when the test shot proved to be satisfactory, the entire ditch was blasted with this old dynamite in three days' time, with results shown in the accompanying pictures.

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No. 4

THE CITY OF TOMORROW

ARCHITECTURE has been defined as "the art which seeks to harmonize in a building the requirements of utility and beauty." In this day and age, especially in metropolitan districts, the towering temples of business are as massive in their proportions as they are simple in design. And they are truly American conceptions of the modern idea of beauty in business structures.

The cover illustration this month visualizes a street scene which does not exist in fact, but it is not less interesting on that account. It does interpret the trend of architecture and the moving spirit of these modern times.

ANOTHER CELLOPHANE PLANT

THE Du Pont Cellophane Company announced recently that plans had been practically completed for the construction of another large plant for the manufacture of Cellophane, the transparent wrapping material.

The new plant, which will cost several million dollars and will employ a large force, is to be erected at Old Hickory, near Nashville, Tennessee, adjacent to the large plants of the Du Pont Rayon Company. Preliminary construction work will begin at an early date.

A NEW PYRALIN BROCHURE

THE Du Pont Viscoloid Company has just issued an elaborate and informative brochure on Pyralin. It is intended for the guidance of manufacturers who use this plastic in the fabrication of a great variety of articles for which it is peculiarly adapted, and also suggests uses in other manufactures where it could be employed to advantage either as a basic material or for decorative purposes.

Besides describing the chemical and mechanical processes involved in making Pyralin, the pages are replete with illustrations and data on the physical properties of the material and the most approved methods of machining, molding and otherwise working it.

If manufacturers who desire to receive this book will write to the Du Pont Viscoloid Company, Inc., 330 Fifth Avenue, New York City, a copy will be forwarded.

DU PONT SAFETY POSTER CONTEST

ON May 1, 1928, the du Pont Company completed a very successful six months' Safety Poster Contest, which was conducted throughout the plants of the company and its subsidiaries.

The common injury hazards, as indicated by the injury statistics of the company, were shown in six posters giving six scenes about a typical plant. Contestants were asked to point out the various things that were wrong in the pictures and to tell why they thought so. One poster was shown each month and, after the replies were received, a corrected one was distributed, indicating what the contestants should have found.

This Safety Poster Contest plan and reproductions of the posters used have been published in pamphlet form, and hundreds of copies have been distributed throughout the country to companies and individuals requesting them. A limited number of these pamphlets is still available and copies may be procured free by writing to Mr. H. L. Miner, manager, Safety and Fire Protection Division, E. I. du Pont de Nemours & Company, Inc., Wilmington, Delaware.

THE HANDWRITING ON THE WALL AND GAME CONSERVATION

(Continued from page 10)

research but is sadly handicapped by the lack of funds.

A few—very few—states maintain their own research departments, and still fewer organizations of sportsmen do so. Those organizations that do not conduct research work, blindly take actions which, instead of doing good, may even be a menace to conservation.

It is often well to analyze carefully the source or authenticity of any piece of information on which action is contemplated. You may have "known" something for years—but is it true? Not many years ago it was thought that migratory birds in Europe went below the waters of the Mediterranean Sea to winter there. We know now that is not true, but to have said so then would have doubtless provoked much mirth from the old-time hunters of the day. We do not know yet why birds migrate—that is, biologists do not, although the cause of the phenomenon is doubtless well known to the average city sportsman and he can expound the real reasons volubly and at great length.

Let us carefully consider the "handwriting" in conservation and put our shoulders to the wheel, giving all aid in our power to those organizations engaged in research. Let us organize a research staff in every state; let us equip and properly finance a scientific department in every national organization. When this is done, the proper method of putting back more game in our covers will be pointed out just as surely and plainly as our national automobile roads are marked today. Then the annual crop of game can be more accurately appraised than at present, and this great resource can be administered by rule and not left to chance, as is the case now.

THE STORY OF BOTTLE CAPS

Just a few lines to make you better acquainted with the product known as Capes-Viscose

By H. S. FISHER

HAVE you ever purchased a bottle of some toilet preparation or medicine, perhaps, and, upon starting to open it, found the top tightly encased in a glossy film cap? If so, it may interest you to know that this material is a cellulose very similar in nature to Cellophane or rayon, and commercially known in the past by the trade name "Capes-Viscose."

Recently the Du Pont Cellophane Company acquired the business of Capes-Viscose, Inc., and will continue to make these caps. They are sold in a moist state to manufacturers and have the property of shrinking as they dry, so that they conform to the shape of a bottle stopper and make a smooth, attractive, air-tight seal. To an onlooker it seems hard to believe that a loose-fitting, flabby, wet cap will shrink down quickly and tightly over the cork and neck of a bottle, but the fact is, it does.

The idea of Capes-Viscose was originated many years ago in France to meet the demands of the great perfumery firms which needed a more effective and attractive seal for their volatile and costly products.

