

The DuPont Magazine

Vol. 14 April 1921 No. 4

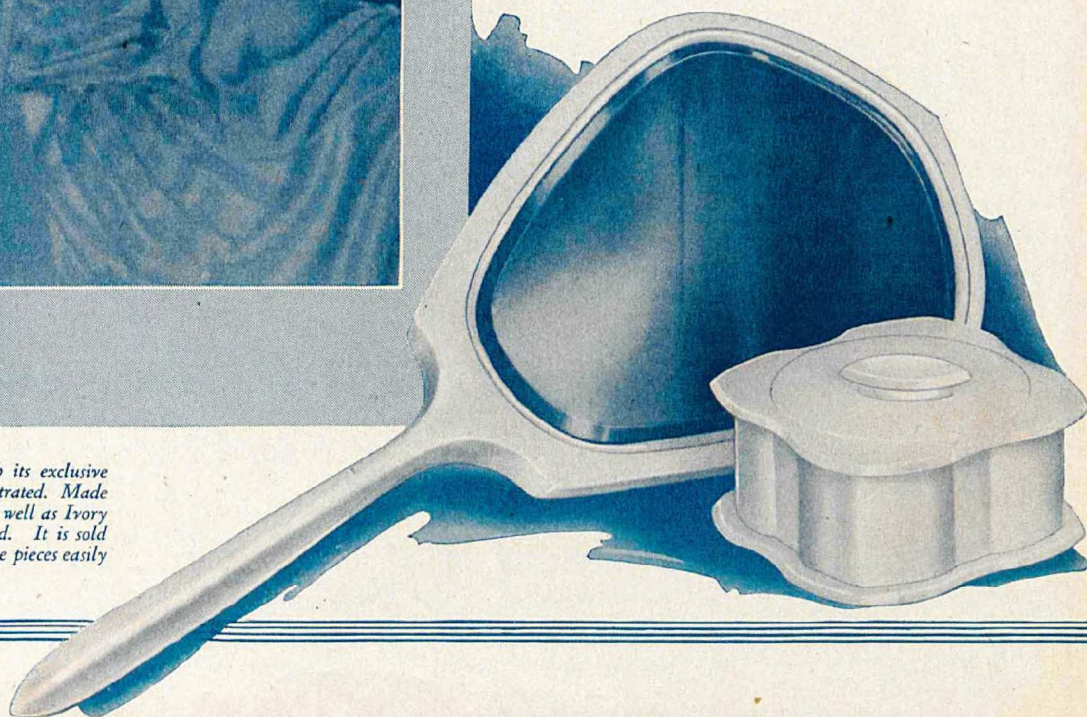


Ivory Pyralin

A WOMAN'S toilet articles are her intimate companions. They must stand the test of daily use, year after year. They must have that simple beauty which never wearies. Their usefulness must be never-failing. Perhaps these are the reasons why Ivory Pyralin is a favorite with so many thousands of women.

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

Sales Department: Pyralin Division
WILMINGTON, DEL.



THE beautiful La Belle Pattern with its exclusive feature, the transverse handle, is illustrated. Made in Shell Pyralin and Amber Pyralin as well as Ivory Pyralin—decorated in colors, if preferred. It is sold the country over, in complete sets or single pieces easily matched at any time.

THE DU PONT MAGAZINE



Vol. XIV APRIL, 1921 No. 4

WORLD DISARMAMENT

WITH one voice, unified at last in a single universal aspiration, the world cries out for disarmament, for relief from its greatest and most perilous burden. How can it be brought about? The problem is difficult and complex, but one at least of its conditions is clear. So long as nations are nations, independent and sovereign, disarmament is and must be limited by the necessities of national defense. No nation will consent to any course of action, however uniform and universal, which decreases its safety, its relative power of resistance.

As regards armies, navies and the older and more highly developed mechanisms of warfare, the problem is relatively simple. Numbers of trained men, ships, airplanes, tanks, guns, machine-guns and shells can be reduced proportionally by mutual agreement, and the facilities for production of them all can be diminished in like manner. The men cannot be trained, nor can the elaborate structures and implements be manufactured, except by specialized means, which cannot be improvised. The creation of such means can either be checked by international action or, failing that, duplicated by any nation in time to insure its safety.

These instrumentalities, however, which used to constitute the whole of military force, are now but part of any nation's fighting power. Chemical warfare, developing by leaps and bounds throughout the great war, has assumed commanding importance. In the last of the fighting half of the shells used were designed to distribute poison gases, while floods of noxious vapors were launched by means altogether independent of artillery. Chemical defense against these substances had become a first essential. By the same token, scientific advances, in the way of discovery of new poisons, or new methods of applying old poisons, held out constant possibilities of instant and overwhelming victory. Already projectors—not guns—had been developed which could be made in quantity in any tube-works, and which could put down oceans of gases at a range of a mile. The science was and is in its infancy, but already the chemists, to some extent without the aid of any existing weapon, and to an overpowering extent in conjunction with the older equipment, can provide an attack of hitherto unparalleled efficiency, while

In a disarmed world the dye-making countries will reign supreme

they alone can offer any adequate means of resistance. This enormous power differs from all previous military resources, in that most of it is not dependent on special plant and organization, built for war and nothing else, but can be produced and kept in constant readiness in peace, by the

normal operation of a peace-industry. The organic chemical industry, particularly that part of it engaged in dye-making, supplies everything that is needed. To make the thousands of different dyes and intermediates needed in our other industries, requires the quantity production of all possible substances needed for the production of poison gases and their antidotes, including many of the gases themselves. The enormous research required for the solution of the infinite problems of manufacture and application, for the disposition of by-products, and for discovery of new materials, insures the maintenance of a force of research chemists many times greater than that required by any other industry. Dye-chemists and dye-chemical employes have, and they alone have, all the necessary knowledge and technique. They, their apparatus and their materials, are instantly ready for conversion to the manufacture of poison gases or of explosives. In a word, a nation equipped with such an industry is, automatically, all but prepared for chemical warfare on a colossal scale.

Accordingly, no nation can disarm to any serious extent, unless it has such an industry. The equipment and the knowledge necessary cannot be improvised, nor even provided beforehand specially for war purposes, and kept, during peace, unused. Inactive plants deteriorate, the indispensable trained employes cannot be kept available and the advance of science is so rapid that no anticipation of the nation's needs can succeed. A scientist, at work with only the simplest apparatus hidden away anywhere, at any time, may make discoveries which render all previous preparation worthless. Only the incessant intensive research constantly necessary in the dye industry can hope to keep up with the progress of the science. Equipped, as a complete dye industry equips a nation, with facilities for immediate huge production of the needed substances, and with the men who have the necessary knowledge, no nation need fear to limit its guns, ships, planes and tanks proportionately with other nations. To a nation

not so equipped, such a limitation would be suicide. Against, for example, such military force as we maintained before the war, an otherwise unarmed nation, which had a powerful organic chemical industry, could easily develop an irresistible attack. In a disarmed world the dye-making countries will reign supreme.

Before the war there was but one such country. Germany supplied the world with dyes. In the war her dye-works, without material changes, supplied many of her explosives, all her gases, and all the technique of her gas defense. While the allies were spending years and tens of millions in building plants and making experiments she was producing as rapidly as she thought necessary. Had she realized her advantage and used gas, at the outset, on the later scale, the allies could never have resisted. A colossal power, fortunately but half-understood, was in her hands, and in hers alone.

Today the United States and to some extent Great Britain are in a similar fortunate position. To be sure of maintaining it, the British have embargoed German dyes for ten years. As long as we maintain our industry, and for not one moment longer, we can safely plan and attempt disarmament. If we lose our new dye-industry, we must either remain armed to the teeth or accept the certainty that we cannot resist an attack by any dye-making country.

Indeed, the real crux of the problem is the German dye-industry. While it exists it can instantly furnish to the Germans, to the Bolsheviks, or to any other destroyers of the world's peace, the necessary resources for a formidable campaign. If every German munition-works were totally destroyed, this would still be true. Till controlled and curbed

by the allies, under the clauses of the treaty designed to that end, the German industry can partially, at least, arm half the world. That industry in itself constitutes a formidable armament; and if its peace value is deemed too great to permit its destruction, its war efficiency must be counter-balanced by the establishment of similar industries in other countries, or else disarmament cannot proceed.

Today the United States, and perhaps the United States alone, has an organic chemical industry capable of offering the same military advantages as the German. In addition, while it survives, that industry guarantees the progress of chemical medicine, the advance of applied chemistry in every industrial field and the independence of the huge industries whose essentials it supplies. For all these reasons, it invites the certain and deadly attack of the gigantic German dye-trust, which must monopolize our market or cease to be Germany's most lucrative industry. This attack, driven home with true German ruthless unscrupulousness, has already begun, and will annihilate any tariff-defense, as the trust's gases and high explosives annihilated their victims in the war, and nothing short of direct measures of exclusion can furnish the necessary shield. If Congress will furnish that defense we have the prime essential, without which neither we nor the rest of the world can safely disarm. If the defense be denied we shall leave ourselves helpless against the warfare of the future, and by the same denial strengthen the indestructible armament which, in the shape of Germany's dye-industry, will make the Germans an incessant and continuing peril to the world.

—Reprinted from "World Disarmament and the Master Key Industry" by permission of the American Dyes Institute.

MOTHER MAY DRIVE

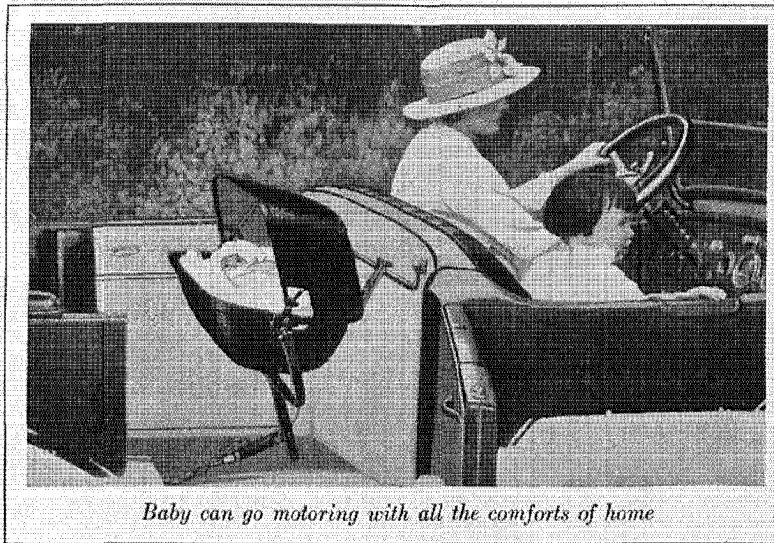
THROUGHOUT the ages babies have traveled in many curious ways. One confronts this fact in every library and art gallery where babes in arms are portrayed riding with their mothers on donkeys, camels, elephants, horses and other animals. The pathetic figure of the Indian papoose, wrapped in a blanket and suspended from its mother's shoulders, excites comment from young Americans and arouses the sympathies of grown-ups. Poor, helpless infants, what tortures they have suffered in traveling, even though fond parents have provided the best conveyances of their time!

