The DuPont Magazine

Vol. 14 March 1921 No. 3





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VOL. XIV MARCH, 1921 No. 3

THE PRICE OF LOANS

Will interest rates soon return to pre-war levels?

By F. LESLIE HAYFORD
Economic Statistician
E. I. du Pont de Nemours & Co., Inc.

DURING the past few years we have witnessed a considerable rise in the price of loans—that is, in the rates of interest which borrowers must pay. This was the inevitable result of conditions created by the World War. In a period of rising prices like that which culminated in the spring of last year such a situation is unavoidable. The increased demand for capital caused by higher commodity prices and by expansion of business activity during such a period invariably raises interest rates and makes borrowed money more costly.

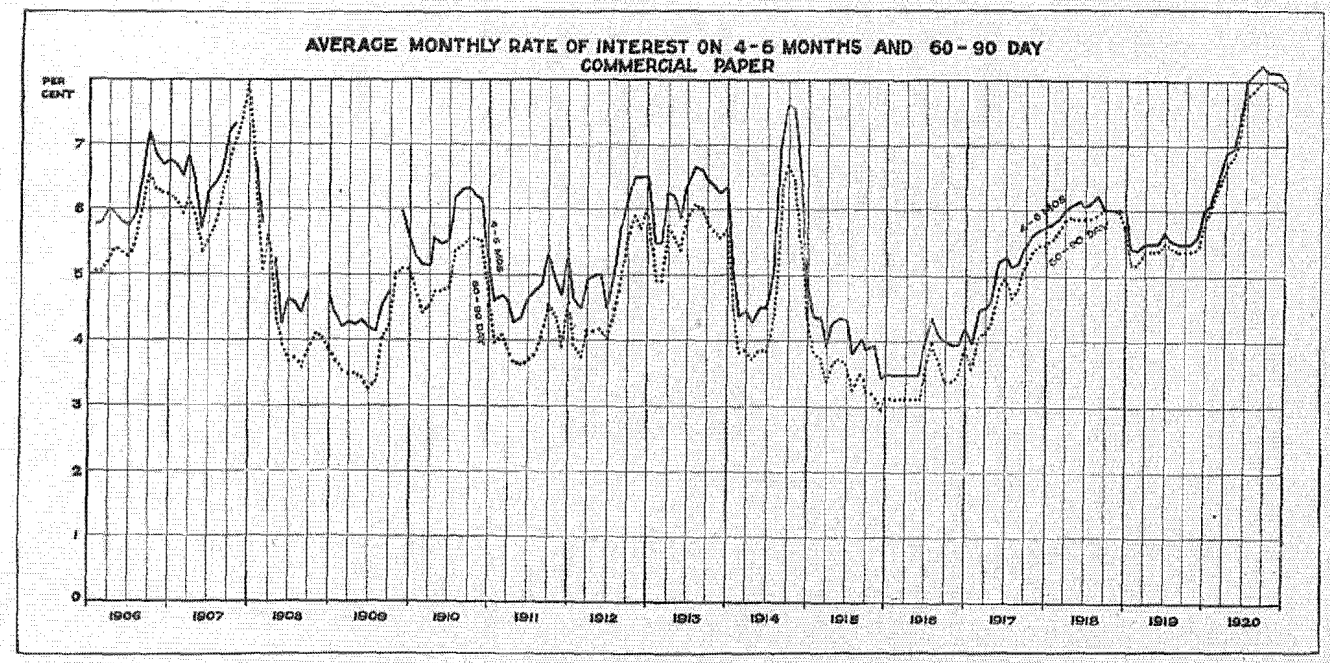
Although not quite so high as three or four months ago, it is obvious that interest rates are still abnormally high. The belief is generally expressed, however, that an easier money market will be seen before long. Some hope for an early return to pre-war interest rates, while others anticipate only a moderate lowering during the next few years. This is a vital matter, for the supply of credit and the rate of interest on commercial loans cannot fail to exercise a marked influence upon business. If the supply of credit is relatively limited and interest rates are abnormally high, it is doubtful if a pronounced business revival could occur. On the other hand, an abundance of credit and low rates of interest would make possible a decided recovery of business activity.

Different rates of interest frequently prevail at the same time for different kinds of loans. With loans for stock market purposes we are not specially concerned in our present consideration. But clear and important distinctions are drawn between short-time and long-time loans for business purposes. Loans for short periods are made to meet temporary capital requirements, such as the purchase of materials and supplies, etc. Such loans are very largely made on commercial paper, which is chiefly carried by the banks. Loans for long periods are for permanent capital requirements and chiefly take the form of bonds. It is principally with interest rates on short-time loans that we are here concerned, because the ease or difficulty of negotiating such loans will probably have a more immediate effect upon the course of business over the next two or three years than the rate on loans made for permanent capital requirements. Frequently-quoted rates of interest on commercial paper are obtainable—except during the height of panics or crises, and make possible comparison of various periods of time. As the financial center of the United States, New York is the most important money market, and can well be taken as typical of the other money markets of the country, for its close connections with the other financial centers make its interest rates and those of the other money markets mutually responsive.

In the accompanying graph are shown the fluctuations in the monthly average rates of interest on commercial paper at New York from 1906 to 1920, inclusive. This graph clearly brings out the fact that in 1920 such rates rose higher than at any time during this period except in the panic of 1907, going to 8 per cent and above. It does not bring out the fact, however, that, with this exception, commercial paper rates during the latter part of 1920 were higher than they had been for twenty-four years.

The graph also makes it clear that after the temporary flurry immediately following the outbreak of the war in 1914, when the rate on four-to-six-months paper rose above 7½ per cent, commercial paper rates went down to very low levels in 1915. The graph shows these levels to have been the lowest reached between 1906 and 1920. But as a matter of fact, the average rates quoted during November, 1915, on sixty-to-ninety-day paper were lower than they had been for sixteen years, while the rate on four-to-six-months paper had not been so low for more than a quarter of a century. Therefore, in comparing interest rates of today with those of former times, we must remember that the rates of 3 and 3½ per cent which were seen in 1915 and 1916 were not normal rates, but unusually low ones. A more normal pre-war rate would be around 4½ to 5 per cent.

In the latter part of 1916 interest rates on short-time loans began to rise and, with the exception of a temporary set-back following the armistice, continued upward until the latter part of 1920, when they reached their peak, going above 8 per cent for four-to-six-months paper and to an even 8 per cent for sixty-to-ninety-day paper. In the last few months some slight lowering of rates has taken place, but it has not been very material, rates still being between 7 and 8 per cent. Interest rates on bonds, as indicated by their yield to the purchaser,



went in general higher in the middle of 1920 than at any time for more than a generation. Holders of bonds experienced the disappointment of seeing their bonds fall in price to new low levels. Corporations borrowing money for permanent capital requirements were obliged to issue their securities at around an 8 per cent yield to the purchaser. Since the summer of 1920 some improvement in bond prices has occurred, but it has not been great.

What, now, is the outlook with regard to interest rates over the next few years?

The rate of interest on short-time loans is chiefly affected by changes in bank reserves, making more or less funds available for loaning; by business activity, which affects the demand for such loans; and by short-time movements of commodity prices, which also affect the amount of money required for business purposes.

Bank reserves are on the increase. This would tend to lower interest rates on short-time loans. The lower commodity prices now prevailing and in prospect will necessitate less credit to finance business transactions. Further liquidation of loans seems probable and should make the credit situation easier. The present lessened volume of business requires less money, which should also help to ease the money market. Thus, the indications point to lower interest rates in the near future. It is even possible that during the next few years there will be brief periods when short-time loans will be relatively cheap; but it appears probable that the supply of investment capital will not be abundant and that interest rates on such loans will generally be relatively high. Before the close of 1921 we may expect to see lower rates than at present, but it is doubtful if they will return in the near future to a customary rate as low as that prevailing before the war.

Bond prices will probably tend to rise, thus reducing the yield to the purchaser. This would be a natural consequence of lower commodity prices and lessened cost of living, which would make it possible for persons with fixed incomes to invest more in bonds and would thus increase the demand for them. Again, however, it does not appear likely that bond prices will soon go back to pre-war levels. This will be both because of the fact that the commodity price level will be somewhat above that of before the war and also because the supply of investment capital during the next few years is unlikely to be relatively as large as it was in pre-war times.

SPRINGTIME—PAINT-TIME

Springtime brings different thoughts to different people. To the youngster, it means baseball; to the poet, spring verses; to the housewife, spring cleaning. But to paint dealers, the first blades of grass appear as harbingers of "paint-up" time.

The average householder sighs gratefully as he rakes the furnace for the last time. But he pauses in his labors to swat a venturesome fly. His train of thought then might be something like this:

"No more coal, thank Heavens! First fly—must keep 'em out—screens—over in the corner—need paint."

If he is energetic, or has an energetic wife, his next stop will be the paint store. If he procrastinates, the paint dealer who is wise in his generation can get this trade with some early advertising. Since screens are generally the man's first springtime thought, they also offer the most salient point of approach for the dealer.

The householder should be impressed with the fact that there is a special screen paint which he should ask for rather than, "Oh, any old kinda paint'll do." Screen paint will protect the metal from rust, the wood from deterioration and will not clog the wire mesh.

Every observant person knows how a set of unpainted screens can make the "house beautiful" anything but beautiful. Painted screens on an unpainted house also make an ugly combination. Once the householder has prepared his screens it is but a step to painting the porch furniture, and, finally, the whole house.

The alert dealer who realizes there is something in the air in springtime that puts the "clean-up, paint-up" germ in everyone's blood, will not miss the opportunity to stock his shelves with screen paint this month. A little advertising linked with well-directed sales effort can hardly fail to attract trade to his store at this seasonable time.

A PROVING GROUND FOR UPHOLSTERY

Hotel service taxes the wearing qualities of upholstery to the limit. Fabrikoid stands the test

UPHOLSTERY materials meet, perhaps, their most severe test when used on hotel furniture. Large numbers of guests daily use the hotel furniture, and generally they are less careful than they would be in a private home. On rainy days wet garments and dripping umbrellas are permitted to come in frequent contact with the upholstery on lobby chairs and settees; spilled food and sticky hands soil the covering material on dining-room chairs; cigar and cigarette ashes are carelessly dropped on chairs in smoking rooms.