The process of manufacturing these caps is interesting. Thick sheets of spruce pulp are fed into a shredder which tears and chops them into finely divided particles. This ground pulp is then dissolved in carbon bisulphide and becomes a thick, brown fluid, called viscose. So far, the process is identical with the manufacture of rayon or Cellophane.

After several days of aging or ripening, the viscose is ready to be made into caps. For this purpose square frames, each carrying hundreds of round-end glass tubes, are used. These platens, so-called, are lowered into a tank of viscose so that a thin film of the liquid immediately adheres to the surface of each glass tube. The whole frame is then raised and again lowered—this time into an acid bath, which coagulates the film on the glass molds. When coagulation is complete, the frames are reversed and the film is stripped off. The film is now

in the form of a hood of cellulose, and, after repeated bleaching and washing, is ready to be cut to the desired length, dyed to the required color and packed for shipment.

When these caps were first manufactured in France, their use was limited almost entirely to perfume bottles. Manufacturers of less volatile and expensive products used corks, and were satisfied so long as the bottle did not leak, or its contents evaporate, before the retailer unpacked it.

Nowadays, the bottler of any product realizes that he must do more than this. He knows that corks are unsightly, and quickly accumulate dust and dirt; that his product must strike the eye of the purchaser and must compete in attractiveness with many other brands.

While the value of this capping remains of paramount importance to makers of toilet preparations of all kinds, the use of these caps has been greatly extended.

The makers of medicines use them, not only to make bottles more attractive and leak-proof, but also to show purchasers that the contents are genuine and have not been adulterated. Many bottlers use them to prevent the possibility of anyone's tampering with the bottle.

Writing inks, liquid shoe polishes, chemicals, serums, oils, sauces and vinegars are only a few of the items that these caps make more valuable and salable.

An associated product of this company is the beverage band, an open-end cap of cellulose used as a decoration on ginger ale and other beverage bottles. This product was developed to take the place of tin-foil used as a neck decoration on this type of beverage container. To produce a band of this kind, a metallic filler is incorporated in the viscose solution, so that when the finished product dries it resembles gold or silver foil.

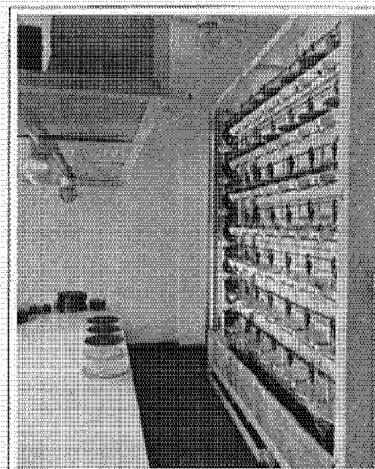
Still another development that seems to have promising possibilities is a flat-top cap of cellulose which is made for jars and tumblers; it is suitable for the use of packers of jellies and preserves.





The drying-time meters at the Central Technical Laboratory, Philadelphia. Note the sand containers

This is the third article in a series describing the testing equipment used in du Pont paint laboratories. The drying-time meter—a cross between an hour-glass and a phonograph—records the time required for a test film to become—



Forty-nine test films rotating at one time. The tune is not "How Dry I Am!", but "How Dry Am I?"

"AS DRY AS A BONE"

THE familiar expression usually means a total absence of moisture, but it applies as well to paint or varnish. We do not like our furniture finished with a varnish that is sticky or not hard enough to resist ordinary usage. We like a product that dries fast enough so that dust will not settle on it and mar its beauty. And so time is the gauge in determining when a finish becomes "dust-free," "tack-free," "hard-dry," or "dry to handle," as the paint and varnish men say. But it is impractical to sit up all night beside a paint or varnish film to determine when it will be dry.

Attempts to substitute mechanical means for measuring drying time were not successful until John E. McSanderson hit upon a simple, effective method. His first set-up consisted of a clock laid on its back with a disk fastened to its rotor. On the disk was laid a freshly coated panel to be tested. Suspended above it was a funnel filled with sand, and as the panel rotated a circular trail of sand was left upon it. After the film was dry the panel was tapped sharply on the back, and the point where the sand stopped sticking was called the "tap point." Going over the film with a stiff brush yielded a second point called the "brush point." It may be well to explain here that these points do not correspond to any of the stages of dryness previously referred to. But they do show accurately on the disk where the sand ceased to adhere to the drying film, thus making possible an exact measurement of the drying time. The tap point indicates

By D. V. GREGORY

absolute freedom from tackiness. Of the few products which reach this stage, Duco is a striking example.