Baby coaches are considered among the best devices of our day, built as they are to insure riding comfort without the jars and jolts that have made infant travel so uncomfortable in the past. But until the day comes when baby coaches are transformed into airplanes and nurses qualify as pilots; until mothers are willing to let their babies enjoy an outing in the clouds instead of along the park pathways, baby coaches, with rubber-tired wheels and shock-absorbing springs, will serve

well enough—at least for parents who do not own automobiles.

Those who are fortunate enough to have a baby in the home and a touring car in the garage will be interested in a motor crib, made in Chicago. It fills a real need and enables every member of the family, baby included, to enjoy the delights of motoring.

As the illustration shows, the crib fastens securely to the roborail, while a coil spring attached to the foot rest counteracts the jolting of the machine. When not in use, the crib folds up against the back of the seat. Opened or closed, it occupies very little space, weighs only ten pounds and can be installed in any make of touring car, sedan or limousine without difficulty. The framework is constructed



Baby can go motoring with all the comforts of home

of black enameled steel, light, but much stronger than necessary. The basket and hood are made of light-weight durable cloth, trimmed with Du Pont Fabrikoid. By selecting this material, so extensively used to upholster automobiles, the manufacturers have produced a crib that harmonizes with the rest of the interior, and is an attractive, useful accessory.

CLIMBING FOR OIL

A GREAT deal has been heard lately of drilling wells for oil. Such terms as shallow drilling, deep drilling, drilling proven fields, and even "wild catting," are familiar; but out in the Rocky Mountains, with true Western initiative, prospectors are beginning to climb into the skies for oil. Rising high into the air among the canyons of Colorado, Utah, Wyoming and Nevada are great cliffs of oil shale, and the seekers after oil are now planning to scale and quarry them.

The term "oil shale" is misleading, as this shale does not contain oil in its common form. The shale does not even feel greasy, nor are there any signs of oil in the crevices of the rocks. As a matter of fact, the shale contains merely a hydrocarbon ingredient, called kerogen, which, when subjected to a heat of from 150 to 1000 or 1500 degrees F., gives off gases that can be condensed into crude oil very similar to that usually obtained by drilling wells.

These shale deposits, often two or three hundred feet thick and covering in all several hundred square miles, belong to what is known geologically as the Green River formation. Geologists tell us that the oil shale was formed in the bottom of what was originally an immense lake, or some other body of still water. The remains of luxuriant tropical vegetation and of prolific animal life, especially of those animals which inhabit the water, were deposited in the bottom of this immense lake or bay of still water together with the material which forms clay. The weight of later deposits of sand, limestone and other clays pressed these deposits into a solid mass in layers from the thickness of a piece of paper up to several feet, producing the laminations characteristic of shale. Subsequently erosions cut canyons through this formation into the rock below, leaving the towering oil shale cliffs that rise a thousand or two thousand feet above the bed of the valleys.

The inflammable character of this shale was discovered by a prospector who built an immense rock fire-place from the material. On lighting a few sticks of wood, he found that the shale caught fire and was entirely consumed, melting down into a heap of smouldering, sticky substance.

*In the West they go up instead
of down to get oil*

By A. E. ANDERSON

Technical Representative, Denver, Colorado

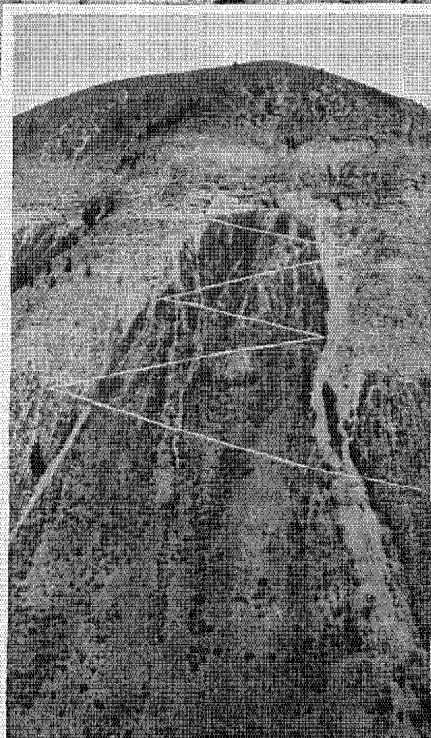
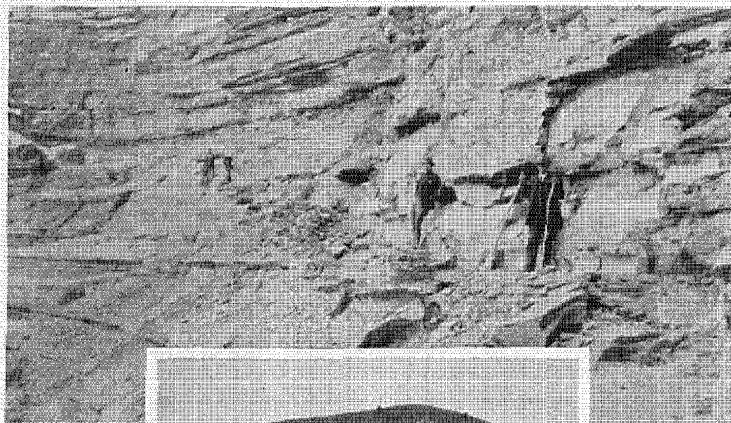
Very little attention was paid to the composition of this rock, however, until people began to worry about the growing consumption of oil for automobiles and for other purposes, which threatened to exceed the supply from oil wells.

Within the last few years claims have been filed under the Mineral Act upon a great deal of this shale-bearing land for the purpose of converting the shale into oil. The claimants have been obliged, according to the Federal land laws, to do considerable "assessment work," that is, to spend at least one hundred dollars a year upon each mineral claim to hold title to it. When five hundred dollars' worth of such work has been done, they have been able to apply for a patent title from the United

States Government and buy the land at a low price. During 1920, the Federal authorities, realizing the value of the land, withdrew it from entry under the Mineral Act and placed it under the Oil Land Leasing Bill. This prevents further filing of claims upon this land; now, anyone who wishes to mine this shale in areas that have not already been filed upon, will have to pay the Government a royalty upon the oil which is extracted from the rock. One of the methods

of doing the required assessment work on these cliffs of oil shale is to build pack trails up the side of the mountains and around these cliffs to the top. This constitutes a definite improvement and aids more than anything else in the examination and development of these immense deposits of shale.

The common impression is that shale is a fairly soft material that can be excavated very readily. This however, is not always true; in the case of the oil shale, the opposite is the fact. Miners working with a single hand hammer can drill probably eight or nine feet a day, if they are energetic workers. The great mass of the cliffs is a very tough, solid, impervious rock, and in order to make a trail through it, it is necessary to drill holes every few feet and blast the rock with a suitable high explosive. Du Pont explosives have been used on many of the roads already built. These hillsides are so steep that the rock which is blasted out from the top of the cliffs rolls thousands of feet to the bottom of the



Upper—Blasting a road through oil shale
Lower—The trail seen from another cliff

valleys, cutting through the brush like a scythe and snapping off the trees in its path.

Building one trail up the side of one of these mountains is a summer's work for several men; yet from the opposite side of the canyon this trail looks like a mere scratch on the side of the cliff as shown in one of the accompanying illustrations.

From the top of one of these cliffs, other cliffs can be seen extending on all sides as far as the eye can reach. There seems to be no limit to these shale deposits, and computation of the amount of oil contained in them staggers the imagination. The yield which can be produced varies from twenty gallons to as much as one hundred gallons a ton. Here, certainly, seems to be an unlimited supply of gasoline for all the automobiles that can be manufactured in the future.

Before these supplies can be realized, however, it will be necessary to quarry the rock from the top of the mountains and slide it down into the valley below where the oil can be retorted from the shale and refined. Several large corporations are now working out economical methods of operation for their oil shale properties; but the best means of getting down the shale, distilling and refining the oil have not yet been definitely determined. Underground mining such as is used in getting out coal, or "caving" and "glory hole" mining may prove the best system, but it seems probable that methods of stripping, similar to those used in the large open-pit copper and iron mining operations, will be the most successful. Large well drills that bore holes six inches in diameter and fifty to a hundred feet deep may be used for drilling holes into which large charges of explosives can be placed. After sufficient blasting has been done to give space on the cliffs, immense steam shovels must in some manner be hoisted to the top of the mountain and set up in place to

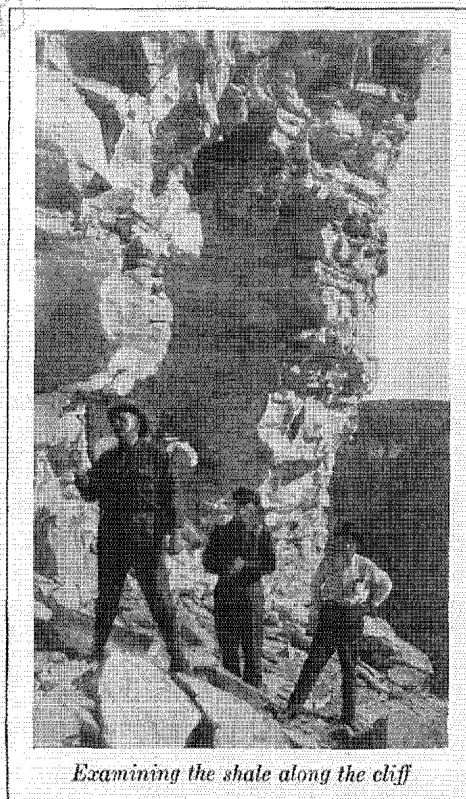
remove this rock to tramways, chutes, or to some other contrivance for sliding the shale down the mountain under human control. Processes must also be perfected for securing the oil from the shale on a large scale, and, later, special refineries must be designed to produce this type of oil.