These and other trying service conditions necessitate the selection of an extremely rugged and durable material for hotel upholstery. It must also be good looking and retain its original fine appearance throughout a long period of hard use.

Craftsman Fabrikoid, already widely used for all types of upholstery, more than fulfills these requirements. It possesses a rich beauty that is in harmony with the finest furniture and, as it is obtainable in a variety of colors or in handsome Moorish two-tone effects, it permits a selection to conform with any decorative plan. Its beauty is permanent—time only serves to deepen and mellow its color tones.

Fabrikoid upholstery is remarkably wear-resisting. It is practically scuffproof and stands up well under constant use. Its impervious surface makes it dust and stainproof, and, consequently, it is easily kept clean at all times. On dining-room chairs especially, where no type of porous or absorbent upholstery material is suitable, Fabrikoid is practical because it is waterproof and washable.

These desirable qualities have been tested and proved in many leading hotels. Hotel managers find the added length of service and ease in cleaning, possible with Fabrikoid upholstery, a substantial item in keeping down expense. Two well-known hotels in which a liberal use of Fabrikoid upholstery has been made are the Ambassador and Strand, both in Atlantic City.

In the Ambassador, Fabrikoid is used in the beautiful Pompeian Grill, where, nightly, hundreds of guests dine and dance. The material adds to the simple beauty of the wall benches and chairs on which it is used and, needless to say, facilitates rapid and thorough cleaning.

In the spacious lobby of the Strand, Fabrikoid is used on the luxurious furniture, emphasizing the elegance and comfort of the chairs and lounges. Despite months of continuous service the upholstery still looks new, and will, undoubtedly, be in use for many years. The beauty, durability and ultimate economy of Fabrikoid are distinctive qualities that hotel owners are quick to appreciate. They know its worth because they realize that only a high-grade upholstery can successfully withstand the test of service in a large hotel. There, if anywhere, is a real proving ground of merit.



The Strand lobby (oval) and the Ambassador grill room, both in Atlantic City, are upholstered with Fabrikoid

MAKING FLORIDA DRY

Canals hundreds of miles long are changing the swampy Everglades into fertile farms

By H. H. HAMILTON

FLORIDA is the wettest state in the Union. Surrounded on three sides by water indenting its shores in numerous bays and inlets, it has a coast line of 1,176 miles, or more seacoast than any other state. Inland, the peninsula is dotted with 30,000 lakes. Moreover, Florida has an annual rainfall of from fifty-eight to sixty inches, most of this coming in such a short period—from June 1 to September 10—that it cannot drain off. Of the state's total surface of 58,666 square miles, 4,400 square miles are under water at all times and vast additional areas are inundated during the rainy season.

It is natural, therefore, that Florida should be interested in drainage. Several years ago a project was started to drain Lake Okeechobee and the Everglades by means of two canals, one, the St. Lucie canal, running from the northern end of Lake Okeechobee to Stuart on the St. Lucie inlet, and the other, the Tamiami canal, running from the southern end of the lake through the Everglades to Miami. The construction of these canals is well under way. The sand and muck soil of this region is from three to five feet deep over a stratum of limestone through which the contractors must blast in order to secure the proper depth. Each canal is to be sixty feet wide and is to carry twelve feet of water.

The sand and muck have been dredged off the entire route of both canals and now a large dredge is working to remove the lime rock. On the Tamiami canal, the *Governor Herrick*, a big steel dredge with a 7-yard dipper, has advanced one-third of the distance from Miami to Lake Okeechobee, about sixty-eight miles, dredging a sixty-foot bottom and removing one thousand yards of rock every eight-hour shift. The *Herrick* is preceded by a drill boat equipped with three hydraulic lift drills of the submarine type. This drill boat is putting down nine holes across the sixty-foot canal, each fourteen feet deep from the top of the water. Each hole is charged with about ten cartridges of 60 per cent Du Pont gelatin, 2″ by 8″ and primed with one electric blasting cap provided with twelve-foot wires.

In addition to the construction of these two canals, which has been in progress for some time, a systematic draining of farm lands has been begun by the use of medium-sized artery and smaller lateral canals running parallel to one another an average distance of one-half mile apart. Two large contracts have recently been let, one at Fort Pierce on the East Coast in St. Lucie county, the other at Fort Myers on the Caloosahatchee river near its outlet into the Gulf. A third, in the Lake Worth district near Palm Beach, is about one-third completed.

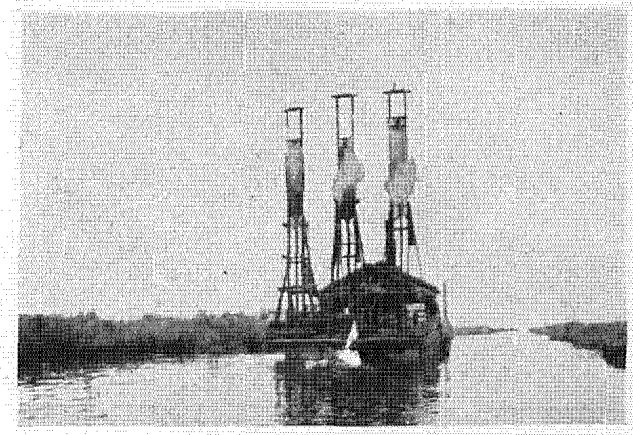
The Fort Pierce contract provides for 400 lineal miles of drainage canal, part of it four and one-half feet deep with a six-foot bottom, and part of it nine feet deep with an eight-foot bottom, making a total excavation of more than 6,000,000 cubic yards to be completed within eighteen months. The engineers estimate that it will cost $1,000,000. As the rock in this district is near the surface, a large percentage of the total yardage to be moved will have to be blasted.

The Fort Myers contract calls for 136 lineal miles of ditch. Of this, there will be forty-one miles of main-artery ditch, eighteen feet wide and from eight to fourteen feet deep, and ninety-five miles of lateral ditches, spaced one-half mile apart, either six or eight feet wide and from four to seven feet deep. It is estimated that there are more than a million yards of excavation and that 400,000 yards of it are rock.

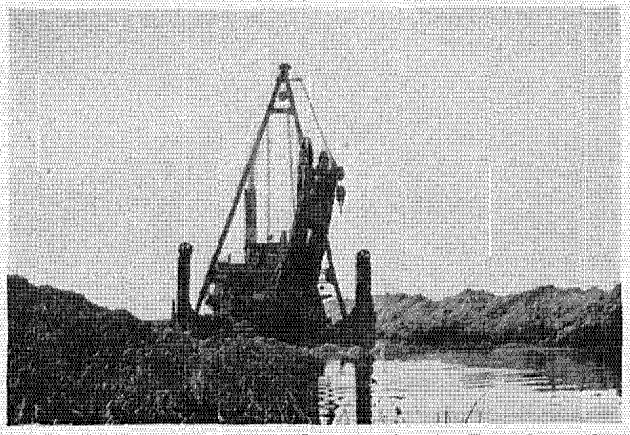
This rock, known as Lost River limestone, is of two different formations, both rather soft under water but becoming harder when exposed to the sun and air. One kind is composed of mussel shells and large flint crystals loosely cemented together. The other is a close-grained limestone containing only small shells but with large porous spots in it. It is somewhat harder than the first kind while still under water and, after being exposed to the sun, has a metallic ring. It is found underlying swampy regions. Strangely, this rock is almost twice as thick under the west side of a swamp as it is under the east side, regardless of the size of the swampy place.

The region around Fort Myers is only nine feet above sea level. In drilling wells, salt water is struck from thirty to forty feet down, but by drilling 600 to 700 feet a fine flow of fresh water is secured with pressure enough to supply household needs. Consequently, one well is being put down to every eighty acres of land in this tract. During six or seven months in the year the land is so wet as to need drainage, but there is also a very dry spell. To provide against this, gates are being built in all the lateral canals so that by closing them and allowing the wells to overflow, the land can be irrigated.

Farms here produce from $500 to $800 worth of vegetables,



Drilling holes through limestone in the Tamiami canal

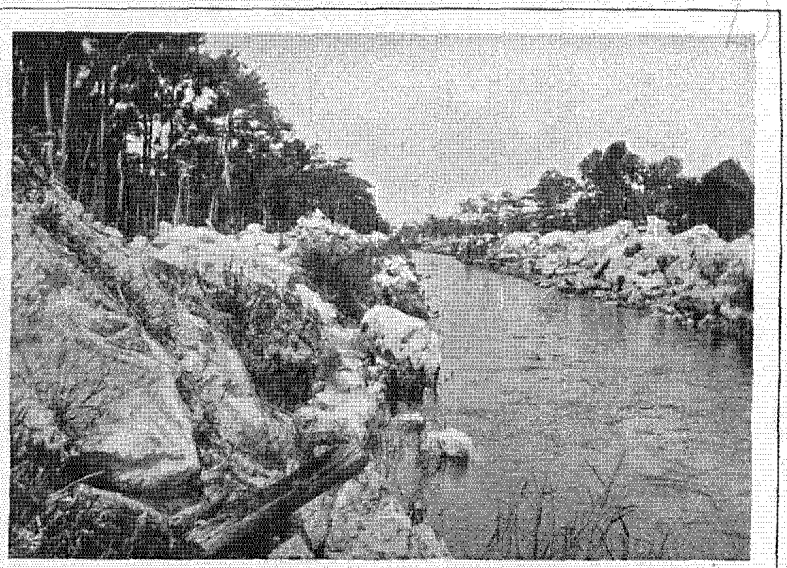


The dredge removes the rock, broken with Du Pont dynamite

per crop per acre, and are especially noted for their yields of lettuce, peppers, beans and tomatoes. When drained, the land sells at $300 an acre. Undrained, it brings about $15 an acre. Thus it is easy to see that although these drainage projects are large and cost a great deal of money, the cost is insignificant when compared to the quick returns in crops and appreciated value of the land.