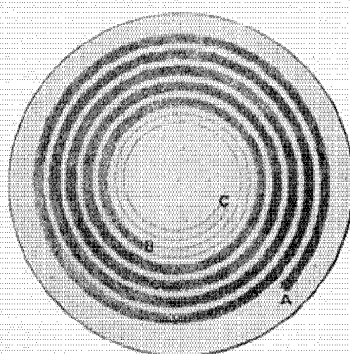
From this simple device came more complicated machines to handle more films at one time. Three films had been the limit for a clock-propelled device. The clock was therefore replaced by a constant-speed motor connected by gear reductions to actuate a number of plates. This improvement was made by du Pont engineers. At the Experimental Station near Wilmington, for example,

thirty-five plates can be tested at once. Similar equipment at the Central Technical Laboratory at Philadelphia has a capacity of forty-nine—seven in each row. By means of change gears any row of plates can be made to rotate once an hour, or once in four, sixteen or twenty-four hours. The meter can be regulated to test fast-drying nitrocellulose products or slow-drying oil paints. The sand cones are suspended from a bar which slowly moves horizontally as the plates revolve, thus leaving the spiral sand trail illustrated. Ten-inch disks of plate glass are used for these tests.

Below are a few representative results obtained with this drying-time meter:

Product	Brush Point Reading
Brush Duco	$\frac{1}{3}$ hour
Flat White	$\frac{3}{4}$ "
Floor & Deck Enamel	4 hours
Motor Truck & Wagon Enamel	8 "

By this means we can control the quality of our products and determine the effect of composition on drying.



A typical test plate. "A" shows the starting point; "B" is the brush point, and "C," the tap point. The broken line in the spiral between "B" and "C" indicates only a trace of sand. Beyond "C" the film is absolutely dry

THE BANKHEAD MINE REVAMPED

Under able supervision a small coal mine in Alabama has become one of the best producers in the state

ON September 15, 1927, a few Alabama mining men, under the name of Cane Creek Coal Mining Company, purchased all the holdings of the Bankhead Coal Company for one and a half million dollars cash. The Bankhead Mine is located about three miles and a half west of Jasper, in Walker County, in the heart of the coal-producing area.

The property consisted of a very small mine with a steel tippie, but had no plant for the preparation of the coal. The purchase also included a big acreage of the Mary Lee seam, which, in this section, is from three to eight and a half feet in thickness, and produces a clean-burning, white-ash coal that has been found to be an especially good quality for steam and domestic purposes.

The mine was at once placed in charge of Mr. Perry R. Jordan, one of the organizers of the new company, who has spent his life in mining coal in Alabama. Under his skillful management the company has built one of the latest plants for the preparation of coal—one that is now considered among the best in the South. Mining conditions too have been improved, with the result that the company today is producing daily about eighteen hundred tons of carefully prepared coal for the market.

One would have to visit this mine and at the same time be familiar with the old conditions to realize the improvements that have been made. All the coal is now under-cut with chain machines and is electrically hauled to the foot of the slope. A large portion of the main haulages has been rock-dusted, using

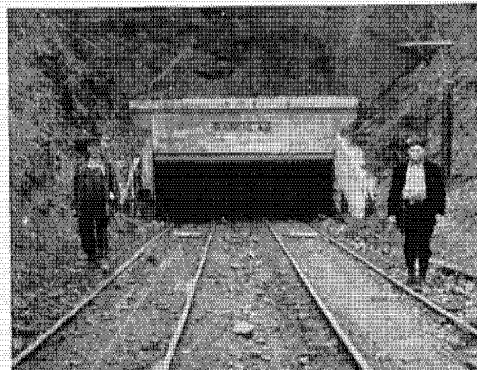
By CHARLES R. DAVIS

the latest improved machine of the Bureau of Mines. It is planned to continue this work in the Bankhead Mine until all the entries are thoroughly dust-protected.

In order to insure a high quality of lump coal, the company has adopted the plan of having its own men do the blasting, and for this purpose they use Monobel No. 12, the latest permissible explosive to be tested by the Bureau of Mines, and the best lump coal-producing powder on the market. Incidentally, this is the first mine in Alabama to use this explosive exclusively. Close supervision is given to the placing of holes and to the amount of explosives used, so that the lump and nut coal will not be shattered more than is necessary.

Mr. Jordan, the general manager, has not only built a modern camp where the health of his miners is supervised by professionally trained people—a camp rated as one of the cleanest in Walker County—but he has also gathered around him some of the best mining men in the territory. He is ably assisted by his superintendent, Mr. Sam. Miller, who has worked in practically all the coal-producing states in the country.

It was no small task that confronted the Cane Creek Coal Mining Company and its general manager when they were called upon to take charge of an old mine with a small output; yet in less than eighteen months' time they have completely revamped it. They deserve much credit for making this mine one of the best coal-producing properties in Alabama.