The crude oil extracted from the oil shale contains about 20 per cent gasoline or motor spirit and 40 per cent kerosene, the remainder being composed of lubricating oil, paraffin waxes, tar and other by-products. The kerosene, and even some of the heavier distillates, can be cracked to produce a total of 40 per cent gasoline, or more. These oil shales also contain many by-products, such as carbon, paraffin, dye bases, ammonium sulphate and other materials which will be useful in the manufacture of various products.

Reliable authorities* state that the gasoline produced from shale oil will vaporize at a lower temperature than paraffin gasoline of the same gravity. This property makes it valuable, especially in cold weather. It is also stated that this gasoline yields more energy and in a steadier and more sustained thrust than the ordinary paraffin gasoline. Its use will therefore tend to reduce the jerk in gasoline engines. The lubricating oils derived from shale are said to hold their body better under the high frictional heat of gas engines than do the paraffin lubricating oils. These superior properties make the shale gasoline and lubricating oils of especial value for use in gas engines of all kinds, and as a result, early development of the deposits on a large scale is to be looked for. Whatever methods of mining are adopted, explosives will necessarily

play an important part in the development of the shale deposits, and Du Pont brands will help in the work.

*Prof. P. D. George, State Geologist, and Professor of Geology, University of Colorado, is one of the authorities.



Examining the shale along the cliff

HOW LONG WILL SHELLS KEEP?

SHOOTERS often write: "How long can I keep shells loaded with Du Pont Powder before the powder will spoil?" "Will shells give satisfactory results after several years' storage?" The assurance is given that the powder will not deteriorate so long as the shells are properly stored. But the company has never claimed for its powder the qualities described by H. S. Kauffman, secretary and treasurer of the Kauffman Manufacturing Company, of Ashland, Ohio, who tells of his experience in the following letter:

"Twelve years ago I bought a case of * * * shells loaded with Du Pont Powder (smokeless), and after using over half of the case I was unfortunate enough to miss hunting for several years. In the meantime these shells had been pushed back in a corner of my garage and had been covered up by old inner tubes and casings, and forgotten.

"One year ago last August we had a flood here, and, as I am located close to the 'town creek,' my garage was flooded, having nearly three feet of water in it for over twenty-four

hours. These shells were under water all that time, and were not discovered until we were cleaning the mess out of the garage. When I ran across the box I put it aside, never dreaming that the shells could ever be used, but did not take the time to destroy them.

"Yesterday our rabbit season opened, and in getting my machine out of the garage I noticed these shells and, out of curiosity, put three of them in my pocket, thinking I would try them out. I killed a rabbit with each of the three shells, they firing just as perfectly as if they had been loaded that day. When the gun cracked on the first shell I thought I had made a mistake and had put a new shell in the gun, but found it was the old one.

"This seemed such a remarkable performance that I thought I must let you know of it, as it certainly seems wonderful to me. After the above experience, I have such faith in the remaining shells that I am going to use them altogether in my next hunt. This experience surely makes a confirmed Du Pont man of me."

BEAUTIFYING THEATRES

IT was only yesterday, comparatively speaking, that a converted store, with a few crude attempts at decoration, served well enough as a motion-picture theatre. Now the most skillful architects are employed, the finest localities are selected and the best materials are utilized in the erection of magnificent palaces for the presentation of the "silent drama." Wild West thrillers have given way to film masterpieces, the "tinny" piano has been replaced by the symphony orchestra and instead of ex-stores, theatres are built at a cost of millions of dollars.

While motion pictures are universal in their appeal, the progress made in America far exceeds their development in any other country. There are few towns in the United States so small that they cannot boast of at least one "movie" house; in fact, the population of larger places can often be estimated with fair accuracy by the number of motion-picture theatres located there. The gorgeous palaces of New York, Chicago, Philadelphia and smaller cities are monuments to the progress made by the industry in this country.

The new Capitol Theatre in St. Paul, Minnesota, will serve as an illustration of the expansion of the film business and the popularity of the recreation. It is one of the largest picture houses of its kind, and in architectural details will not suffer by comparison with any in the country. The beauty of the theatre and its appointments certainly justifies the title—"the perfect playhouse"—given to it by appreciative audiences.

The amusement house cost \$1,500,000. Mere figures, however, cannot give one any adequate idea of its splendors.

Quality paints are essential to the fine appearance of modern playhouses

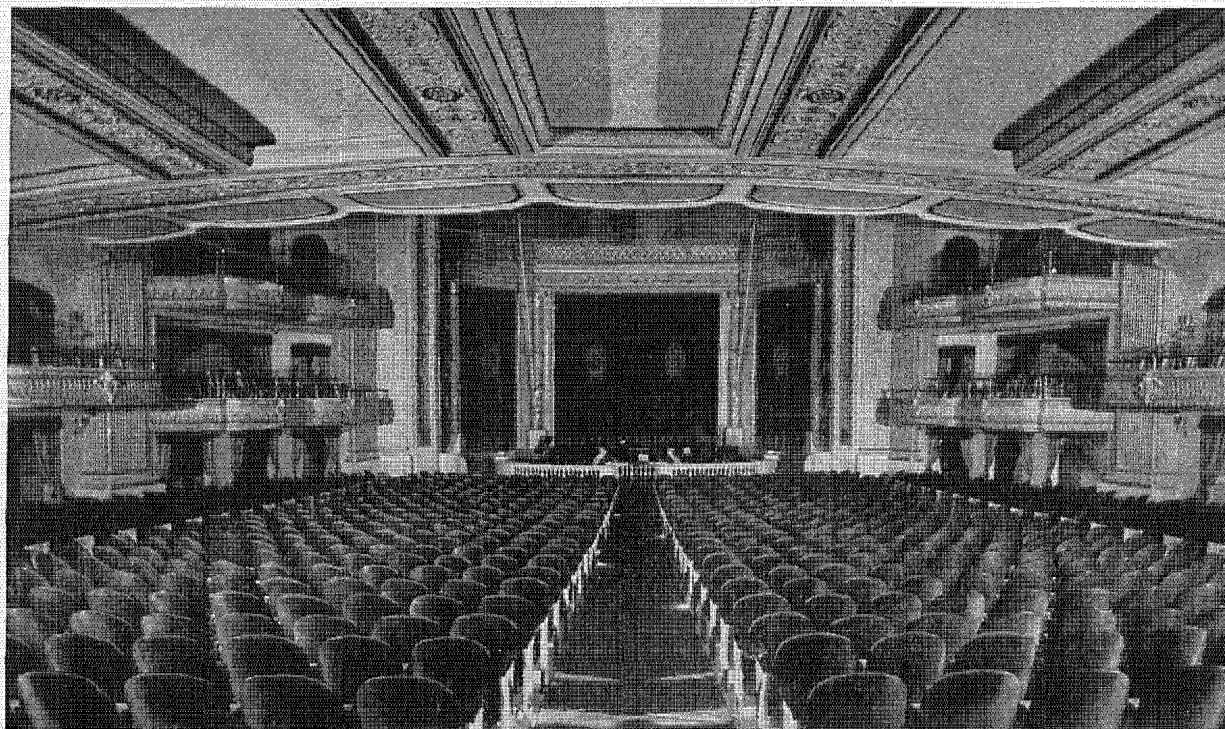
It is located in the recently completed Hamm Building, which itself is worth several pages of description. With a seating capacity of 3,000, this theatre is claimed to be the largest motion-picture house in the Northwest.

The St. Paul theatre has many interesting features, not the least of which is the fact that it embodies the latest and best ideas in theatre architecture. A pipe-organ with ninety stops is one of the incidentals of equipment. This instrument cost \$75,000 and required the labor of twenty men for fourteen months to assemble it. One pipe is 32 feet long and large enough at the base for a boy to crawl through. Another is smaller than a pencil.

Musical entertainment will be provided for the fortunate St. Paul "movie" fans, not only by this organ, but also by a thirty-piece symphony orchestra, said to be the largest organization of that kind west of New York City. The lighting system is unique in that section of the country. Through an ingenious arrangement it is possible to light the stage with red, the main body of the house in blue and the lobby in yellow. Any other combination desired can be supplied.

One fact alone indicates to what lengths the owners went to make the building as beautiful as possible—some of the marble used in the lobby, the foyer and other parts of the theatre was imported from Italy, a distance of approximately 5,500 miles. Every other decorative material used is in keeping and, as a result, the superb artistry of the theatre is its main claim to distinction. The restful effect of soft color combinations, subdued lighting and harmonious archi-

Continued on page 16



Interior of the Capitol Theatre, St. Paul, Minnesota. Du Pont products helped to make it beautiful

RELICS AND RAZORS

SEVERAL hundred, perhaps thousands, of people helped you shave this morning. The labor of a multitude of hands, the brain power and inventions of many generations are indirectly responsible for your clean-shaven face. Moreover, a variety of materials from many countries entered into the operation. A Siberian hog, a Japanese tree, a Michigan mine and a Southern cotton field may have been the source respectively for your shaving brush bristles, perfumed soap, razor blade and handle.

This will give some idea of cutlery as it appears to a man of imagination. He can see men tunneling and blasting in the depths of the earth for iron ore and picture workmen smelting it. He can imagine the Gehenna-like glare of the furnaces where the iron is transformed to steel, hear the forges pounding and watch the craftsmen fashioning and tempering the blades.

But the man who is worrying about the 7.56 has little time for imaginative flights. Therefore he is likely to become unappreciative of the advantages and comforts of living in this century. Mark Twain probably had something of this in mind when he wrote "A Connecticut Yankee in King Arthur's Court."