The drainage work at Fort Myers is being financed by a bond issue and supervised by a drainage commission. It is understood that as soon as this contract is well under way, another bond issue will be floated for the drainage of another area.

The contract for ditching in the Lake Worth district calls for more than 621 miles of ditch. Of this, about 450 miles will be lateral ditches of six-foot bottom, from four to nine feet deep, and the other 171 miles main ditches of sixteen-foot bottom, from ten to sixteen feet deep. About one-third of the whole excavation has been completed, but practically all the rest must be blasted. The rock in this district is composed of lime and small shells. Like that around Fort Myers, it lies in layers from fourteen inches to forty inches thick and is fairly soft while under water.



Finished canal through a cypress swamp in the Fort Myers district

In the six-foot bottom ditch the contractors are using a single row of holes spaced about five feet apart. To put down these holes they drive a piece of double-strength pipe down to the grade line of the ditch. At times there may be from six to twenty-four inches of water over the surface; at other times the surface is dry, but the holes always contain water. Therefore, after removing the pipe, a charging barrel is used for loading. This charging barrel consists of a piece of pipe, split at the lower end. Through its length runs a wooden rod. The cartridges are placed in the split portion of the pipe, which is then forced into the hole, and the charge pushed into position by the use of the wooden "plunger." Then the charger withdraws the barrel and the shot is ready to be fired.

In loading these holes from two and one-half to five cartridges of 40 per cent gelatin dynamite are used. Drag-lines are chiefly utilized to get the rock out of the lateral ditches after it is broken. There are now in operation six steam-driven drag-lines, four gasoline-driven machines, and six other machines that straddle the ditch on caterpillars and use dippers. On the main ditches the contractors are using small floating dredges with ¾-yard dippers.

The fertile land in the Palm Beach region is especially suitable for beans, tomatoes and peppers. One man in that district made $18,000 on peppers alone last season. Such results make a bright outlook for prosperous farming in Florida and encourage the promoters of drainage to push forward their projects as rapidly as possible. It is an indication of the extensiveness of the work already under way that Florida is using as large a quantity of explosives per capita as any of the states having large mineral wealth which must be taken out with dynamite or powder.

MEASURING THE UNIVERSE

ALMOST everything visible—and a few invisible things—can be measured. The circumference of the earth or the thickness of a hair is mensurable. Even gas, electricity, air or the temperature, which cannot be seen, can, nevertheless, be gauged. It is almost true, therefore, that man has learned to measure the universe.

The instruments with which this task is done are interesting. The diversity of application necessitates a variety of devices, while efficiency demands extreme accuracy. Therefore, in these instruments, whatever material is used must meet severe tests. For this reason it is no inconsiderable tribute to Pyralin sheeting to state that it is used on many of these measuring devices.

You will find Pyralin in the drafting room, the laboratory, with the surveyor or the engineer, or wherever man is at his task of measuring some part of the universe. The designer, busy with his drawing, uses a T-square and ruler edged with transparent or amber Pyralin. His protractor, set of curves and triangles are made of the same material. The surveyor and engineer are partial to Pyralin, while in laboratories, gauges and meters are covered with this sheeting.

The slide rule, the planimeter, the drafting machine, all have some Pyralin on them. For a transparent cover over recording instruments where glass might be broken, it is also desirable. The indicating gauges on scales, from the largest to the smallest, are most efficient when made of this material. Pocket rules and scales are frequently made for advertising purposes, the advertisement appearing on the reverse side.

Perhaps no one appreciates Pyralin triangles more than the draftsman. Because they are transparent and clearly show the lines already on his paper, instruments made of Pyralin permit greater accuracy in drawing. This sheeting is also flexible, does not break or crack easily, is light in weight and easy to keep clean. This last quality, particularly, greatly aids the draftsman, as it prevents soiling the paper.

Pyralin meets all the requirements of manufacturers of scientific instruments. It can easily be cut, sawed, drilled, molded or punched. Graduations and figures can be stamped or printed on the sheeting and the markings will not wear off. The sheets of Pyralin are uniform in color and thickness and free from blemishes, allowing maximum use and minimum expense. Even the waste cuttings can be saved and sold.

A CITY IN A BUILDING

The necessities of life and many of its luxuries are housed in Detroit's new office building

THE fact that a building contains 1,700 offices for 6,000 people, four miles of corridors and thirty acres of floor space would seem to justify the claim that it is the largest structure of the kind in the world. Such is the Durant Building at Detroit, Michigan, which also houses a larger number of business and welfare services and conveniences than any similar building. In addition to the offices of many business concerns it includes within its walls stores, banks, restaurants, swimming pools, gymnasiums and recreational facilities.

The building was intended primarily to accommodate the general offices of the General Motors Corporation and its subsidiaries. It is fifteen stories high and covers a full city block, 522 by 365 feet, in the heart of Detroit. A research laboratory, five stories high, has also been erected adjoining the new structure.



Durant Building—painted throughout with Du Pont products

Through some peculiar mental quirk, the statement that the new building weighs approximately 230,000 tons does not impress one as readily or as forcibly as the fact that 303 tons of window-sash weights were used in its construction. To say that 5,000 radiators have been installed gives a more definite idea of the hugeness of the building than the bald statement that the building occupies 20,411,000 cubic feet of space. It aids in visualizing the size to state that 8,790,000 bricks, 100,000 barrels of cement, 16,478 tons of steel, 170 miles of electric wiring and 218,000 square feet of glass now form part of this mammoth building.

But size is not its only distinctive feature. Of more interest are its unusual facilities and conveniences. An executive of the General Motors Corporation can follow this routine, if he desires, without once leaving the building:

Arising in the morning in the bedroom of his private living suite, he can bathe, dress with the aid of a valet and have breakfast in his private dining room. Before stepping into the elevator to go to his office, he can go to the private barber shop or read the morning newspaper in the executives' lounge. When he arrives at his desk he is under the same roof with the vital parts of his own organization, as well as with hundreds of other concerns with which his company may have business dealings. For lunch he can go to the executives' general dining room.

In the afternoon he can either keep an appointment with the doctor or the dentist, visit a friend in the hospital or go shopping in the many stores on the main floor. For his financial convenience there are two banks in the building. In the evening he can attend a concert in the auditorium on the main floor—and so to bed. Not only has he failed to cross any of the four portals of the building during his busy day but he has also failed to exhaust the resources of the building. If he could crowd two days' activities into one he might also enjoy a "work out" in the gymnasium, a plunge in the swimming pool and a half hour at bowling or billiards. Even then, like the very small boy at the very large three-ring circus, he would retire with the knowledge that he had not enjoyed everything in this "city within a building."

In the basement are two swimming pools, one for men and one for women; a gymnasium, a barber shop, twelve bowling alleys and a 31-table billiard room. On the first floor are eight automobile showrooms, an auditorium which can seat 1,500 people, a bank, a trust company and numerous stores. The floors above, served by 27 passenger and 4 freight elevators, are devoted to miscellaneous offices as far as the fourteenth, which is for the exclusive use of executives of the automobile corporation. On the fifteenth floor are two dining rooms with cafeteria service, one for men and one for women. This floor also contains a women's rest room, men's lounge and games' room, offices of the doctor, dentist and nurses and an employes' dance hall.

In planning this huge building, housing such a large number of people, the architects considered every detail that would enter into the permanency and safety of the structure. Because the building is of steel frame construction the protection of the metal against rust was an important consideration. Du Pont rust-inhibitive paint was used on all structural parts made of metal.

In fact, Du Pont paint products were used exclusively in painting the structure, both inside and out, and enough was applied to put a good-sized town in first-class condition. As American walnut trim was used throughout, it was filled with Walnut Paste Wood Filler and finished with Du Pont varnishes. Oil colors and flat wall paints were also applied in quantity. Du-Lite Flat and Gloss were used in the laboratories and workrooms to give maximum light reflection.

On such a huge contract the uniformity of the paint was highly essential. Such a quantity was used that the slightest discrepancy in quality or shade would have been immediately noticeable. But the paint used on the first floor is the same shade as that used on the fifteenth. Needless to say, the paint also harmonizes effectively with the general architectural and decorative scheme, while its superior quality will enable it to survive every test of service.

"BLAST THOSE POLES!"

It was a happy inspiration that led the fisherman to put Du Pont service to the test

IF Lud Raymond, of the Chincoteague Fisheries Company, had a characteristic failing it was the too frequent use of proverbs. He had them for every occasion and when he could not find an old one to fit the case in point, he improvised. Therefore, having discovered that barking dogs sometimes snap, he told his fellow fishermen "when in haste, use dynamite." As the connection between dynamite, haste, fishermen and barking dogs is involved, the skein of the story had better be untangled.

The Chincoteague Fisheries Company, as the name implies, is one of many similar concerns whose business is to supply fish to the city markets. This company has its headquarters on the picturesque and little-known Chincoteague Island, off the eastern shore of Virginia, and maintains a number of fish pounds several miles at sea.

These fish pounds consist of poles ranging from sixty to seventy feet in length, sunk so as to form either a circle or an oval. The tapering ends of the poles are driven deep into the bed of the ocean, while the butt ends, which average about two feet in diameter, project well above the waves. Within the oval or circle formed by the poles, twenty-four of which make a "pound," a net is suspended. Only a small opening is left through which the fish can enter. These arrangements made, the fishermen go daily to their pounds to haul in the catch. There are many such pounds stretched along the Atlantic coast, and at one time captains and owners of coastwise shipping objected to them strenuously, claiming they were a menace to navigation. According to their story, on a dark night, and more especially if a gale were blowing, their ships, unwarned of the danger, might run into these huge poles and knock out their bottoms.

Their complaints became so insistent that the Government decided to investigate. The department within whose province these waters are located conducted an investigation, holding several hearings at which both the skippers and the fishermen testified. A ruling was made that the fishermen must not leave their poles in the water between December 31 and February 15; that the butt ends must project well above the surface so as to be clearly visible by day, and at night vessels must be warned of their nearness to the pounds by red lights suspended from the poles by the fishermen.