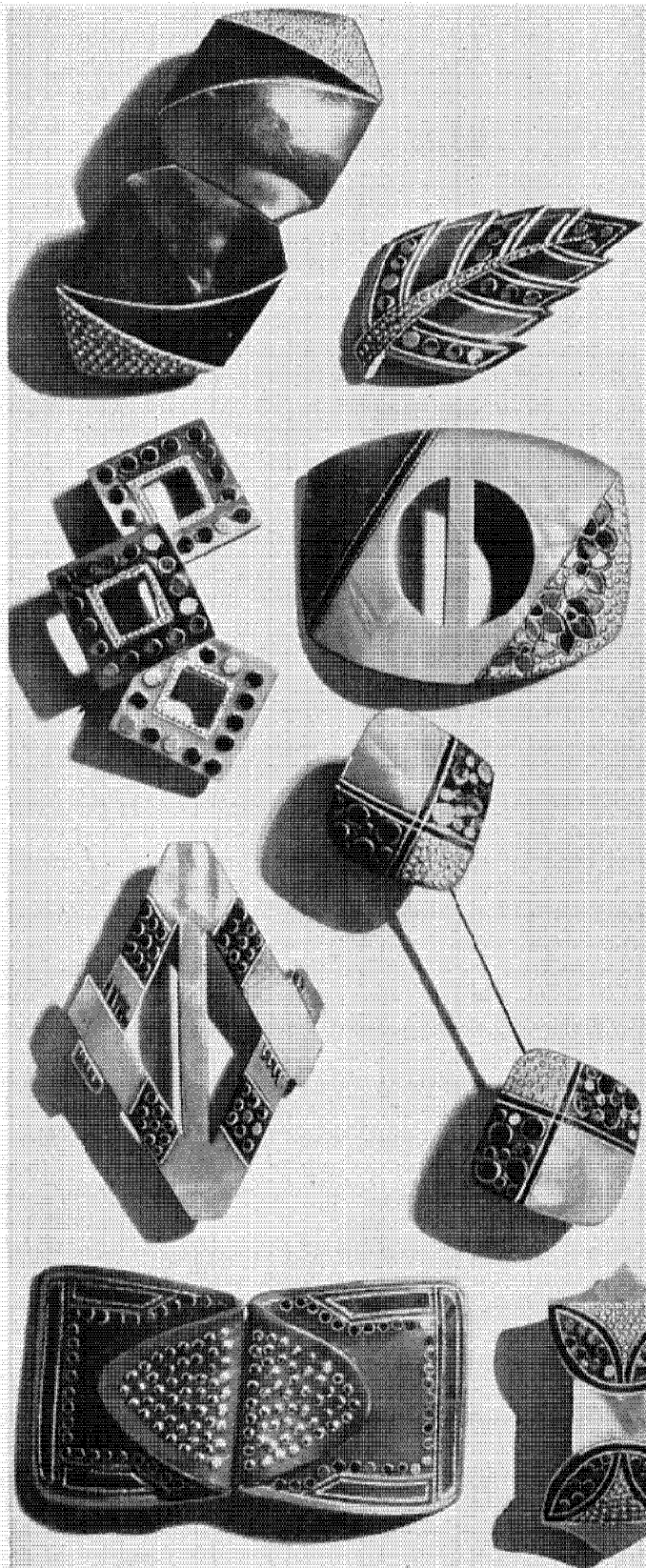


Double-track entrance to the mine, with the general manager, Mr. Jordan, at the right

General view of the washing and screening plants at the mine



A coal washer of the latest design has recently been installed



THAT TOUCH OF COLOR

Du Pont Pyralin offers it to milady in dress and hat ornaments

By PAUL H. COLLINS

NEARLY a quarter of a century ago Joseph Krizan, an expert Bohemian woodcarver, came to America and started a business of his own. As the years went by and his business expanded, he felt the need for a material that was more colorful and more easily worked than shell, bone and wood. Turning his attention to the then new Pyralin, he found that it completely answered his requirements. It offered an infinite variety of colors and color effects; it was readily worked into any shape; it was durable and easily cleaned; it was inexpensive.

Today Mr. Krizan is one of the leading manufacturers of ladies' dress and hat ornaments in the United States and practically his entire output is made of du Pont Pyralin. Much of this interesting development has been made possible because of the beauty and easy-working qualities of the material.

Each year he designs approximately four hundred different ornaments as samples from which his customers can order their season's requirements. He spends his days in superintending the production of his plant and many of his evenings in designing new ornaments for the coming year. Thus, his products show the well-blended union of an ancient art with a highly modern and adaptable medium. Buttons, belt buckles and hat ornaments are produced in a wide variety of forms and shapes—each made with the sure touch of the master designer and each carrying a bright note of color for milady's costume.

The Krizan Manufacturing Company's interesting plant, where du Pont Pyralin is cut and carved, heated and formed, gilded and colored, is located at Fairview, New Jersey.

PYRALIN IN THE OFFICE

It finds numerous uses on our desks, for the little devices we all have must be beautiful and durable

FROM the first telephone call in the morning until the door snaps shut at night, the modern office is the scene of dynamic activity. This uninterrupted flow of business, handled with ease and precision, requires the attention of alert brains assisted by the most modern time-saving devices. Adding machine keys, calculating machine keys, cash register keys, blotter backs and card index tabs are touched and pushed and pulled by thousands of fingers every day—a striking test of durability.