Were it possible to take a man of today and set him down beside the Pyramids in the time of the Ptolemies, it would be interesting to watch his actions and reactions. This interest certainly would be redoubled if we could see him shave. Provided our transposed wanderer had been befriended by an opulent Egyptian, he would be given a concave metal mirror, a sharp (?) knife and a pair of tweezers. Then his troubles would begin. Even with the keenest hollow-ground razor made today he could hardly avoid cutting himself, because of the distorted image of his face reflected by the primitive mirror. The crude knife which passed as a razor in those times would be the cruellest revelation; his skin, pampered by the unappreciated luxuries of the modern toilette, would surely suffer. Perhaps he had glanced askance at his Egyptian host when he was presented with the tweezers, but after seeing the badly reaped field of stubble left on his face by the knife, he would understand their use. The pieces of metal were used to pluck out the hairs which had been missed by the "razor."

The accompanying illustration shows a shaving set used in Egypt during the XVIII Dynasty. At the extreme left side note the several implements wrapped up as a traveling set. Beside it is the razor or blade. The purpose of the piece of wood in the middle is not certain, but it is thought to have served as a handle for the knife. At the right side of the illustration are

The modern blade is protected by a beautiful handle worthy of its steel

two pairs of tweezers which were necessary complements of the crude razor. Above one of the tweezers is shown a stone used for sharpening the blade, the prototype of the modern razor-hone.

The immense gap between the primitive razor of the Egyptians and the handy, keen-edge blade of today shows clearly enough the evolution of the instrument. But it would take more than a few pages to describe with any completeness the changes that have been made in the handles. Many materials have been used at different times, but among them the most common were wood, bone, horn, ivory, shell, pearl, tortoise, silver and German silver. Some of these are still used today.

Each material mentioned has some fault, but the cutlers of former days had to be content with what they had. Wood, useful for many purposes, has never been accepted as carrying sufficient tone and quality. This is also true of bone. Horn is scarce, limited as to size and hard to work. Ivory is also scarce, expensive and difficult to secure in large pieces. Silver tarnishes, requiring an immense amount of attention. Pearl is beautiful, but so brittle that the waste in cutting out scales or handles is enormous. The other materials are either difficult to work, hard to obtain or too expensive.

Yet each material, in spite of its faults, has some things to recommend it. The problem has been to supply the cutlery trade with handles that have the beauty and utility of the materials formerly used without any of their faults. This has been accomplished by the production of Pyralin in which can be reproduced almost any material in common use among cutlers, with the possible exception of silver.

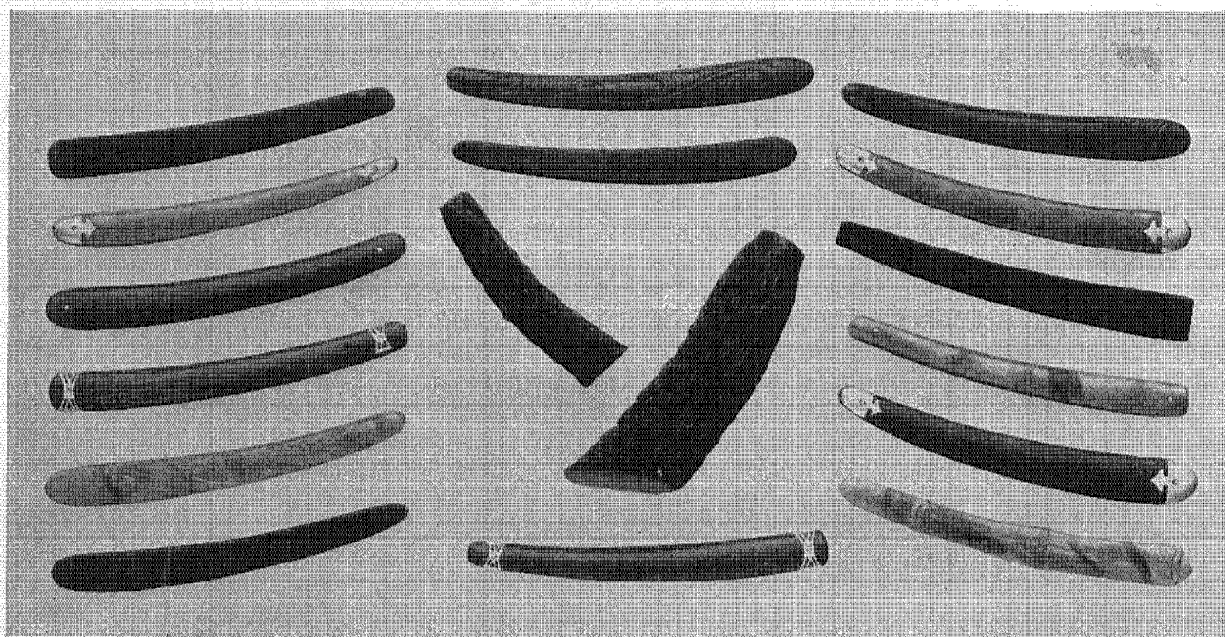
There are a great many effects and color combinations which can be produced in Pyralin. Among other things it is made to reproduce grained ivory, tortoise-shell, amber, horn, mother of pearl, abalone pearl, coral and such woods as ebony, mahogany and oak. Aside from its beauty, Pyralin has other recommending qualities; it is tough and strong; will not crack or splinter; does not rust or corrode; is free from grit; can be cut, sawed, turned on a lathe like wood, and in

plastic form can be bent or molded in any way desired.

Someone has said, "It is the supreme mark of wisdom to replace an excellent thing by a better one." Cutlery manufacturers generally have recognized the superior excellence of Pyralin for handles, and as a result it has to a large extent replaced natural materials formerly used. Manufacturers of razors, particularly, have sought Pyralin handles or "scales" for their best products. Large orders have been made up at the Arlington plant, which is unusually well equipped to produce high-grade fin-



A crude shaving set used by the ancient Egyptians



Pyralin can be made into beautiful and useful handles, not only for razors but for all kinds of cutlery

ished articles. The Du Pont Company is in position to supply the trade with a distinctive line of razor scales, some of which are shown in the accompanying illustration. It is, of course, quite impossible to show in black and white the beautiful color effects produced in these finished articles; one must see the scales themselves to appreciate their beauty.

Considering the wonderful variety of colors and reproductions made in Pyralin, the ease with which manufacturers can assemble razors without waste or breakage when these scales are used, there is little reason to doubt that the popularity of Pyralin in the cutlery trade will increase. No material so fully meets all requirements for beautiful, serviceable handles.

DELIVERING THE GOODS

NOT a man works in this mine another hour until I give the word!" The mine inspector delivered the ultimatum to the superintendent as fifty or sixty miners came pouring out of the slope behind him.

The superintendent remained silent. A quick glance at the inspector told him that it would be futile to raise objection. The mine was furnishing coal to the railroads throughout that section of West Virginia and must at least get out enough coal to supply the locomotives daily, but he knew the inspector had the upper hand, and the men knew it.

Just then the general manager hove into sight with a Du Pont salesman in tow.

"What's up?" he demanded, seeing the men standing around and the superintendent looking glum.

"There's gas in one of your dip headings," answered the inspector. "I've just ordered the men out, and they don't go back until you load safety powder."

The manager turned to the salesman. "How long will it take you to get some of this powder here?"

"Why, I can wire our magazine to deliver Monobel to the railroad tomorrow, but that may mean two weeks' delay."

The manager whirled on his heel, looking like a man who could swear if he would, as he started off down the tracks. The Du Pont salesman trudged behind, thinking hard.

"Look here," he called ahead presently. "Suppose I deliver five hundred pounds of permissibles to the mine tomorrow morning. Will that tide you over?"

"Yes, probably," replied the manager, "for by the time that's shot the railroad might get a shipment to us if they knew their own coal depended on it. Can you do it?"

"Can't say for sure," answered the salesman, "but I'll try."

He took the next train to his headquarters, a town two hundred miles over the mountains, where was located another large coal mining operation. Arriving at 6.30 P. M., he quickly got in touch with the coal company and secured five hundred pounds of Monobel No. 3. Then he got out his automobile, loaded the dynamite in the back seat and started off.

The road was fairly good at that end of the route, and mile after mile reeled off until Morgantown was reached. There he stopped for supper, gas and oil. It was then 10 o'clock and the mine was still one hundred and thirty miles away. Hour after hour he drove over the rough mountain roads.

Just as daylight came, he pulled into Oakland and struck a piece of macadam road forty-five miles from his destination. After giving the car the "once over" to see that it was on four good tires, he let the engine out on the last lap and in less than an hour drew up in front of the mine office.

The ten cases of Monobel were quickly unloaded. The salesman conducted a demonstration which completely satisfied the inspector, and the men went back to work. The miners had lost only twelve hours' time.

"Believe me," declared the general manager as he gripped the salesman's hand. "I'll say Du Pont for service."

LITTLE THINGS COUNT

FABRIKOID, ever pioneering into new fields, overcoming difficulties and establishing itself firmly, has recently made its entry into the paper-making business. As is usual, the advent of this material in a new sphere of usefulness means progress. In this instance it has removed one more nightmare from the minds of the men who satisfy the appetites of the voracious printing presses for "paper, paper, more paper." Fabrikoid has many uses, but none so fully demonstrates its suitability for a variety of services as its latest application.

In the papermaking business, as in everything else, "many a mickle makes a muckle," which is a canny Scotch way of saying it is the little things that count. One of these "little things," comparatively speaking, is the "apron" on the Fourdrinier papermaking machine. To the technically initiated this apron is known as the connecting link between the flow box and the breast roll. To the uninitiated it might be described as the bridge of transition between the fibrous pulp and the first appearances of paper as such.

A short description of the process of paper manufacturing should make the use of the apron more easily understood. In making paper from wood pulp, the wood is chipped by machinery into small pieces and then chemically reduced to a pulp, either by the use of soda or sulphurous acid. Following this operation the pulp is washed and screened to remove impurities and some of the excess water is drained off.

When the wood is first turned into a pulp it is a dark, rich brown color. After being washed and screened it is a light grayish brown so that it is necessary to bleach the material to secure the clear white color commonly associated with paper.

The next process is known as "beating." In this operation the pulp is washed, thrashed and cut until the fibres are of suitable length and proper degree of fineness. Clay and sizing are added to the pulp at this point so that the finished product may have a better surface. To complete the prepara-

A few yards of Fabrikoid make a lot of difference in the manufacturing of paper

tion of the fibres, which have now been freed from all non-essential matter, a refining engine is used to make a still finer division of the fibres.