The fishermen complained; nevertheless, they endeavored to meet the regulations imposed. Lud Raymond tried with the others, but all acknowledged it was senseless to attempt lighting the danger signals on the pounds when a nor'easter was blowing. Frequently Lud crouched with his fellow fishermen in the lea of some building, quoting proverbs and watching the waves sweep up the inlet, threatening to hurl their crested tops clear across the tiny island. It would be suicidal, these hardy sailors decided, to put out in a boat in such storms. So the pounds were not lighted during a "blow."

A paternal government discreetly paid little attention to such infractions of the rules. The impossible could not be expected. There came a time, however, when Lud Raymond received a letter calling attention to the fact that he had forgotten to remove his poles December 31, as ordered. Surprised but not alarmed, Lud quoted something about the barking dog.

The fishing season was over and he no longer went to the pounds for his daily haul. He realized it would be expensive, tedious and even dangerous to pull out these deeply imbedded poles. If a nor'easter couldn't move them, Lud reflected, with a proverb about "leaving well enough alone," he wasn't going to try.

He received two other letters, each a little sharper than the preceding one. His only comment on the third letter was, "it never rains but it pours." Before February Lud received a peremptory letter from the Government telling him that if the fish pounds were not removed within a week the department would act.

"Barking dog, again!" Lud exclaimed, but in an enclosure he caught a glimpse of the teeth. It was a copy of the rules on fish pounds and the fines which could be imposed for violations.

His first impulse was to start pulling the poles immediately. Then he decided he would need a larger boat, special equipment, an expensive crew and other money-eating items.

"Blast those poles!" he exclaimed in irritation. Then he paused. Why shouldn't he blast them literally as well as figuratively, he wondered. But where could he get the explosives? There was no store on the island or on its neighbor, Assateague, that sold dynamite and he doubted if there were any means of getting it from the mainland to that little, out-of-the-way place in the short time remaining. Combining the proverb about "a stitch in time" and "nothing ventured," he telephoned G. H. Gravenor, a dealer of Parksley, Virginia, who handles Du Pont explosives.

"Say," Lud drawled into the mouthpiece, "can you fetch me some seagoing dynamite tomorrow?"

"Tomorrow?" came back Gravenor's voice. "Why not today?"

"You don't believe in putting off until tomorrow what you can dynamite today, do you?" Lud laughed. "But that suits me fine, for if I don't get my

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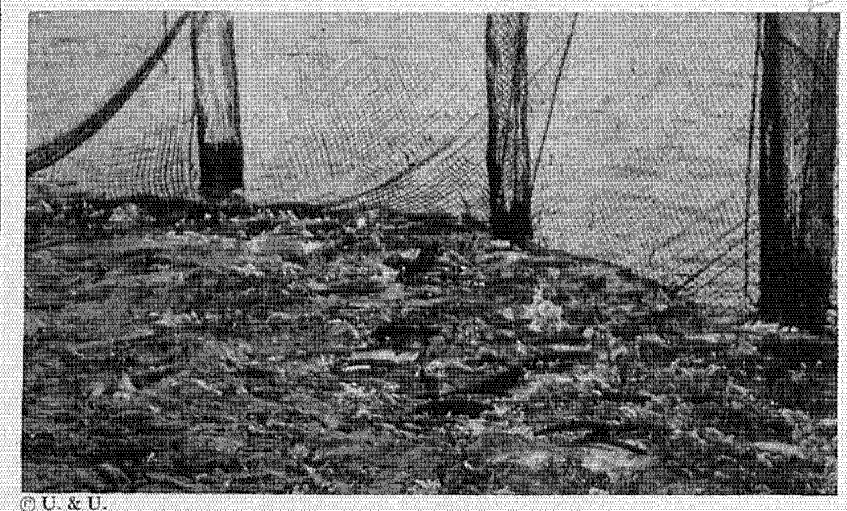

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Section of a fish pound showing the large poles, the net and a good catch

THE USED CAR PROBLEM

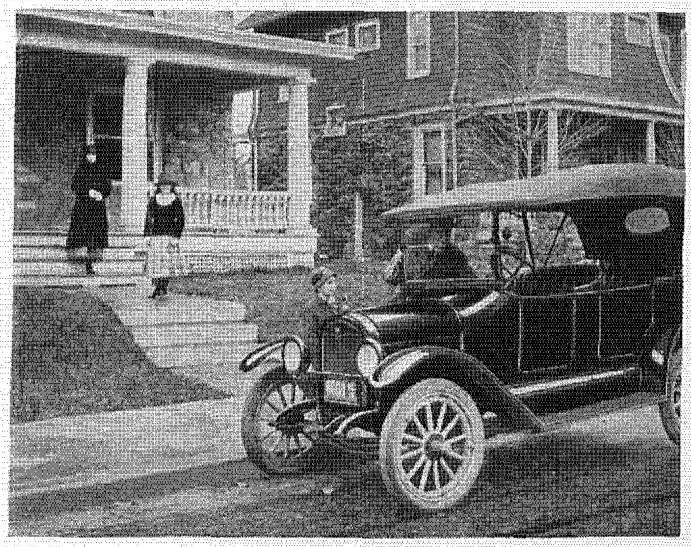
How to keep an old automobile looking new is really no problem—just refinish it

By S. L. JOHNSTON

TWO decades ago the problem of the used car did not present itself as it does today, for the automobile industry was then in its infancy, and every one who owned a horseless carriage guarded it with scrupulous care. A machine so wonderfully made called for careful grooming, and the owner attended to it himself. The few trips it made did not seriously affect its appearance, and, anyway, it was enough of a curiosity to offset any travel-acquired defects in appearance.

Today all that is changed. Automobiles, once a seven-day wonder, are now far more numerous than horses, particularly in large cities. A wide gap separates the first, crude, horseless carriage of twenty years ago from the long, low, rakish, speedy automobile of today. The many different types of machines now manufactured are a sufficient testimonial to the marvelous growth of the motor industry. This rapid development has witnessed the production of automobiles of greatly improved design, apparently perfect in their mechanical details and also in appearance.

The new car, resplendent in its shiny, glossy coat, makes a strong appeal to the prospective buyer. This matter of finish is given serious consideration in the factory, for automobile manufacturers know that appearance is as definitely a sales factor as good construction and reliable performance. Frequently the beautiful appearance of a car determines its selection, more particularly if a feminine voice has anything to say about it. Color, too, plays an important part. A great deal of attention is given to this detail. There are rich blacks, deep blues and dark greens for the dignified and conservative tastes, rich reds, creams and light browns for the more sportively inclined. Auto manufacturers have worked hard to build cars that will stand up under the trying conditions of travel, and, at the same time, be distinctive in appearance. In a remarkable degree they have succeeded.



Refinished and ready to take the folks out for a spin

But the impossible cannot be expected. The original beautiful finish on a car is not everlasting. Consider the effect of a year's strenuous use, for the automobile is not a fair weather machine, but daily performs its task regardless of weather and road conditions. A year's service generally does not affect the mechanism of a car. Its appearance, however, is sure to suffer.

Rain, snow, sleet, ice, mud, intense heat and cold are, of course, detrimental to the finish of a car. This cannot be attributed to defective finishing at the factory, or to the quality of materials used. Rather, it is chargeable to the conditions which a car in service must meet—conditions which are bound in time to injure even the most durable finish, dulling the gloss, fading the color and causing the enamel to chip, crack and peel off in spots. This picture may be somewhat overdrawn as to the appearance of a car after a year's service, yet hard usage, careless washing and constant exposure to changing temperatures spell disaster to the finish.

How shall a car owner keep his machine looking new? It is not really such a problem as might be supposed, for the paint industry has kept pace with the advancement made in the motor industry. It has perfected the materials used for finishing the new and refinishing the old car. These refinishing materials are practical in application; any handy man can use them with satisfactory results. They dry quickly so that his car need not be out of use more than a few days, and the range of colors is sufficiently varied to meet any taste. They are products that can be depended upon. For the car that has merely lost its original lustre, the only thing needed is a coat of Clear Finish. This is a varnish of good body and lustre, sufficiently clear for use over light colors and specially prepared for automobiles. Before applying the varnish, the car should be washed thoroughly with soap and water. Grease spots should be removed with benzine, while Pontoklene will dissolve any stubborn tar spots. Allow the car to dry thoroughly, sand lightly to cut the gloss and apply the varnish in a garage or workroom free from dust. A chisel-edge varnish brush should be used in a temperature as nearly seventy degrees as possible.

If you are not satisfied with the present color of the car, or prefer to change its color, the process is equally simple, but requires the application of slightly different materials. After the car is washed and cleaned, it should be sanded with fine sandpaper to kill the gloss of the previous coating, and then thoroughly dusted. If a light color is to be applied over a dark one, two coats of Auto Ground, corresponding in shade to the desired effect, should be applied. The first coat, when dry, should be lightly sanded and the second coat haired down with steel wool. For the final finish apply one or two coats of Auto Enamel. If two coats seem desirable, the first should be sanded before applying the second.

If a dark finish is to be applied over a light color, or the present finish restored, the Ground Coats are omitted and one or two coats of Auto Enamel applied over the old finish. For a final finish that will add greater smoothness and protection, a coat of Clear Finish can be applied over the Enamel Coats.

The methods described before apply generally to an automobile after a year or a year and a half of service.

The Ground Coats and Enamels mentioned are especially prepared for the purpose, and work perfectly in conjunction with each other. The Ground Coats harmonize with the Enamel colors and together they form a smooth, non-absorbent

surface, which causes the finish to stand out with full lustre.

The Auto Enamels are free-flowing, durable products, possessing depth of color and lustre. They are much superior to the ordinary carriage and automobile paints or "overnight" finishes.