But durability alone is not enough—the modern office requires that it be combined with beauty and attractiveness. Limitations inherent in the materials existing a few years ago led imaginative manufacturers to turn to Science for the development of an entirely new material. The answer to this problem was Pyralin.

Because it is lustrous and beautiful in all its shapes and forms, and because it is available in an infinite variety of colors and tints, Pyralin offers the manufacturer a wider selection of colors and effects than any other material, except textiles. It is readily adaptable to all sorts of mechanical processes. It is economical to fabricate. It is durable. It is suitable for all kinds of articles.

In the office Pyralin is in demand because it is beautiful, ornamental, durable, easily cleaned and transparent. Progressive manufacturers of office supplies have been quick to capitalize on these qualities, producing book marks, cigarette cases, comptometer keys, desk calendars, dictaphone mouthpieces, eye shields, fountain pens and fountain pen sets, letter openers, pencil sharpener housings, refillable pencils, switch-plates and telephone number covers—all made of Pyralin.

This rapid development in the use of Pyralin is a tribute to the successful research conducted by du Pont chemists and engineers. In many other fields they have helped to lift products out of the ordinary—to give them new life, greater attractiveness and increased salability. Their service is always at the disposal of any manufacturer who may contemplate the use of Pyralin in his product.



WHAT DO COLORS SUGGEST?

They have a language all their own. Duco colors, carefully chosen, may eloquently express artistic ideas in home decoration

EACH of us has a preference for some particular color, but not all of us know why. Yet a slight knowledge of the meaning of color will help us analyze our likes and dislikes.

Red is the most powerful primary color and symbolizes vitality, energy and power. It stands for danger, love, passion, anger—for tremendous emotional reactions. It is highly stimulating, alluring and flirtatious. Someone has said that Adam could have resisted Eve's wiles if the apple had not been red.

Yellow symbolizes light, life, brilliancy and cheerfulness. It is the color of gold, of the grain rice, and was reserved by the Japanese for use of the emperor only. Psychologists recommend rooms toned in yellow for workshops and living quarters for people afflicted with certain mental disorders. Though intense in its power and promoting a sense of exultation and gaiety, yellow is not so fatiguing as red.

Blue is associated with the sea and sky. It signifies space, illusion, immensity, coolness, tranquillity. Psychologically, its influence is quieting and restful. Perhaps there are more devotees of blue than of any other one color, probably because of its illusiveness and mystery, in so far as women are concerned.

Green, the product of blue and yellow, carries something of the qualities of both its components. It has the light and life of yellow or, if the yellow element does not predominate, it takes the quiet and calm of blue. Green soothes and yet exhilarates, and is symbolical of sympathy and hope. The ancients, we are told, wore emerald rings to insure vitality and undying hope.

Purple, a combination of red and blue, is a color of richness, elegance and sumptuousness. It has always been associated with royalty and dignity, probably because in the olden days the necessary ingredients for producing it were difficult to get, and only the wealthy classes were able to afford it. Purple has much of the warmth of red, with the calm and restfulness of blue.

Black, properly speaking, is an absence of color. Mystery, peril, the unknown were, and to some extent still are, associated with it. Anything of a sinister or questionable nature is prefixed with black, such

as blackguard and blackmail. However, the Chinese have fostered happier

thoughts of black, and have used it most effectively as an accenting note in their wearing apparel and art. Black, placed beside a color, lessens its value, and when used with advancing colors, such as yellow and red, adds a note of refinement and emphasis.

White denotes purity and suggests light, peace, innocence. Down through the history of the church we find that it has always been linked with things held as sacred. Where black lowers the value of a color, white accentuates, brightens and intensifies it, and lends emphasis to receding shades such as blue and blue-violet.

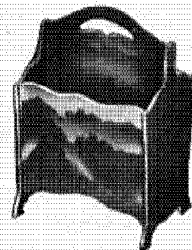
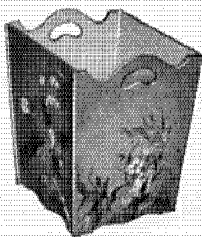
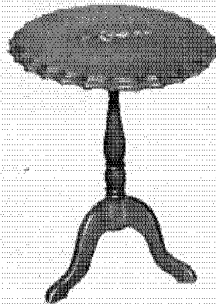
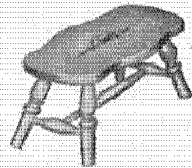
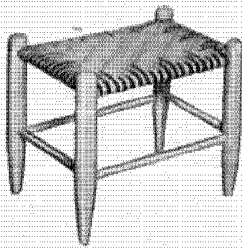
If we give a little thought to the meaning of color, our decorating problems will become more interesting and easier. It gives us a reason for our desire to have a "yellow room;" a reason for that feeling we have against an all-red room, and yet an eagerness to "spot" the brown and tan room with a Mandarin Red Duco tilt-top table, with antique effect in burnt umber and raw sienna, and finished with a charming little decalcomania of yellow and green.