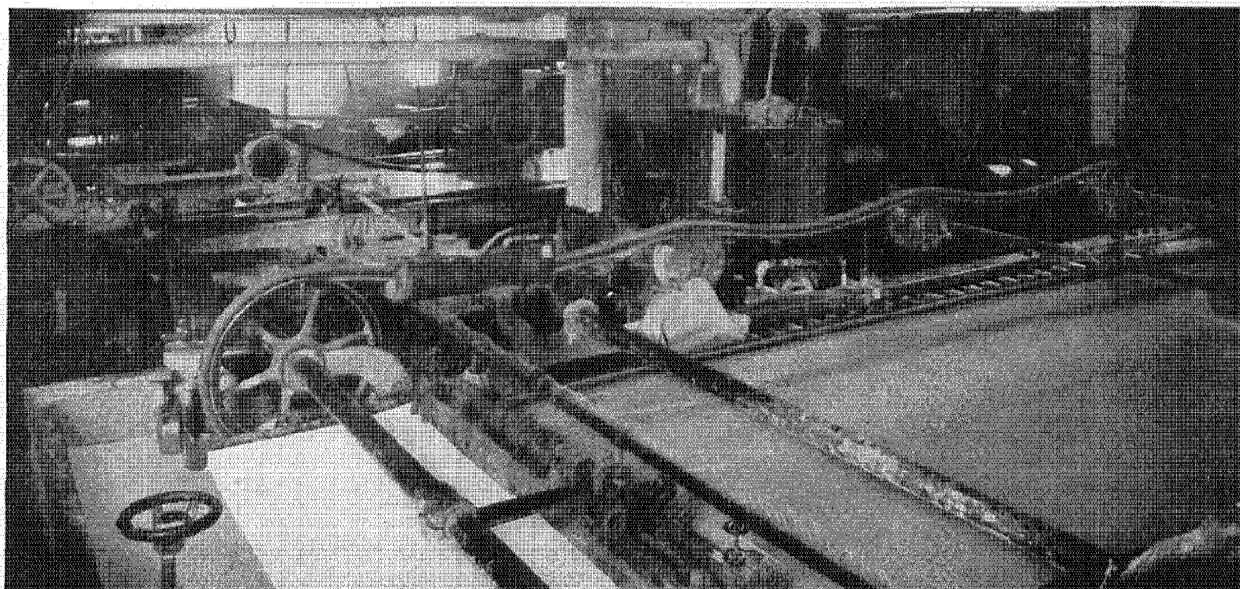
The pulp is then pumped to the stuff box and from there to the flow box, where the first operation of the Fourdrinier machine begins. Previous

to the final refining of the fibre, the pulp has been washed and treated until the chemicals used in the various processes have been removed. But the pulp is still diluted with a quantity of water which must be removed.

To remove this excess water and at the same time to "felt" or weave the paper, the pulp flows from the vat, or flow box, over a perfectly smooth "apron" on to an endless bronze wire screen, the mesh of which is from sixty to ninety threads to the inch. The water falls through the holes in the screen or is drawn off by suction boxes underneath the wire on which the pulp is being carried forward. The forward motion throws the fibres in one direction. To offset this and to secure the interlacing of the fibres that gives strength to the paper, the breast roll also shakes laterally as the bronze screen moves forward.

The width of the paper is determined by two endless borders, or deckle rubber straps, which control the edge of the flow of pulp at the sides. The drawing off of the water and the felting of the fibres transform the pulp into paper. The "dandy roll," a light cylinder covered with wire, presses the moist paper as it passes underneath and gives it whatever design is on its surface, putting the watermark and the "weave" in the paper.

Where the endless bronze screen begins its return journey to the flow box are the couch rolls. These press out more water and still further consolidate the woven or felted fibre. The paper is then carried to the press rolls, consisting of a series of highly polished brass and rubber cylinders. The paper, carried along on an endless woolen blanket, passes between these rolls and is smoothed off by the pressure. From



The position of the Fabrikoid "apron" on the Fourdrinier is shown by the white strip in the foreground

this press the web of paper is carried to the driers, a series of steam-heated cast-iron cylinders. Following the drying, the paper is passed through a perpendicular row of chilled iron cylinders, or calenders, which, by their own weight, produce the final finish.

What has been written is a very brief description of the intricate and technical business of making paper. But the word "apron," one of the big-little things in the process, appeared in the description, and it was to explain its uses that the entire operation was briefly summarized.

In a foregoing paragraph it was stated that "the pulp flows from a vat over a perfectly smooth apron on to an endless bronze wire screen." It is essential that the fibrous pulp go from the flow box to the breast roll as smoothly as possible.

The problem of the papermaker is to transfer the pulp in an even sheet. The slightest unevenness in the way the fibre is spread over the apron on to the screen will show in an uneven product. If it is true that a chain is no stronger than its weakest link it is also true that a Fourdrinier machine is no more efficient than its apron.

Formerly paper manufacturers used a coated cloth, usually linseed-coated drill. The fibre in the cloth was kept constantly wet when the machine was running, particularly after the protective coating had begun to wear off. But when the machine was stopped the water-impregnated fibres of the cloth were exposed to the action of the air, and shrank. As a result, a "buckle" or hump appeared in the apron. When the machine was started again, if this defect had not been remedied, the pulp could not flow evenly over this "buckle" or hump and the finished paper had a thin streak where the hump caused an uneven flow.

The under side of the apron is laid on the constantly revolving, endless, bronze wire screen. The consequent friction wears away whatever coating has been placed on the cloth, leaving the fibres at the mercy of the constant immersion. Sometimes the abrasion of the wire makes the cloth so thin that it collapses, or in making repairs to it the workman inadvertently puts his finger through the thinned material. Abrasion is also responsible for frayed edges, another source of annoyance and trouble to paper manufacturers.

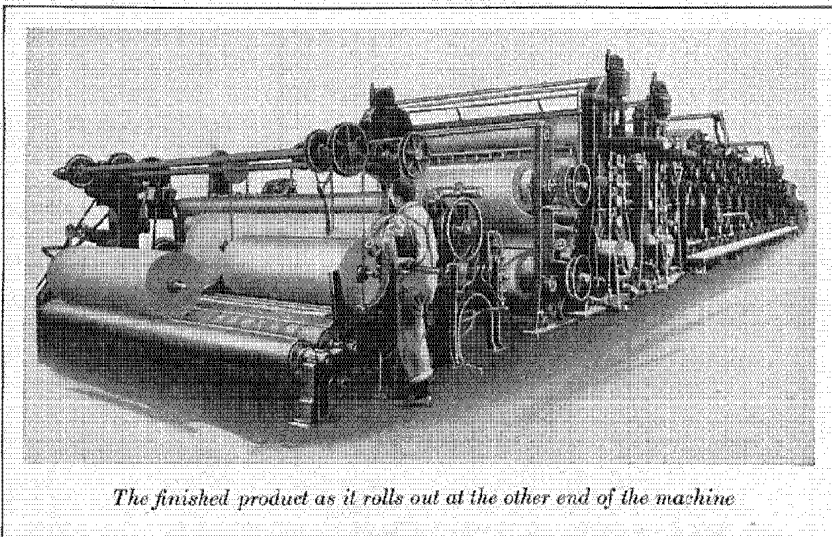
Whether buckled, frayed or broken, the apron has to be replaced. This means shutting down the machine, the loss of valuable time, the waste of much material and the cost of another apron. Fabrikoid, doubly impregnated with pyroxylin, is now being used as an apron on papermaking machines. It has a much longer life than ordinary aprons; the material stands greater wear from the rasping, file-like bronze wire, and buckling, if not eliminated, is reduced to a minimum. The apron has been tested extensively in the Augustine Mills, of the Jessup and Moore Paper Company, Wilmington, Delaware. According to these manufacturers, the Fabrikoid apron has proved thoroughly satisfactory, more convenient and much more economical than those previously used.

The double impregnation of the Fabrikoid apron renders it waterproof. Even when the protective coating is worn off, the water can have no effect on the fibres, which are themselves impregnated with pyroxylin. Papermakers know that when the machines are shut down it is necessary to protect ordinary aprons from drying so as to prevent shrinkage. This

is generally done by keeping wet blankets on the cloth until the machine is started again. Even with this protection the aprons shrink and buckle.

At the Augustine Mills, while the Fabrikoid apron was being tested, the machines were shut down. The apron was left exposed to the action of the air without protection, but after several days' time, when the machines were again started, the material was found to be as good as new. The Fabrikoid did

not shrink or buckle when it dried. Fraying is almost impossible with the Fabrikoid apron. The fibres are so closely interwoven and the pyroxylin solution becomes such an integral part of the fabric that it can stand a maximum amount of wear and abrasion. Outwardly there is very little difference between several yards of coated cloth and several yards of Fabrikoid when used as the apron of a papermaking machine. But the manufacturer knows that in his business as in every other "many a mickle makes a muckle," and Fabrikoid is one of the little things that count.



The finished product as it rolls out at the other end of the machine

SHOOTING IN INDUSTRY

The vital part which the training of marksmen plays in the defense of the nation and the thousands of hours of real recreation that Du Pont sporting powders give to millions of shooters each year have been generally known for a long time. But the use of these powders for what might be termed industrial purposes, in the manner indicated by the clipping below, shows them in a rather new light.

From the Detroit Free Press comes the following:

"Marcellus, Mich.—Local sportsmen came to the village's relief after the smokestack on the local electric lighting plant had buckled, fallen over and cut off the draft in the boilers, leaving the community in darkness.

"There was no ladder in the village long enough to enable workmen to make the repairs, but marksmen, armed with every known kind of 'shooting iron,' fired volley after volley into the stack until bullets severed the pipe and removed the cause of the trouble.

"From the middle of the forenoon until afternoon, the stack was bombarded and the sound of the firing was heard for several miles.

"Officials at the lighting plant estimated it would have taken a week to make the repairs but for the happy thought of a member of the rifle club."

Du Pont dynamite might have done the work more quickly, but in the emergency sporting powder served well enough.