Next, consider the car on which the finish has reached the apparently hopeless stage. This is the automobile from which the original finish has peeled off in spots down to the bare metal, where it has become cracked and marred, or where accident and rough usage have dented the metal. After washing the car, these bare spots should be sanded thoroughly to remove rust and to smooth up the rough edges of the remaining finish. Then apply to these spots and to deep cracks and dents a knifing coat of Filler and Surfacer which, when dry, should be carefully sanded. Over this apply two or three brush coats of the same material, properly reduced with turpentine to brushing consistency. These coats should be brushed on in opposite directions, and each sanded, when dry, to produce a smooth surface and to even up the spots with the entire surface. Then follow with two coats of the Ground Coat and one or two coats of the Enamel as previously directed.

There are several other items in the Auto Finish line that are worthy of mention, for this line would not be complete without the addition of certain products. These items represent the perfecting touches that give a complete finish to the car, from top to fenders.

Seat Dressing is a specially prepared product for dressing leather, Fabrikoid and other upholstery. It renews the appearance and pliability of the material and has the distinct advantage that it will not rub off on the clothing. Top Renewer, as the name implies, produces a glossy black on Mohair, and leather substitute tops, renewing the appearance and producing a waterproof finish. It should not be used, however, on rubber tops.

Fender Enamel is a rustproof, high-gloss, jet black that will stand the bumps and knocks to which it will be subjected. It is a tenacious product and very durable. Lamp Enamel is used for the refinishing of lamps and other metal trimmings. It produces a jet black finish in semi-gloss.

All of these products possess the same high quality that characterizes the Enamels and Ground Coats.

This briefly describes the work of refinishing a used car, excepting only the car so badly cracked and marred that the entire finish must be removed. This is a process, however, requiring too much time and labor for the majority of car owners; in fact, it is a job that may well be delegated to the auto painter or finisher who has the facilities for doing this type of work. He will, perhaps, use the same materials mentioned, for these auto finishes are not designed merely for car owners who desire to do the work themselves; many automobile painters use these products regularly in their business because they are sold ready for use and can be applied at a saving of time and labor.

You will find the refinishing of your car an interesting and absorbing problem. You will feel a sense of pride in accomplishing what at first seemed an impossible undertaking—that of transforming the used car into a new one. With a little care and patience the car will lose its apparent age, become a credit to your handiwork, and regain its place with dignity in your social and business activities. Perhaps then you will decide that the problem of the used car is not really a problem at all—simply a matter of knowing what to do and how to do it.

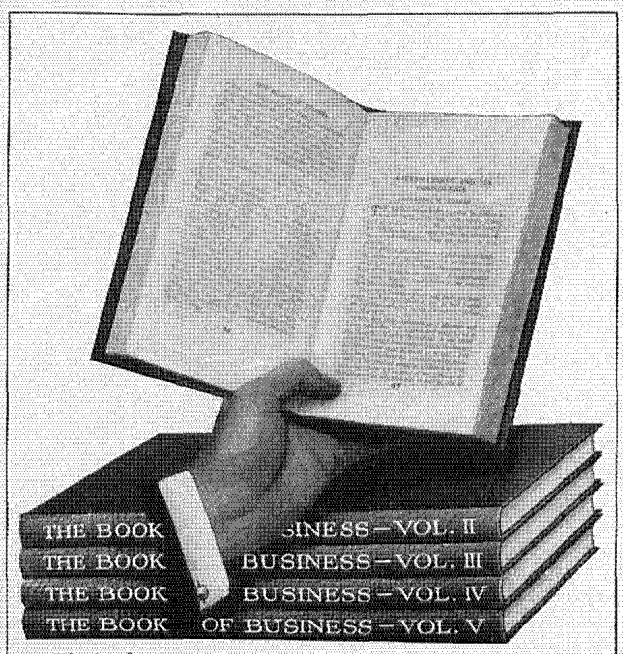
TOUCHSTONES TO SUCCESS

SOUND advice on the basic principles of finance and credit, of organization and management, of employment, of advertising and selling, of making collections, given by sixty-seven of the nation's leading business executives, is certainly well worth having. This collection of helpful instruction on topics of vital interest in the business world has been published by P. F. Collier & Son, of New York City, and is now offered in book form in a five-volume series called "The Book of Business."

Needless to say, these volumes are sure to be very useful to young men just entering business, or to those who are facing the problems of their first few years in commercial life. To have the advice of such business giants as Charles M. Schwab, John D. Rockefeller, Jr., H. S. Firestone and John Wanamaker, given in the light of their own years of successful experience, is a privilege that all students of business will appreciate.

Such men as Elbert A. Gary, George R. Perkins, Charles H. Sabin, and others equally successful, freely discuss the problems of business today and how they are solved.

Ten years ago these facts would have been jealously guarded as business secrets. Now they will be disseminated as widely as the demand for the books. Everyone has his own way of doing things, but there is hardly a business man in the country who cannot learn something of value from these past-masters of the art of making good. In point of human interest and educative value the stories of their achievements are well worth while.



The books every young man will find profit in reading

No effort has been spared in designing and manufacturing these volumes to make them worthy of their contents and still keep the price within the reach of all who wish to profit by them. For the binding material, on which the appearance and life of the books so largely depend, the publishers are using Du Pont Fabrikoid, which they have found very successful on other important editions. Its Fabrikoid bindings will keep the "Book of Business" in good condition indefinitely, for these bindings are exceedingly strong and durable; they do not scuff or grow shabby; are fast color, stainless and waterproof. After years of hard service, an application of soap and water to the cover will make the "Book of Business" as bright and business-like as ever.

REPRODUCING AMBER

Science has surpassed Nature by producing in quantity a material that replaces the precious amber

THE beauty of amber has made its appeal to many races, both ancient and modern. Primitive naturalists, it is claimed, were made poets in their study of this interesting substance. Because they were unable to find any satisfying explanation of its origin, they concluded that it must be a concretion of the "tears of sea birds." In Greek mythology amber is also linked with tears in a legend, which claims that the Daughters of the Sun were changed into poplar trees, and the tears shed for the death of their brother Phaethon were converted into amber.

But the legends about its origin are not more interesting than the facts. Amber is the fossil resin of a species of pine tree now extinct. The Baltic Sea covers a submerged amber pine forest, and its shores are today the principal source of supply. If you walk along the western coast of Samland, East Prussia, Germany, particularly after a severe storm, you may see scores of men fishing for amber, raking over seaweed cast up by the waves, and even mining the adjacent shores to obtain this much-prized product.

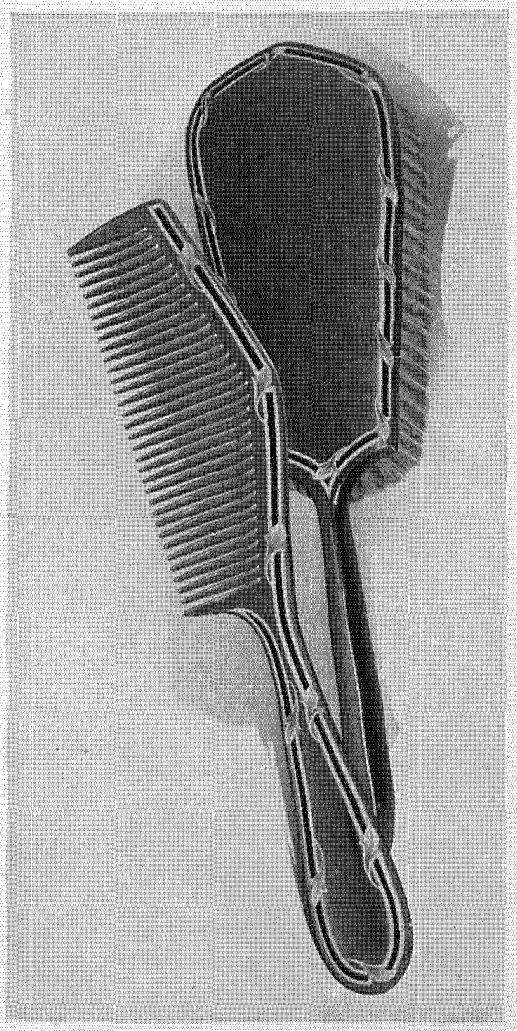
It is not obtained in large quantities. A piece weighing ten pounds is a rare find and commands a high price. The scarcity of amber, its distinctive coloring, its beautiful, translucent qualities and the fact that it is still believed by some to possess virtue as a charm—these are the chief reasons for its popularity and value.

The manufacture of amber articles of large size has not been practicable; the material is too scarce, too costly and too rarely found in large pieces. In the Morgan collection in the Metropolitan Museum of Art in New York City, however, are two amber tankards and a carved amber cup showing the fine handwork of German artisans of the sixteenth century. Beads, chains and small trinkets are the principal articles made of amber for the delight of womankind, while amber pipe stems, cigar and cigarette holders are most highly valued by men. Real amber, however, has never been found in sufficient abundance to permit its use in the manufacture of toiletware.

The love of beauty and the desire to create are primal instincts in man. Years ago the beautiful color of amber aroused the desire to reproduce in more abundant materials the limpid, golden translucency of this semi-precious material. The chemist, working with Nature's most versatile substance, cellulose, and with man-made dyes, achieved it. He not only reproduced the color and beauty of amber, but incorporated them in a material possessing properties far superior to amber itself. The serene beauty of amber has been perfectly reproduced in Amber Pyralin, which lends itself to the manufacture of fine toilet articles.

It is true, toiletware has been made of other materials closely approximating the color and texture of amber. Very beautiful and likewise very expensive combs, brushes and hand mirrors have been made of blond shell, a rare product obtained from a species of sea turtle called hawk's-bill, but that is another story.

Although the Du Pont Company has manufactured sheeting stock of Amber Pyralin for several years, no attempt was made to produce an extensive line of toilet articles of this material until this year. The production of Amber Pyralin toiletware was begun in January, and the favor with which the exquisite pieces have been received shows that discriminating buyers appreciate the superior excellence of these products. The production of this toiletware in sets is an achievement. To secure uniformity of color in articles made of opaque stock is comparatively easy, even though the thickness of each article may vary. But it is not an easy task to secure uniform color and transparency in Amber Pyralin, for variations in the thickness of combs, brushes, mirrors and other articles result in slight variations in the color and transparency of the finished articles. Special treatment of the material has overcome this difficulty. The various pieces which compose a set, regardless of their thickness, are more uniform in color and transparency than would be the case if they were made of genuine amber.