Knowing that black placed beside red will lessen its value, we use Rich Red Duco on a rush bottom stool and take the frankly "red" look out of it by striping the alternate pieces of rush in Black Duco.

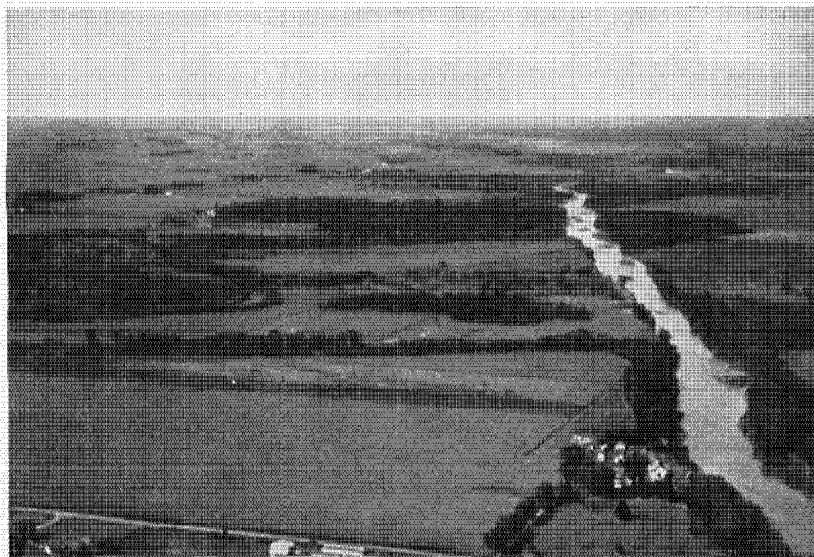
And we realize that an old-fashioned stool done in Chinese Yellow Duco, with an antique finish and an interesting decalcomania in red, blue and green, will add a note of cheeriness that was lacking in the dark corner of our bedroom, near the wing chair.

Again, with our knowledge of the light and life of the yellow-green, and the quiet and calm of the blue-green, we are quite sound in our decision to put Jade Green Duco on the waste-paper basket with the hand-painted floral design, right down in the heart of our brown, red and tan room. By doing this we can bring a measure of restfulness to the room that otherwise might prove to be too stimulating.

If we are wise, therefore, we shall do well to make note of the characteristic properties of individual colors before we proceed to the selection of color combinations for the things we can make beautiful by home decoration work.



AN EIGHT-MILE RIVER CUT-OFF



MUCH valuable farm land was reclaimed near Waterloo, Nebraska, some years ago when a two-mile cut was made in the Elkhorn River which shortened it about eight miles. Follow the irregular lines of timber-covered banks in the illustration above, and you will trace the former winding course of the waterway. Originally the river ran even beyond the left margin of the picture, which is a reproduction of an aerial photograph made by Otto Wilson of Waterloo.

All the land seen from the bend of the river in the background to the immediate foreground was subject to overflows and was practically useless for growing crops, until a floating dredge made the new cut. Du Pont

explosives blasted many trees in the path of the dredge and loosened the hardpan under the surface soil.

This cut-off is mentioned merely to give an example of the possibilities of explosives for reclamation work. Their effectiveness is not limited to any one section of the country or to any particular season of the year. They may well be considered the all-round helper to those interested in agricultural development.

If you have some special land-clearing or reclaiming problem, write to the Agricultural Extension Section of the Explosives Department of the du Pont Company at Wilmington, Delaware, for helpful suggestions about the practical use of explosives.

MINING GOLD IN THE RAND DISTRICT OF AFRICA

(Continued from page 3)

managers have been able to lower the temperature nearly seven degrees for a distance of about fifteen feet from the working face. This has helped conditions some, but it is expensive and probably prohibitive on a larger scale. It also has the disadvantage of adding more moisture to the air. It has been suggested that small plants, similar to a Frigidaire system, be installed in relief chambers where the miners could go at intervals to recuperate, and it is not improbable that a machine that is compact and not too expensive will be built that will be able to extract the humidity found in the hot air in such working places, and in turn supply enough cool, dry air to

enable the operators to control in some degree the temperature in these places.

More and more study is being given to ventilation in this district, as there is no present reason to doubt the persistence of the reef or its payability at far greater depths than it is now being worked.

The economic life of this great gold mining district probably depends more upon ventilation than upon any other factor. It is not unreasonable to think that mining operations in the Rand district may some day be carried on at the ten-thousand foot level, or nearly two miles below the surface of the earth.

THE PRODUCTION OF TALC

(Continued from page 1)

illustrated on page 5 indicates these operations graphically.