PROTECTING THE BEAUTIFUL

THERE is one phase of manufacturing, important enough to be classed as a separate industry, which deserves more attention than it is receiving. It is the business of protecting manufactured articles from influences which tend to destroy them. While one manufacturer is making an article, another is busy preparing the materials which will prolong its life, preserve its beauty or protect its strength and utility.

A list of materials whose main or secondary purpose is protection would show a wide diversity. Paint, rubber, creosote, asbestos, oil, glass, lacquer, "dopes" and manufacturing processes such as galvanizing, insulating or nickel-plating are some of them. Among the enemies these materials or processes fight are rust, corrosion, friction, putrefaction, waste, oxidation, dirt, and plain old age.

One is apt to admire a complicated piece of machinery without giving much attention to the tiny oil cups that protect the machine from tearing or burning itself to pieces. When a bridge has stood the wear and tear of many years' service, the credit is usually given to the strength of the steel and not to the paint which protected the metal from rust. The beauty of a piece of silverware is admired by all, but few think of the invisible film of lacquer which preserves intact the original beauty of the metal. If the relative importance of the protective materials is judged by the number and value of the articles on which they are used, lacquer would hold a high place on the list. It is used on all kinds of metals and woods as well as on glass and even on cellulose products. Above all, it is the only material used for the protection of gold and silver.

The value of these precious metals renders their protection a matter of importance. Both are intended primarily to be beautiful and it should be the first thought of the manufacturer to preserve that beauty. Tarnish or oxidation is the great enemy of beautiful silver. Everyone is familiar with the unsightly stains that either mar the metal or make frequent cleaning necessary. Lacquer prevents tarnish by presenting an impenetrable, transparent film to moisture and air. Strange as it may seem, manufacturers of solid silverware often refuse to use lacquer on their products. Why this should be so, when lacquer not only protects the metal but also preserves its beauty, seems rather odd.

Lacquer is used on a variety of articles made of precious metals, among them lighting fixtures, casket hardware, tableware, cigar and cigarette cases, silver novelties, jewelry, buckles and safety razors. Unless these articles are lacquered they soon tarnish and must be frequently cleaned before being sold and after they are in use. This means a loss of some of

A good lacquer not only preserves, but enhances the beauty of silverware

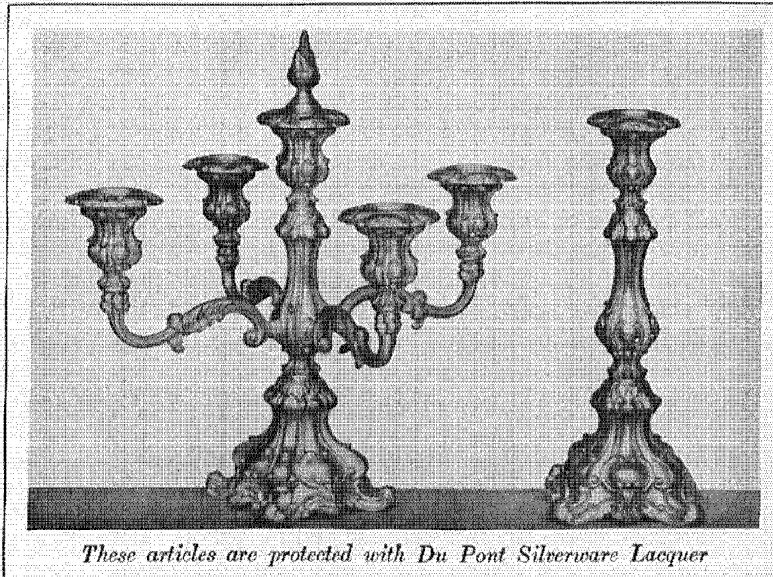
the attractive appearance of the metal, making the article less salable for the dealer and less useful to the purchaser.

It is not enough to apply any sort of lacquer to silverware. Every manufacturer knows that the material used on precious metals must have qualities the ordinary lacquer is not required to

possess. Two of the principal essentials are transparency and a water-white color. These are necessary because the artistic products of the jeweler would be ruined by the presence of any foreign color. Some lacquers, even among those sold specifically for use on silver, give a slight yellowish tinge to the metal. When lacquer is not transparent it gives the object on which it is applied a clouded appearance. Sometimes the materials are transparent and water-white when first applied, but degenerate later. These defects are particularly serious when

the lacquer is to be applied to the finer grades of silver, for poor lacquer lessens the value of the silver article.

The Du Pont Company has been manufacturing lacquers for many years and about a year ago developed a special lacquer for silver, called Du Pont Silverware Lacquer, which has many unusual and desirable qualities for protecting gold and silver. There has not been a single complaint made during the time it has been on the market and manufacturers who tested the product always returned favorable reports.



These articles are protected with Du Pont Silverware Lacquer

The success of this lacquer is due mainly to the use of special processes and specially prepared raw materials in its manufacture. Its transparency and water-white color meet all the requirements of manufacturers of the finest silverware, while its uniformity makes it practically indispensable to those who produce in quantity.

The qualities of Silverware Lacquer have not been developed, nor are they maintained without painstaking efforts. In its production the greatest care is exercised throughout the entire operation. Absolute control over raw materials and mechanical processes, formulas which have been proved by exacting tests, extensive laboratory work, are some of the means employed to preserve the superior quality of this product. In most cases the raw material which enters into the manufacture of the Silverware Lacquer has been made by the Company especially for this lacquer.

Before a batch of this product is shipped it is exhaustively tested to see that it conforms to specifications and will meet the special requirements of the manufacturer who ordered it. In this work the trained services of a corps of technical experts employed by the Company are of invaluable assistance to the manufacturer.

Much attention has been paid to securing a water-white

Continued on page 14

SOMETHING NEW IN SPORTSWEAR

EVERY experienced outdoorsman, be he hunter, fisherman or what-not, knows that proper apparel is the first essential to real pleasure and success afield. He knows, too, that rain, snow, brush and brier have always searched out and found weaknesses in the very best garments he could procure. And so he accepts a certain amount of discomfort as inevitable, whenever in forest or on stream he meets Nature in a surly mood.

Take, for instance, the standard hunting suit made of waterproofed canvas. Though no other type of garment has ever been so popular and generally satisfactory for woods wear, this suit is far from ideal; the service it must render is too varied and the tests it must withstand are too severe. Very often the designing and tailoring of the suit are such as to limit its usefulness. No one knows this better than the veteran hunter.

Your genuine, rain-or-shine hunter is nothing if not self-contained. Once he sets foot on the trail he is prepared for anything—and meets it with a smile. His hunting suit, laden with many indispensables, must be more than his home and shelter while he is out; it is his storehouse, commissary, arsenal and workshop, as well as the receptacle for whatever trophies he is able to secure; it must possess warmth with light weight, strength without stiffness, capacity with convenience. It must keep all the essentials in and all the elements out. It must, in addition, stand the grinding wear and tear of hard service under strenuous conditions.

To give the hunter and his "fellow-outers" clothing sufficiently rugged and weather-resisting has been the effort of various American manufacturers. Although fair progress in that direction has been made during recent years, further success depended upon the development of a more positive and permanent process of waterproofing than those in use. This problem had proved very difficult indeed.

Sigmund-Eisner Company of New York City and Red Bank, New Jersey, was confronted with this problem. Having finished its war work as the largest producer of uniforms for the United States and allied armies, this company determined to devote a part of its immense facilities and wide experience to the production of garments for sportswear, and to make these garments more adequate for the use of sportsmen than any other clothing available to them. Above everything else, they sought an absolutely waterproof material that was

*Garments that give the "outer"
real service are now made
of an improved material*

at the same time soft, flexible, strong and attractive, and that would retain all of these qualities throughout long use. They put this problem up to the Du Pont laboratories more than a year ago, and a few months ago they accepted as perfect a process, applied in Du Pont plants to their own fabrics, which promises the exacting sportsman field apparel that is all he has hoped for. The first suits made of this perfected material are already being marketed and are meeting with great favor under the trade name of Eisner-Du Pont Sportswear. The word Du Pont appears in this name as an acknowledgment of the assistance rendered by the Du Pont Company to the Sigmund-Eisner Company, whose ownership and control of the finished product is absolute.

The fabric which the Sigmund-Eisner Company supplies for processing is a very fine, high-count khaki canvas—the best and most enduring material made for rugged use. The process by which the waterproofing is accomplished actually strengthens the fabric materially without in any way affecting its softness and flexibility. Very little weight is added to the fabric and no chemicals are left in the fibres that will alter in character or dissolve as time passes. The material in this respect is radically superior to anything now in use for the same purpose.

The Sigmund-Eisner Company has given much thought to the designing of the various garments in the new line. The ideas of veteran outdoorsmen have been followed entirely and with the happiest results. The Eisner-Du Pont "gamester" coat is certainly the most practical and efficient garment of its type yet made. Every possibility of this coat has been developed to afford the maximum of service and comfort to the hunter. Roomy pockets and more of them; a perfect distribution of the weight of the garment and its contents, and a new standard of tailoring are outstanding features of this coat and of the entire Eisner-Du Pont line.

Every garment is made to exact measurements and carefully finished by experienced tailors. Whether it is a coat, trousers, hat or vest it must look well, fit well, stand up perfectly and be worthy of the Eisner-Du Pont label.

Eisner-Du Pont Sportswear will be sold through the regular sporting goods dealers in every community and the Sigmund-Eisner Company will be very glad to have any inquiries from dealers regarding this line. They will also be glad to put individual sportsmen in touch with dealers who can supply them.



Comfortably dressed for any emergency outdoors

THE DU PONT MAGAZINE

Published monthly and copyrighted by

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

Subscription, 50 cents the year

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Vol. XIV

APRIL, 1921

No. 4

DIRECTORS RE-ELECTED

Stockholders of E. I. du Pont de Nemours & Company, Inc., re-elected all the members of the board of directors at the annual meeting held in March. The directors are: F. D. Brown, H. F. Brown, R. R. M. Carpenter, W. S. Carpenter, Jr., F. L. Connable, William Coyne, A. Felix du Pont, Alexis I. du Pont, Eugene du Pont, Eugene E. du Pont, H. F. du Pont, Irene du Pont, Lamont du Pont, Pierre S. du Pont, J. B. D. Edge, H. G. Haskell, J. A. Haskell, J. P. Laffey, C. A. Meade, C. A. Patterson, C. L. Patterson, F. W. Pickard, H. M. Pierce, M. R. Poucher, J. J. Raskob, Dr. C. L. Reese, W. C. Spruance, and F. G. Tallman.