Amber Pyralin—La Belle Pattern, Arbor Design

A point of interest to purchasers of Amber Pyralin toiletware is the fact that the rich color of this beautiful material is enhanced when the articles are displayed against a background of darker shade. These toilet articles, like those made of the expensive blond shell, appear at their best when they are placed on a dresser scarf that does not reflect or create an undertone of contrasting light color.

Standard sets of Amber Pyralin toiletware are procurable in stores that cater to the most exclusive trade. The purchaser may choose between two distinctive patterns, the famous Du Barry and the dainty La Belle with its characteristic transverse handle. The dresser set contains the full twenty-five pieces, making up a complete list of toilet accessories; the bag-fitting set includes fourteen essential pieces, and the military set comprises two military brushes

Continued on page 16

THE AGE OF BRONZING

Bronze powder meets the demand for beautifying the useful in almost countless ways

THE Age of Bronze extended from about 2000 to 1800 B. C., whereas the Age of Bronzing is with us now. It is not meant that bronzing is as thoroughly characteristic of the present period as bronze was of the pre-historic age—rather, one represents the almost universal use of a material for utility, the other, the almost universal use of a material for beauty.

Considering utility alone, the present might as properly be called the Age of Steel, the Age of Electricity or the Age of Steam. But a civilization which has advanced far beyond the mere supplying of bodily needs demands something more than utility. It also requires an artistic complement to the practical—and so bronze powder comes into its own.

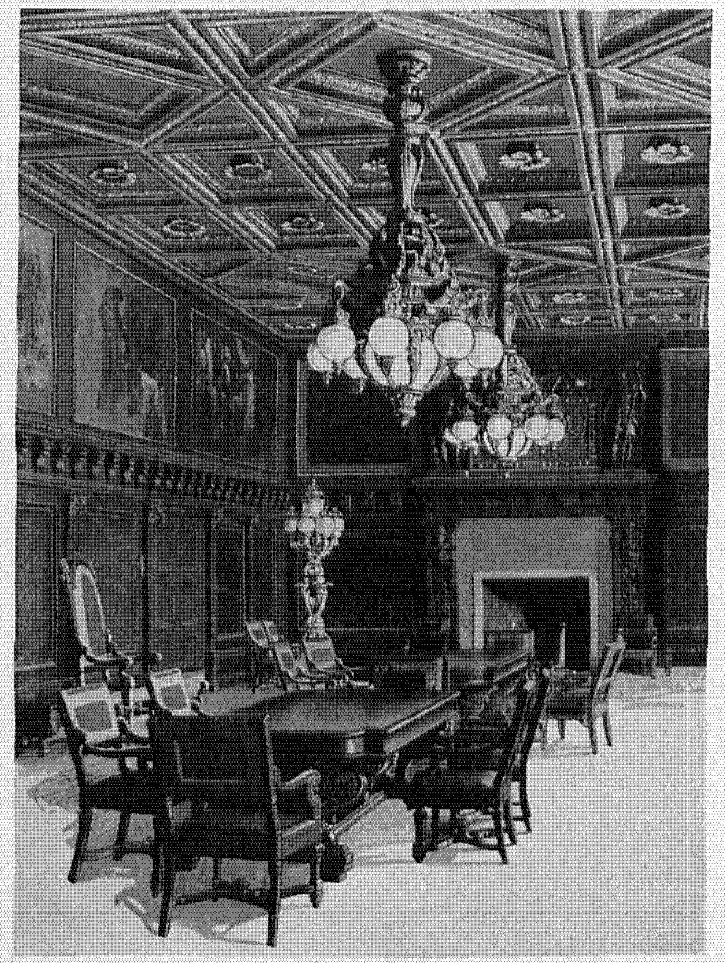
Lift your eyes from this page and you will probably see bronze powder on some article. It may be the gold-like pattern in the wall paper, on picture frames, radiators, lighting fixtures, furniture, cigar bands, cigarettes, candy boxes, perfumery labels, calendars, books, and on scores of other articles. But wherever seen, it is bronze powder, supplementing the utility of the objects on which it is used with the beautifying touch so necessary in the twentieth century. It is the "Pollyanna" of industry, brightening everything with which it comes in contact.

Bronze powder, as the name suggests, is made from bronze, although sometimes other alloys of copper are used. There are about six combinations, varying from seventy per cent copper and thirty per cent zinc, to almost 100 per cent copper. Whatever alloy is used, the metal is smelted, run into thin sheets, and cut into small pieces. It is then pounded until it will pass through the holes in a ¼-mesh screen, or 16 holes to the square inch. But before the process is finished the powder must be stamped so fine that it will pass through a 200-mesh screen, or 40,000 holes to the square inch. If the mind can visualize the size of one of these holes, the almost impalpable fineness of the powder can be imagined.

But the workman must be able to distinguish between sizes, aided by mechanical contrivances for this purpose. The different grades of powder are secured by separating the particles of metal into groups made up of grains of different sizes for different purposes. The finer powder, naturally, sells at a higher price than the coarser.

The various colors of bronze powder are the result of three things—the different combinations of metals, the different degrees of heat or different dyes. If the powder is to be colored by heat it is taken to the furnaces where it is oxidized the desired color. The final process is polishing. The grains of powder are put into an enclosed cylinder where revolving brushes give them a maximum brilliancy.

A list of the manufacturers who use bronze powder would read like the trade directory of a large city. A list of the products on which it is used would suggest a mail-order house catalogue. Baby's cradle will probably have some bronze powder decoration. His first picture may be placed in a frame on which the powder has been used. The youngster's toys will be touched here and there with this attractive product. When he puts his sticky hands on the wall paper you fret because he has ruined the beautiful gold pattern. That's bronze powder again. From the kindergarten to the college he finds it used on his books. And so on through life, literally from the cradle to the grave, for casket manufacturers are large users of bronze powder. But it is in places given over wholly or in part to recreation that the powder finds its greatest usefulness. The next time you go to your favorite theatre or moving picture house notice the amount of bronze decoration on the walls and ceilings. Then think what a comparatively drab place it would be without it. The accompanying illustration gives some idea of the way interiors can be beautified with bronze powder.



Bronze powder gave the final, beautifying touch to this room

In spite of its many uses and the immense demand for the product, the manufacture of bronze powder is a comparatively new industry in this country. Prior to the war, Germany had what amounted to a monopoly of the trade. But with the war came a shutting off of exports from Germany. The demand for bronze powder could only be filled from the meagre stocks existing in this country, and they were soon exhausted. It was at this critical time that a plant was erected by the Du Pont Company. The business is now firmly established.

Continued on page 16

THE
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MAGAZINE

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Vol. XIV MARCH, 1921 No. 3

COMPANY CHANGES

The Miscellaneous Manufacturing Department as such ceased to function February 1, when there was substituted within the organization of the Production Department two new units known respectively as the Dyestuffs Department and the Paint & Chemicals Manufacturing Department. The activities of these departments in the aggregate are identical with those of the former Miscellaneous Manufacturing Department.

The Dyestuffs Department is in charge of C. A. Meade, vice-president, with W. F. Harrington as director.

The Paint & Chemicals Manufacturing Department is also in charge of C. A. Meade, vice-president, with Hunter Grubb as director.

R. W. Sample has been appointed manager of Paint and Varnish Sales, Eastern Division, with headquarters at 35th and Grays Ferry Road, Philadelphia. The sales of paints and varnishes will be consolidated under Mr. Sample at Philadelphia for all of the company's selling branches, with the exception of Boston, Chicago, New York and San Francisco. The railway, industrial and architectural representatives of the Paint and Varnish Section will also report to Mr. Sample.

Dr. F. A. M. Noelting, director of the Technical Laboratory of the Du Pont Company, at Deepwater Point, N. J., has been assigned to export work.

Dr. R. E. Rose, of the Chemical Department, has been transferred to the Dyestuffs Sales Division as assistant director of the Technical Laboratory.

H. J. Haon, formerly manager of the Newburgh plant of the Du Pont Company, has been made manager of the Fabrikoid Promotion Bureau.

Clifford McIntire has been made acting manager of the Newburgh plant, with William A. Schnedeker as superintendent.

J. L. E. Cheetham, formerly superintendent of the Camphor and Oils Department at the Dye Works of the Du Pont Company at Deepwater Point, New Jersey, has been named superintendent of Meadows Plant, which is located at Newark, New Jersey.

O. M. Dulaney, superintendent of the Fairchance, Pennsylvania, powder works, has been granted a leave of absence. W. T. Cloud, formerly superintendent of the Wilpen, Minnesota, works, has been appointed acting superintendent.

A. F. Gebhardt, superintendent of the Rushdale, Pennsylvania, powder works, has retired from active service. W. P. Gebhardt, his son, has been named as his successor.

George Walker, superintendent of the Augusta, Colorado, powder works, has been transferred to Lewisburg, Alabama, as superintendent of the Connable works. G. E. Minshull, of the Wilmington Office, succeeds him at Augusta.

HISTORY OF THE DU PONT COMPANY

How Jefferson, Franklin, Lafayette, Talleyrand, Mme. de Stael, Jerome Bonaparte, brother of Napoleon and King of Westphalia, and other historical personages were friends and active supporters of the Du Pont Company in its earliest days is only one of the many interesting facts contained in the recently published "E. I. du Pont de Nemours and Company, 1802-1902, a History," written by Mrs. B. G. du Pont.

It is an interesting account of the early struggles, later growth and solid development of the company from the time E. I. du Pont de Nemours, a French emigre, settled in Delaware, until 1902 when the fourth American generation of the family took charge of the hugely increased business.