Generally speaking, talc is sold in three forms: Crude talc, most of which is eventually ground; the sawed and manufactured product from which such articles as tips for gas burners, tailors' chalk, metal workers' crayons are prepared, and ground talc which is used as a filler in paper, paint and rubber goods; in manufacturing toilet preparations, for electric insulation, foundry facings, textiles, lubricators and the like. It is also used as a bleaching, cleaning and polishing agent; for acid-proofing and fire-proofing and in many other ways.

The relative importance of ground talc will be apparent from the fact that the mineral in this form constituted about 96 per cent of the total domestic output for 1926.

In the early years of the New York State industry, practically the entire output of fibrous magnesium silicate was consumed by manufacturers of paper. Later its value was recognized by paint and rubber manufacturers and these two markets have been rapidly developed during the past thirty years. Today, industries represented by such products as paint, paper, rubber, ceramics, leather and the like, consume almost all of the talc produced by the two leading companies in the Gouverneur district.

More recent developments indicate a broader field of usefulness for this talc. Laboratory and field results have proved that the short-fiber ore, when milled to a certain degree of fineness, can be used as an admixture in concretes

to make them waterproof, to improve their workability and to increase their resistance to acids.

After three years of research, the W. H. Loomis Talc Corporation has brought out a product of this kind and is marketing it under the trade name "Loomite."

To demonstrate the feasibility of using talc as a building material, the corporation recently constructed an office building in which talc products predominate. All foundation walls were waterproofed with Loomite. The material used for plastering and for the outside stucco work was a mixture of talc and white cement. The chimney was built of crude talc rock, the fireplace of talc brick; and the floors, cornices, window sills and columns were all made from talc ore. Just how extensively this mineral may be used for building purposes no one can say as yet, but some interesting conclusions may result from this experiment.

The Loomis Corporation maintains a laboratory in which research men are constantly finding new uses for talc. Their activities are said to be largely responsible for the progress being made by the industry. Incidentally, the laboratory staff is ready at all times to coöperate with manufacturers who may use this mineral in their products.

Gouverneur talc today is the fruition of much research and development work applied to product, processes and machinery, and the W. H. Loomis Talc Corporation deserves much credit for its part in upbuilding the industry that supplies so many manufacturers with this material.

THIS SMALL, VITAL INDUSTRY

(Continued from page 11)

There is still another angle from which to consider the essential character of the dyestuff industry, and that is its contributions to the field of medicine. The well-known coal-tar chemical, picric acid, is an example of how closely dye production is related to medicine, and not that alone, but to national security. Picric acid, without modification, can be used as a simple silk dye, as a medicinal (healing burns), and as a powerful high explosive. Synthetic coal-tar medicinals developed in the chemical laboratories of the country are almost legion in number and of great importance to the health of the country.

Probably the most important reason for the continuance and growth of our dye industry is its essential character as an arm of our national defense system. Arsenal, camps, the Army and Navy require huge peace-time expenditures for their necessary maintenance, but the source of all their war-time high explosives and toxic gases is self-supporting in times of peace, producing essential colors and chemicals for innumerable uses. The war and Germany taught us this great economic lesson.

Congress has happily realized the importance of the industry and has taken special steps to insure its continued

existence and development by extending to it the American valuation method of tariff protection. The wisdom of their action is obvious, when one learns that with such protection the industry has constantly improved the quality and quantity of its output at a gradually lowering cost to the consuming industries. It might be of interest to state that the average selling price per pound of dyes for the year 1927 was 39 cents, a price roughly equal to that of a half-pound of good coffee. Yet this pound of color will dye anywhere from 50 to 300 pounds of cloth, depending on the depth of shade desired, equal in turn to 2,000 yards or more of cloth varying with the weight. Thirty-nine cents is a small enough price for such a service.

The American dyestuff industry is just about ten years old. Over this time it has developed to the point where it now supplies upwards of ninety per cent of the country's dyestuff requirements. Such progress augurs well for the future, particularly as those in the industry who are in close touch with research activities feel that even greater developments lie ahead. They realize that the industry is a small one, but they know it has an important present and an even greater future.