COMPANY CHANGES

F. Leslie Hayford, Economic Statistician of the Du Pont Company, has accepted a position in the New York Office of General Motors, Inc.

Clarence I. B. Henning has been transferred from the Experimental Station of the Chemical Department to the Military Sales Department, as Assistant Director of Sales.

J. Bayard Eliason has been appointed comptroller of the Du Pont Company to fill a vacancy occasioned by the death of James B. Broad. Mr. Eliason has been assistant comptroller of the Company since December, 1918.

William P. Allen, Director of the Service Department, has been transferred to the Treasurer's Department as Assistant Treasurer. He will represent the treasurer in all matters pertaining to cost accounting.

William B. Foster, Assistant Chief Engineer, has been transferred to the Service Department as Director.

W. M. Moore, Manager of the Planning Section of the Service Department, has been transferred to the Accounting Department as Assistant Comptroller.

AN INDUSTRIAL FILM

An interesting motion picture of the large dye plant of the Du Pont Company at Deepwater Point, New Jersey, was recently taken and is now being shown at colleges, technical schools and before business bodies. Views of the extensive laboratory area are shown, together with interesting details of the operations in the semi-plant and exterior and interior pictures of the large units in the manufacturing area. The film shows the importance of the dyestuffs industry to America's commercial life, and also on what a large scale our dyestuffs manufacturers have founded their business.

JAMES B. BROAD

James B. Broad, comptroller of the Du Pont Company, died March 12, at a Wilmington hospital after an illness of more than a month. His death resulted from an abscess which had developed in one of his lungs.

Mr. Broad was born in Youngstown, Ohio, and began his business career as a stenographer in the employ of the Buffalo, Rochester & Pittsburgh Railroad at Punxsutawney, Pa. Later he became chief clerk to the yardmaster of the road. Since 1902 he had been associated with the powder industry. Mr. Broad was employed in the accounting department of the Repauno Chemical Company in 1904 when the Du Pont Company acquired it by purchase. He became identified with the Du Pont Company at that time. His thorough knowledge of business and accounting practice fitted him to render an important service in mapping out the accounting system under which the Company has been successfully operating for years, and his rise in official position was rapid.

When the Arlington Company was purchased in 1915 he was made its treasurer, with headquarters in New York City, but was recalled to Wilmington when the parent company needed the assistance of its ablest men during the trying days of its wartime activities. Mr. Broad was assigned to special work as a member of the comptroller's staff.

In April, 1918, he was made assistant comptroller of the Du Pont Engineering Company, and three months later, its comptroller. In November, 1918, he was made comptroller of the parent company, a position he filled with credit until the time of his death.

In the passing of Mr. Broad, the Du Pont Company has lost the services of a capable executive who was highly esteemed not only for his loyalty, ability and energy, but also for personal traits of character that endeared him to his associates. His was a personality that won friends in all walks of life. He was an active member of many business, fraternal, social and religious organizations and the recipient of many distinguished honors. His death is sincerely regretted by all who knew him.

NEW PERMISSIBLE EXPLOSIVES

The Federal Government centralizes its tests of explosives at the experiment station of the Bureau of Mines in Pittsburgh, Pa., and recommends under certain limitations of use what are termed "permissible explosives" for use in gaseous, dusty coal mining operations. About nine per cent. of all industrial explosives comes within this classification.

Five years before the Bureau of Mines was created, the Du Pont Company developed a safety powder that was in its day in advance of anything produced; and when the experimental station was opened at Pittsburgh and manufacturers were invited to submit samples for the Federal authorities to pass on them, Du Pont powders were the first to establish their rating as permissibles.

For more than a decade Du Pont permissibles have been accepted as standard products, although improvements made in the Monobels and Carbonites have followed as a result of careful research work and constant experiments. The development of Duobel marked another forward step in manufacture. During 1920 the Company perfected two of its low-freezing permissible explosives, Carbonite No. 6 and Duobel, now known respectively as Carbonite No. 7 and Duobel No. 2. Samples of these were recently tested by the Bureau of Mines and admitted to classification as permissibles.

Carbonite No. 7 will be placed on the market immediately, but it is not planned to seek a market for Duobel No. 2 until next fall. With fourteen brands now listed as permissibles, the Du Pont Company is in position to meet the requirements of explosives users in any part of the world, regardless of climatic or other conditions affecting the use of these products.

TORTOISE-SHELL AND SHELL PYRALIN

ASK the average man where tortoise-shell comes from and the chances are he'll turn a cold, appraising eye on you before replying: "Why, from a tortoise, of course." You'll note the emphasis on the last two words, and you'll feel that in his estimation you belong somewhere in the grammar grades. It does seem obvious that tortoise-shell must come from the animal we call a tortoise, doesn't it? The inference is natural, direct, plain, but unfortunately it is not a correct one.

For the tortoise-shell of commerce—the exquisitely beautiful material that manufacturers use to fashion combs, paper cutters, picture frames, snuff-boxes, cigarette cases and other novelties—does not come from the tortoise at all. Whatever may have been the original classification of the reptile family, the distinctions now marked between species show the tortoise as a land animal and the turtle as an aquatic animal—at least most of the time. Aesop's fable about the race between the tortoise and the hare certainly suggests a sporting event on land and indicates the acceptance of such a classification in very early times.

So the claim that tortoise-shell comes from the backs of tortoises is erroneously made. As a matter of fact, the product comes from a species of sea turtle called the hawksbill, which is, incidentally, the smallest of the marine turtles. They range in size from one foot to four and a half feet long and rarely attain a weight of more than one hundred and fifty pounds. A good-sized hawksbill will yield up to eight pounds of shell.

The principal source of supply is in the vicinity of the West and East Indies and some of the other tropic seas. Because the product commands a price ranging from \$2.00 to \$25.00 a pound, depending upon the grade of shell and the condition of the market, fishing for these turtles has become an established industry.

The back of the hawksbill consists of horny plates which overlap one another like roofing tiles. There are thirteen full plates on the middle of the back, known as the carapace, which is bordered by twenty-four marginal plates. These are yellowish above and mottled with yellowish white and chestnut brown below. Their distinctive coloring gives rise to the three classifications or grades known to the trade as blond, demi-blond and dark. Of the three, blond shell is by far the most valuable. For example, a manicure knife handle made of blond shell is displayed in the British Museum and is valued at more than one hundred and fifty dollars. A single hatpin with a round knob of plain yellow shell on a silver gilt pin is worth a pound Sterling, while a good comb made of this material commands a price ranging from five to

*One comes from the sea, the other
from the cotton field, yet both
are identical in appearance*

twenty pounds. When a hawksbill is caught and killed the plates are first heated, then detached with a knife. Curved and irregular in form, the plates are flattened under heat and the superficial inequalities are rasped off. A remarkable property of tortoise-shell is that it can be welded and moulded

by pressure in scalding hot water. Heat softens and liquifies the horny substance and gives it a semi-plastic character; but even under the most favorable conditions it does not respond so readily to heat, nor can it be worked as well as pyroxylin plastic materials which in recent years have so largely replaced it for manufacturing purposes.

The hawksbill family owes a debt of gratitude to the makers of Pyralin and similar products, for science has done away with the necessity of combing the seas to lure and destroy these turtles. In the degree that Pyralin has gained wider appreciation of its qualities as a material exactly reproducing the color and beauty of real shell, the destruction of these

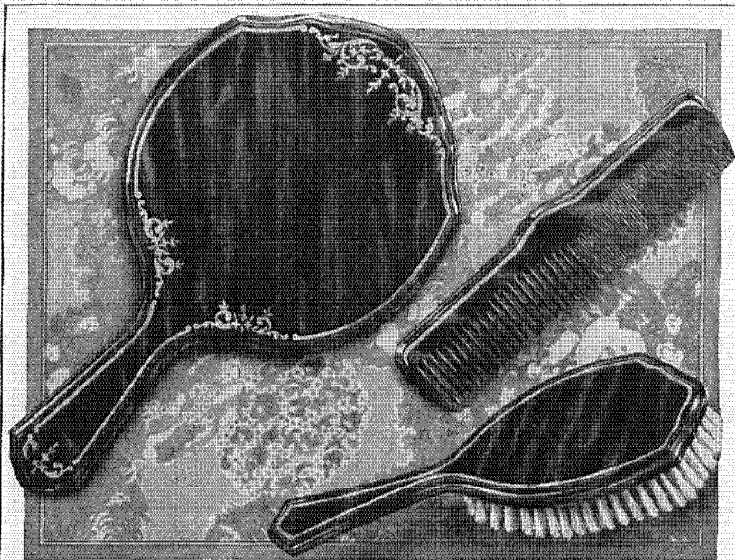
animals has abated. So perfect is the reproduction of real shell that few people are able to distinguish between the natural product and the transformed product of the cotton fields. To examine a piece of Shell Pyralin is to wonder how anyone could reproduce the rich mottled colors of genuine tortoise-shell so faithfully.

The manufacture of Shell Pyralin is no small achievement because of the difficulty of duplicating exactly the warm translucent yellow, dashed and spotted with rich brown tints, the color characteristics of genuine shell. But it has been accomplished by manipulating Pyralin sheeting stock in two colors—clear amber and clear

dark. The material is first heated and rolled together, forming a single sheet in which the two colors are intermixed. The sheet is then cut into long shreds, which are skillfully arranged in a "chase" and pressed into a solid cake. Subsequently, the cake is cut into sheets of varying thicknesses and after seasoning, straightening and finishing is ready for the manufacturer's use.