Because of the interesting sidelights on commercial transactions in this country a century ago and the romance of a typical American company it reveals, the book should prove entertaining and valuable reading to all, whether connected with the Du Pont Company or not.

Inasmuch as the company has been intimately associated with critical periods in the country's growth, the book is also an illuminating commentary on American history. How steadfastly the company has maintained American ideals and principles is graphically shown in its business policy during the War of 1812, the Mexican, the Civil and the Spanish-American wars. It is unfortunate, in one way, that the book devoted itself to just one century of the company's history and so missed the opportunity to include in the narrative something of the "men behind the men behind the guns" in the latest war. But in the period it does cover it is a romance of business that everyone could read profitably.

Published by Houghton-Mifflin Co., Boston, Mass., $3.00.

THE PAINT AND VARNISH OUTLOOK

It has been conservatively estimated that there is at present a shortage of more than 1,250,000 houses in America. Before the world war there were erected in the United States between 350,000 and 400,000 family dwellings in a year. The construction of homes and apartments during the war was practically at a standstill, excepting, of course, whatever building was done by the Government. We are at present far behind on our building program. The situation has not improved a great deal since the signing of the Armistice, except for a brief spurt early in 1919. The underlying reason for this is that people who contemplate building homes have been putting it off until prices come down and become stabilized.

Prices are now stabilized. We, as paint and varnish manufacturers, have announced substantial declines throughout the line. The prices have now reached their lowest level. It would be impossible to decrease selling prices further without causing commercial bankruptcy. Prosperity moves in a circle and depends on concert of action by each segment of the circle. It is urgent, therefore, that all dealers do not delay in passing on these declines to their trade. When this is done everyone will soon realize the fact that the present-day selling prices are rock bottom. Building will then begin on an enormous scale.

As a direct result of this big building boom paint and varnish products will be in great demand. We, therefore, predict that this year 1921 will be the banner year for the sale of paints and varnishes, and will be the greatest this industry has ever witnessed. With prices stabilized at their lowest level business cannot help but flourish.

ANOTHER "R" TO THE "THREE R'S"

Rifle shooting is taking its place beside "reading, 'riting and 'rithmetic" in our schools

ON a Sunday when a Pilgrim Father gathered his brood around him and started off through the little clearing to the settlement church, he carried a blunderbuss under one arm and a Bible under the other. If there were a boy in the family, he, too, had his blunderbuss and could use it in an emergency quite as skillfully as his father. It was the same in Colonial days. Doubtless the echo from some youngster's gun was mingled at Lexington with the noise of the shot that rang around the world. Still later, as the pioneers restlessly wandered westward, pushing the border states farther and farther towards the Pacific, the boy of this adventurous stock who could not shoot straight was as much of an anomaly as the healthy youngster of today who does not play baseball.

Those who had anything to do with training raw recruits for the world war often breathed heartfelt prayers or profanity, according to individual dispositions, over the ignorance of firearms generally shown. How much easier their task would have been, they thought, if the boy of yesterday had been as familiar with the rifle as his forbear of a century ago.

Unfortunately, the use of firearms for years prior to the war was confined almost solely to those who preferred to carry their guns in holsters under their armpits and gave policemen a wide berth. Of course, the thousands of rifle shooters, trapshooters and hunters are excepted. But the day when rifle shooting was regarded as an essential part of every boy's training, and good fun as well, seems about to be revived.

The growing popularity of rifle matches in grammar schools, high schools, academies, colleges and universities indicates a renewed and widespread interest. The education in discipline, the steadying effect on the nerves, the unequaled training in co-ordination of mental and physical faculties, and the appeal which a rifle holds for every red-blooded American, young or old, all have caused the sport to spread from coast to coast. Considering the number of educational institutions which have already adopted rifle shooting and the avidity with which the boys have taken to the sport, it is a safe prediction to say that only the start of the rifle's popularity in schools has been seen. If the boys themselves had the making of the decision every school in the country would have its rifle teams.

It is not far in the past when rifle shooting in colleges was not considered a "live" sport. The collegian who won his "letter" on the eleven or the track usually smiled condescendingly when a "frat" member "made" the rifle team. How Daniel Boone must have turned over in his grave at such sneers! But put the scoffer in front of a target, load his gun, show him how to use it and tell him to shoot holes through the bull's-eye.

"That tiny little black spot?" he will ask incredulously.

Watch him puncture the atmosphere and furnish "ore" for rifle-range mining while his comrades make sieves out of their targets. Let him see the marker waving frantically in the general direction of the horizon for his shots while it obscures the bull's-eye each time someone else fires. Then watch him change his opinion about rifle shooting.

Once a scoffer nestles a rifle-butt against his shoulder, cuddles the stock with his cheek, curls his finger around the trigger and tries to get a "full" sight of the elusive bull's-eye, he is converted. Let him acquire the keen eye, the steady nerves and the co-ordinated muscles that make a marksman and he becomes an enthusiast. Such has been the experience at Princeton, Yale, Harvard, Cornell, Ohio State, Colgate and other colleges where the sport has been introduced.

The Public School Athletic League of New York City has long fostered rifle shooting. Until last year, however, the sport was handicapped by lack of proper range facilities. In 1920 a model indoor range was installed under the grandstand at Ebbets Field for the school boys' use and considerable improvement in the status of the sport has resulted. In New York the boys are put through a regular instruction course with a .22 rifle or sub-target gun during the winter months. When the state range is opened in summer all the students who have made certain qualifying scores are taken to Peekskill and initiated into the science of shooting the regular U. S. Army Springfield rifle. The number of youngsters who pass the Army tests for Sharpshooter, Marksman and Expert Rifleman is surprising.

Much the same system is followed in Washington, D. C., where public school rifle shooting has been developed to a greater degree than in any other place in the country. Prac-



© U. & U.

Miss Marjorie F. Kinder, fourteen years old, the National Junior Rifle Champion

tically every school has an enthusiastic club, including within its membership both boys and girls. Regular inter-school matches are as much a part of the sport calendar as the football and baseball games.

The junior rifle shooters are not hampered by lack of a place to shoot. The District of Columbia National Guard range is used and the youngsters are taught the advanced stages of the sport, the rudiments of which they have learned in the galleries.

In New England, rifle shooting is becoming a fixture in the public schools. Chicago, and other cities of the Middle West, have high school rifle teams and stage matches in which the school spirit runs as high as in any other sports. The movement has also spread southward and westward. Los Angeles and San Francisco boast of a number of junior rifle teams.

Inter-collegiate rifle matches are daily gaining more and more space in the newspapers. Matches with the small-bore, .22 rifle or with the regular U. S. Army Springfield are being shot off between old rivals. Yale and Columbia are engaged in a series of three matches with the small bore. Yale won the first match and the Columbia gun-toters are out for blood.

A cable match between Yale and Oxford University, England, will be shot this month. The English colleges have been enthusiastic supporters of small-bore rifle shooting for years and the New Haven collegians have shown they are sportsmen of the first order in accepting the challenge. Colgate is also trying to arrange matches with Cambridge and Oxford, and other colleges are expected to step into line so that international rifle matches by cable will become of common occurrence. Such keen interest is exhibited that many colleges are hiring coaches.

The possibility of cable matches is one of the characteristics of rifle shooting as a sport that place it in a rather unique position. Regardless of the location of a college, it may, through the medium of the telegraph, cable, wireless or telephone, stage matches with any other college in the world.

Another point is the fact that the size of the school is of little importance as far as a winning aggregation of riflemen is concerned. As five shooters generally constitute a team, even a small school or class can have strong teams.

The equipment is relatively inexpensive and once installed becomes as much an asset as any "gym" equipment. There are no expensive replacements to buy every season. As a matter of fact, the small-bore rifleman disregards "seasons." Day or night, summer or winter, he finds sport, recreation, and training in the indoor gallery. Of course, in spring an inexpensive outdoor range can be put into operation or, if there is a State or Government range in the vicinity, the rifle shooter can leave the gallery for a few months and get outdoors.

The National Rifle Association endorses the organization of school and college clubs. It will accept such clubs into full membership and arrange each year matches for schools and colleges alone. Furthermore, the boys may enter any of the other matches held annually under the auspices of the National Rifle Association. Medals and suitable trophies are awarded, and individual members of the National Rifle Association are permitted to purchase rifles, ammunition and range supplies from the Government arsenals, a privilege not enjoyed by persons outside the national body.

The Military Sales Division of the Du Pont Company will be glad to confer with the faculty or athletic association of any school interested in rifle shooting; or inquiries may be addressed direct to the Secretary, National Rifle Association, Woodward Building, Washington, D. C.

TECHNICAL AID FOR FABRIKOID USERS

NO material, perhaps, of as recent development as Du Pont Fabrikoid is used in so many different industries, or becomes a part of so many different products. This diversity of application, constantly increased by the discovery of new uses for Fabrikoid, places the Du Pont Company under a very definite obligation to provide technical advice to all who need it.

As is well known, the Du Pont Company does not make up any articles of Fabrikoid in the finished form in which they reach the ultimate consumer. It merely produces a raw material which thousands of independent manufacturers convert into its final useful form. However, it is of vital interest to the Du Pont Company that the conversion of Fabrikoid shall be along the most practical and economical lines, so that it shall always reach the consumer in attractive and durable forms in articles that sell at fair prices.

Only as the ultimate consumer is satisfied with Fabrikoid can its sale increase healthily, so that good business, if nothing else, suggests a close co-operation with every manufacturer who will welcome it.

The value of technical aid is particularly great where the characteristics of the material to be worked up are not generally known. There is no mystery about the construction or the general qualities of Fabrikoid, but there are limitations to its usefulness, as well as possibilities in it, which are not always understood.

We are constantly advising against the use of Fabrikoid for purposes where it would prove impractical either from the standpoint of cost or utility. On the other hand, we have helped develop so many uses for which it is thoroughly practical that our technical staff has contributed largely to the great expansion of our business.

This technical staff is thoroughly equipped to handle any problem that may arise in connection with Fabrikoid or its use. It is at the service of any manufacturer using Fabrikoid, whether the same is supplied directly through us or through any of our distributors.