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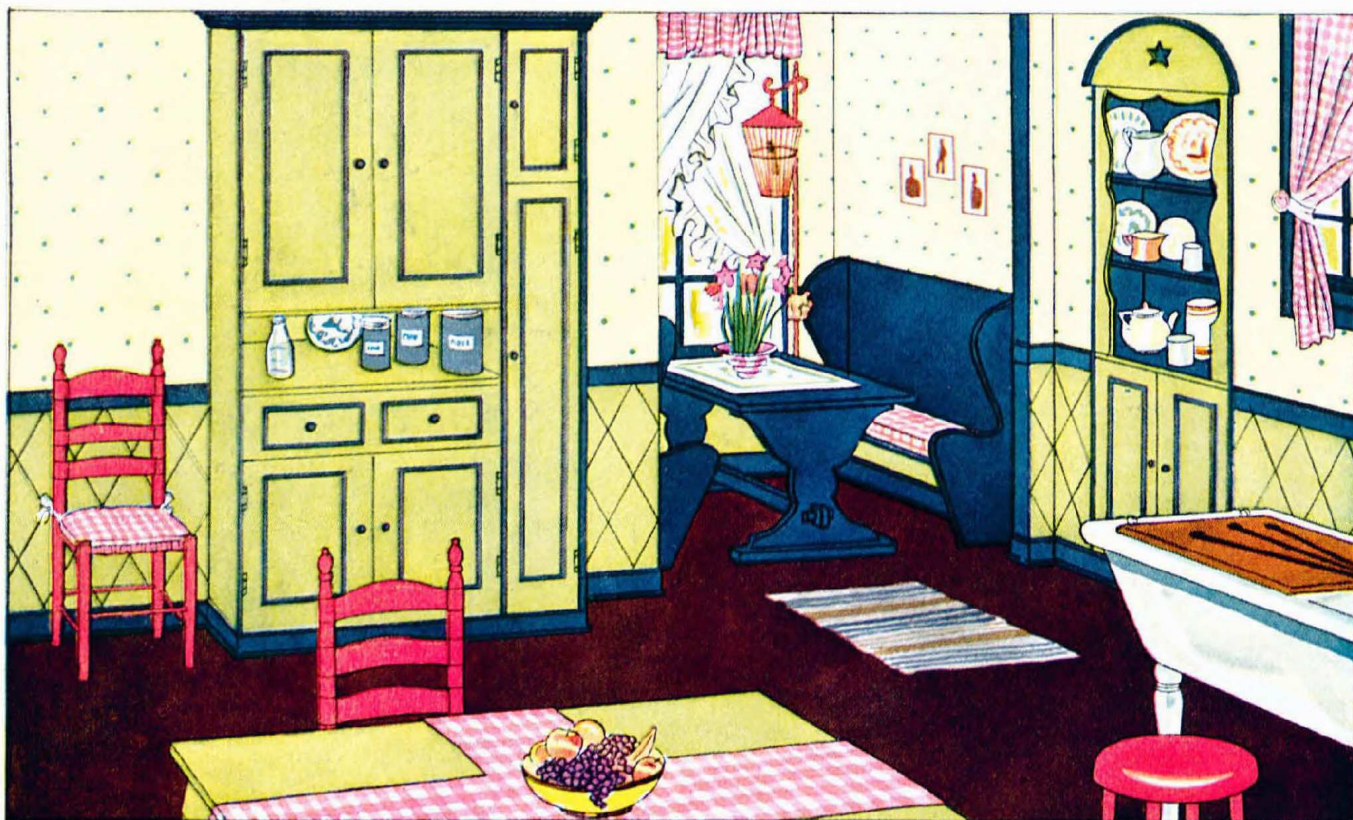
Pacific Novelty Division
Toys, rattles, infant sets, hair ornaments.
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When you are in Atlantic City, New Jersey, visit the du Pont Products Exhibit, at 1121 Boardwalk



AGNES FOSTER WRIGHT

*tells you how to achieve
a colorful modern kitchen
with Duco*



MRS. AGNES FOSTER WRIGHT, a decorator widely known for the color charm of her interiors, tells you in her own words how she created this delightful kitchen:

"There is no room in the house which has a more direct effect upon a woman's happiness and good spirits than the kitchen. And certainly no room which offers more interesting possibilities to the woman who knows what can be done with Duco and a little ingenuity to create charming interiors. . .

"For this kitchen I chose three of the many lovely Duco colors available and used them with, I think, a quite unusual and interesting result. For the kitchen cabinet, the wainscoting, and the corner cupboard I chose Nile Green and Navy Blue, using the Blue for the trimming and the shelves of the corner cupboard. The table I painted solid Nile Green. In the sunny breakfast nook I painted the benches and the table with the same Navy Blue.

"Then I was ready for my touches of contrasting color. The wall cover-

ing was a cheerful greenish yellow with tiny green dots, harmonizing beautifully with my green and blue. So I painted the chairs and stool with Duco Mandarin Red, and repeated this gay note in the checked gingham that made the window curtains and tie-on pads for the chairs. I used Duco Mandarin Red for the bird cage, the flower vase, and the handle of the broom."

* * *

The subject of home decoration is of such vital importance to every woman that the makers of Duco have prepared a book containing the expert advice of Mrs. Wright and other authorities. "Modern Color Schemes for the Home" offers you illustrated color schemes for every room in the house, with practical instructions for carrying them out. You will also find schemes suggested by leading architects for painting the outside of your home.

Send ten cents in stamps to the Du Pont Magazine, Wilmington, Delaware, and "Modern Color Schemes for the Home" will be mailed you at once. You will find it a source of interest and practical help.

**DRIES QUICKLY
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