Of course, Pyralin shell stock is not a new product. For several years past the Du Pont Company has supplied the trade with a material that has closely approximated the appearance of real shell. Some years ago the Company itself used this stock in the production of a limited number of essential toilet articles. More recently manufacturing processes were improved and Shell Pyralin, exactly reproducing the most beautiful color effects of shell, was achieved. The marked improvement in the quality of this product encouraged the Company to produce a high-grade line of toiletware. As an experiment to test the salability of this

Continued on page 16



The beauty of Shell Pyralin is enhanced by appropriate decorations

IT'S TRAPSHOOTING TIME

AT this time of the year boys start out with their air rifles and red-blooded men obey the impulse to spend an afternoon each week at the traps; that is, if there is a gun club in the vicinity. Both young and old respond to spring's inviting call to the pleasures of outdoor sports. Trapshooting—the sport alluring—is doubly so to those who delight to prove their skill in friendly competition with their fellows. Devotees of the sport know its thrills and delights. Those who have never tried to break the flying clay targets may well follow the suggestion to start this spring.

Trapshooting has been described as a blending of mental and physical satisfactions—the rapture of accomplishment with the zest of exercise. It is an impulse to the open; an urge to the great outdoors; a beckoning forth of prisoned limbs and fettered minds to sunshine.

Enticing, fascinating, tempting, it lures with varied charms and satisfies with unnumbered benefits. It simulates the tang of woods and the whir of wings to the hunter; brings relaxation to the business man; tingling vigor to the frail; sociability to the stranger. It is an American-born, American-bred sport, satisfying an inherent American passion in an entirely adequate way.

Trapshooting has that touch of nature which makes all red blood kin. It knows no caste, recognizes no social distinctions, is hedged about with no embarrassing ritual, and neither age nor sex is a handicap to its enjoyment. It is the call to a new hunting which all enjoy on equal terms, without chance of fatigue, disappointment or tender-hearted regret over the slaying of bird or beast.

Every field is a hunting ground and every day "in season" for trapshooting. Nor is there anything selfish in its enjoyment. The nearest trap to your home may stand beside some magnificent clubhouse, or by the humble shack of a few village lads, but either place you will be welcome. The sportsmen and the sport itself invite you, for trapshooting is the "open sesame" to good-fellowship.

The need for trapshooting is as varied as its benefits. That it serves a manifold purpose and caters to a number of necessities is evidenced by the physical range and the widely divergent interests of its devotees. That it is potent and worth while is demonstrated by their enthusiasm and loyalty.

Few pastimes are as scientific as trapshooting; none is so good a brain tonic. It constantly develops situations requiring keen judgment. Every target brings its own difficulties, to be solved in the fraction of a second. The rapid calculation of lead, elevation, angle and other points, the nice decision and instant action, quicken the eye and hand. The intense

*Spring calls you to outdoor sports.
Why not try trapshooting
this year?*

concentration drives away brain-lag and brain-lag and gives real relaxation. Your skilled trapshooter is a man with nerves of steel, quick and unerring judgment, superb poise and unfaltering action, qualities latent in every man and woman, and needing but the virile touch of this sport for their development. Someone had described trapshooting as "a bumper from the fountain of youth." It is a rejuvenation to those who have been "slowing up" or "going back," a reversion to elements and interests that have inspired youth since the world began. Requiring no special physical development or training, it molds along lines of vigor and endurance.

Trapshooting is recognized as one of the leading sports in this country. In addition to clubs organized specifically for

trapshooting, associations of almost every other kind have taken it up. These include golf and country clubs; boat and yacht clubs; athletic, social and industrial clubs. Many hunting and fishing clubs let trapshooting supply the necessary thrills when the fish won't bite, the ducks aren't "coming in," or the dogs can't locate the birds.

There is a great deal of pleasure to be derived from the small outlay which is necessary for trapshooting equipment. All that is needed is a clubhouse, a trap and good fellows.

The Du Pont Company has spared no expense to give the

trapshooter all the information necessary to make his sport more widely appreciated. One of the latest and most complete booklets prepared for distribution is "The Trapshooting Club Handbook." It contains forty-eight pages devoted to a discussion of the most essential phases of trapshooting.

Those who contemplate organizing clubs this spring and desire complete information about the sport may procure copies of this handbook and other literature by addressing a letter to the Military Sales Division of the E. I. du Pont de Nemours and Company, Inc., at Wilmington, Delaware.

PROTECTING THE BEAUTIFUL

Continued from page 10

color and transparency with a minimum decrease in solids. Both these qualities are to be found in Silverware Lacquer, and for this reason alone it is the most practical lacquer to use on the finest wares. It will not affect the most delicate tones of the silversmith's art and can be used successfully on burnished, satin finish or French gray silver as well as on gold ware of any description. The finest conception of the jeweler will remain beautiful with no blurring of fine color tones or delicate traceries after it is protected by this material. In fact, Du Pont Silverware Lacquer not only preserves the beauty of a fine piece of silver but even enhances it.



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BEAUTIFYING THEATRES

Continued from page 5

ecture show just what can be done toward making a moving picture theatre really beautiful. To Toltz, King & Day, of St. Paul, Minnesota, the architects, belong much of the credit, not only for developing the plans of the theatre but for the entire Hamm Building as well.

This building, including the theatre, cost approximately \$2,500,000. It has several unusual features, but the most unique is the way in which the space below the ground floor has been utilized. Most buildings have only one basement, or possibly two, unless the building is unusually large. The Hamm Building has six stories above the ground level and three below. One of these basements is to be used entirely for recreation and has been leased to a recreation company which has installed bowling alleys, billiard tables and other amusement devices. A café and dance floor will be maintained in this basement. The owners plan to install an ice skating rink in the second basement. The remaining space will be used for storage, heating and electrical installations.

Great care was exercised in combining the various decorative features of the theatre. In color scheme and architectural details there are no discordant notes. Every piece of molding, every bit of color, every curve and line is an essential part of the whole decorative balance. To secure this effect it was necessary that all materials used, whether wood, marble, iron, plaster or paint, be subjected to the closest scrutiny to see that they met exacting specifications. The question of paint alone was an important one. It was realized that unless paints of the best quality were applied, the result would be disappointing. The color and uniformity of all paint products were carefully considered as well as their protective value. The decision was finally reached to use Du Pont paints, not only for the theatre but for the entire building.

The paint was supplied by Thompson Yards, Inc., of St. Paul, lumber dealers, who, in their paint department, handle Du Pont products exclusively. That the choice of materials was excellent can be seen in the pleasing harmony of the color scheme. The selection will be justified still further when time shows the lasting merit of these products.

TORTOISE-SHELL AND SHELL PYRALIN

Continued from page 13

improved product, small sets of eleven dresser articles were produced and placed on the market. So promptly and completely did discriminating buyers accept them that the Company, in revising and standardizing its 1921 line, decided to include a complete dresser set and a complete bag-fitting set of Shell Pyralin in its two most distinctive patterns.

This year there are forty-one pieces of Shell Pyralin toiletware produced in the popular Du Barry Pattern as well as in the exquisite LaBelle Pattern, with its distinctive transverse handle. Included in the forty-one pieces in each pattern are the essential twenty-five pieces for the dresser set and sixteen pieces for the bag-fitting and men's military sets. The popularity of these patterns in Ivory Pyralin assures the ready sale of their counterparts in Shell Pyralin.

Shell Pyralin possesses an unusual beauty, a richness of color and tone that gives it appealing charm. In many cases it harmonizes better with boudoir decorations than Ivory Pyralin. Elderly people particularly express a preference for Shell Pyralin possibly because with age comes a keener appreciation for the more subdued colors and a feeling that soft blends of amber and brown, like lavender and old lace, are more in keeping with refined tastes. For quite another reason, Shell Pyralin finds purchasers among travelers. Several manufacturers of fine traveling bags and cases have created a demand for fitted sets of Shell Pyralin. They are offering at a single price their luggage completely outfitted with Shell Pyralin toilet articles in all essential pieces.

While Shell Pyralin toiletware is distinctive in color and of unusual beauty, like genuine shell it is more pleasing to the eye if each article in the set is appropriately decorated. No type of embellishment serves to bring out the full beauty and charm of Shell Pyralin quite so well as inlaid designs in gold. The floral and classic designs illustrated in black and white on page 13 suggest but do not convey any adequate idea of the beauty of Shell Pyralin decorated toiletware. One has to see the pieces themselves in order to appreciate them. The opportunity is open—in almost every store where toiletware of the better sort is kept in stock and displayed.

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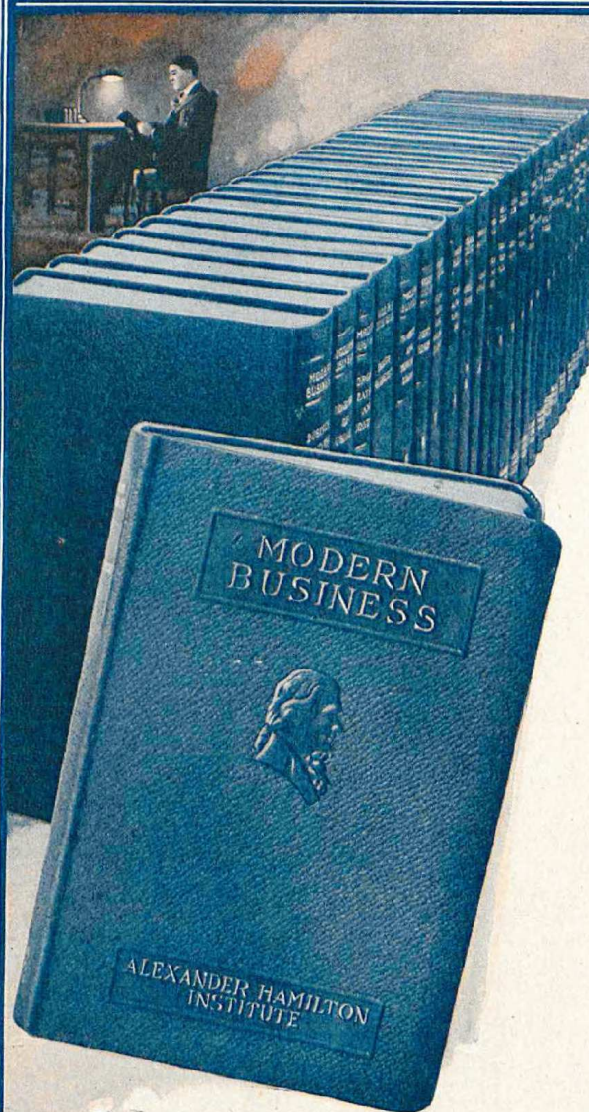
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