In many cases a manufacturer's problem can be solved through correspondence. In other cases it will be necessary for one of our experts to visit the manufacturer's plant. Very often the Du Pont laboratories are called in to help, but always this technical service is prompt, thorough and practical—almost always it solves the problem.

It would be very interesting if we could review here some of the outstanding successes of our technical staff, but all of this service is rendered in strict confidence. We can, however, practically assure any manufacturer that there is a grade of Fabrikoid which can be adapted to his use if a flexible, impervious material is not impractical.

In many cases there is no problem whatever involved in the adoption of Fabrikoid by a manufacturer using it for the first time. In most cases our salesmen from their wide experience and careful training are quite competent to advise such a manufacturer, or at least to submit his problem to our technical staff in intelligible form.

In any case where a manufacturer decides to buy or to try Fabrikoid before consulting one of our salesmen, he should write us in detail as to the use he intends to make of the material and the process by which it will be worked up. We can then usually save him some time, trouble and expense. We can often suggest a type of Fabrikoid, or a particular grain, finish or pliability that will meet his requirements exactly. We often develop entirely new materials for manufacturers who require something special. It is both our duty and privilege to work in close co-operation with any user or prospective user of Fabrikoid who will place his problems before us. This service is entirely free and it is open to any manufacturer who needs it.

DU PONT — THE STANDARD SHOTGUN POWDER

You Can Meet the Demand for Shotgun Shells

—if you order from this table of Du Pont Standard Loads.

The great majority of shooters use Du Pont Powders simply because years of experience have taught that Du Pont Powders *always* give satisfactory results.

With this great army of shooters the word of the Du Pont Company, backed by its 119 years of powder-making experience, carries great weight.

We are telling every shooter we can reach through the sportsmen's magazines that the standard loads given in the table below are the ones to use to get best results. In this table we have eliminated all slow movers and have listed only those that are in constant demand in various sections of the country.

Make up your orders from this list and meet the demand—concentrate your stock, cut down capital invested. Result: faster turnover, greater profits.

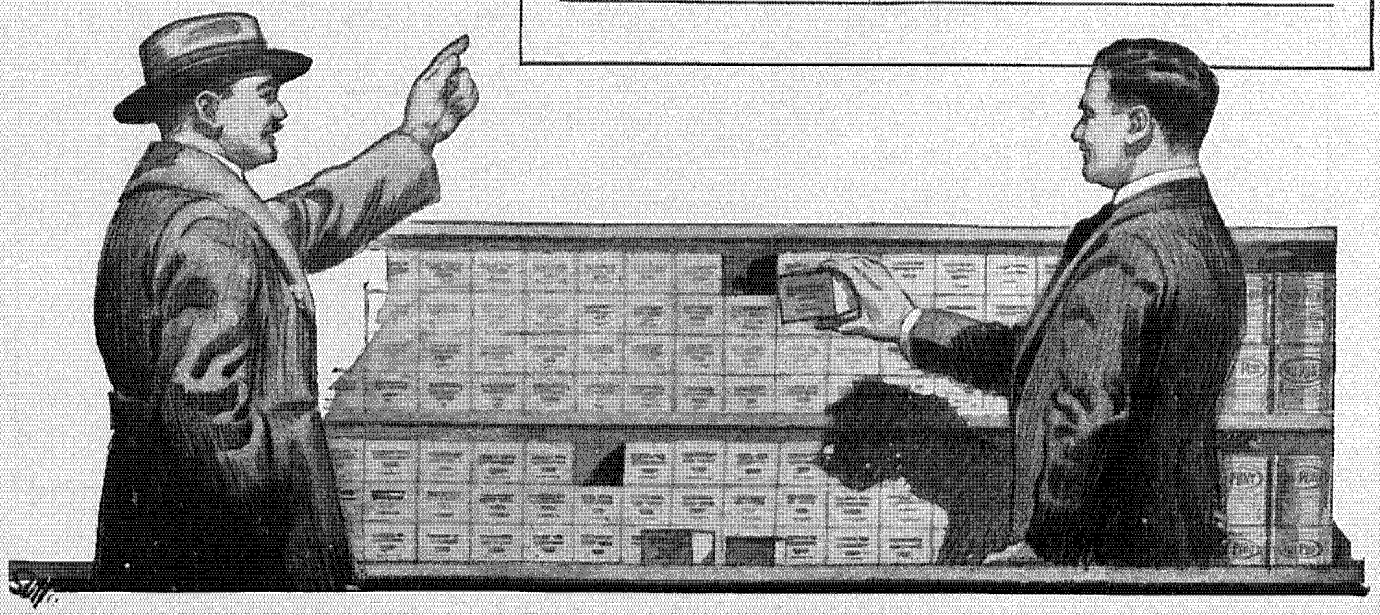
Most Shooters Use Du Pont Shotgun Powders

STOCK THEM IN THESE STANDARD LOADS

DU PONT

Standard Twelve Gauge Loads

	DUPONT SMOKELESS Drams	BALLISTITE SMOKELESS Grains	DUPONT BLACK Drams	OUNCES Shot
Large Ducks	3, 3¼ or 3½	24, 26 or 28	3½	1⅛ or 1¼
Small and Medium Ducks	3, 3¼ or 3½	24, 26 or 28	3½	1⅛ or 1¼
Grouse, Partridge, Prairie Chicken	3 or 3¼	24 or 26	3¼	1⅛
Pheasants	3	24	3¼	1⅛
Geese	3½	28	3½	1⅛
Wild Turkey	3½	28	3½	1⅛
Squirrel, Rabbits	3	24	3¼	1⅛
Doves, Pigeons	3 or 3¼	24 or 26	3¼	1⅛
Quail	3 or 3¼	24 or 26	3¼	1 or 1⅛
Snipe, Woodcock	2¾ or 3	22 or 24	3	1 or 1⅛
Shore Birds	2¾ or 3	22 or 24	3	1 or 1⅛
Sora Rail	2¾ or 3	22 or 24	3	1 or 1⅛
Trap Loads	3 or 3⅛	24 or 25		1⅛ or 1¼



Facts that Every Dealer Should Know about Du Pont

It is a fact that "Du Pont" develops a higher velocity than any other powder made. This is because it burns progressively and cleanly, generating a lower pressure at the breech and maintaining the pressure a greater distance down the barrel.

Other reasons why "Du Pont" has the largest sale of any powder made:

—it gives the closest patterns.

* * *

—it develops the lowest initial pressure, which means less strain on the gun.

* * *

—it is the cleanest burning powder made.

* * *

—it is waterproof, dependable, and absolutely uniform year in and year out.

* * *

A shell is only as good as the powder it contains.

E. I. du Pont de Nemours & Co., Inc.
Sales Dept.:
Rifle and Shotgun Powders Division
WILMINGTON, DEL.

"BLAST THOSE POLES!"

Continued from page 7

poles out of the water by high tide tomorrow, the Government'll be after me."

Arrangements were finally made to have Gravenor start at once from Parksley in a truck carrying the much-needed blasting materials. Lud promised to leave Chincoteague by boat, and meet him at Willis' Wharf, approximately half way from their starting points. It was a 55-mile trip over rough roads for Gravenor.

"A friend in need is a friend indeed," thought Lud as he turned his boat toward the appointed meeting place.

Gravenor reached Willis' Wharf first and waited. After Lud arrived and had unburdened himself of a proverb—in this instance, "better late than never," both men set to work transferring the dynamite to the boat.

"Good thing I reached you by 'phone," Lud remarked, as he threw a coil of wire on board. "I'd surely run afoul a peck o' trouble if you hadn't brought over this dynamite to blow out my poles. I certainly am obliged to you for all your trouble."

"That's all right," replied Gravenor. "Ordinarily I wouldn't make a trip like this except in an emergency, but Du Pont dealers take pride in living up to the best service traditions of the company, and I aim to keep my end up."

The order for the dynamite had been received at ten o'clock in the morning. By three that afternoon Lud was on his way back to Chincoteague with the explosive.

On arriving at the pounds it was a simple matter to get rid of the poles. A "dynamite necklace," so named by the facetious fishermen, was arranged for each pole. The "necklace" consisted of a wire hoop large enough to pass over the projecting butt ends of the poles. To this wire was attached a ten to fifteen pound charge of jelly dynamite and a heavy weight. The "necklace" was then lowered and the charge fired electrically. Each shot cut off a pole and by noon next day the pounds had vanished. Du Pont *50* and *60* per cent N. G. dynamite was used.

THE AGE OF BRONZING

Continued from page 11

The almost endless variety of shades in which bronze powder is made is an indication of the development of the industry in this country. The possible combinations are almost innumerable and special shades are often furnished to meet individual requirements. The Du Pont Company has standardized the manufacture of this powder by organization, mechanical equipment and inspection so that the customer can always be sure of getting the same powder when he repeats an order. It is this dependability which makes Du Pont Bronze Powder so popular. Its unusual covering power and brilliancy are two other points of excellence. Grade for grade, shade for shade and price for price, Du Pont Bronze Powder equals or excels any competitive powder sold in this country.

REPRODUCING AMBER

Continued from page 10

and a comb. Each set is also obtainable with standard decorations. It has been observed that customers in eighty-five cases out of a hundred choose this toiletware, decorated. For the beauty of Amber Pyralin is greatly enchanced when the rich effects of gold and colored enamels are added to it in appropriate designs.

Two beautiful designs in which gold inlay work is the dominating motif afford a choice of decorations. The work is performed by skilled artists and engravers who know how to embellish these articles to make them objects of art as well as of utility.

Because Amber Pyralin must be skillfully produced to secure uniform transparency and color, without flaws in the material, it costs the additional trifle that buys perfection. But the fact that the material, patterns, pieces and decorations are all standardized brings this toiletware within the reach of all discriminating people. As all articles can be easily matched, those who cannot buy a complete set outright can purchase individual pieces from time to time, until they have acquired a complete set.

ALL INQUIRIES REGARDING DU PONT PRODUCTS SHOULD BE ADDRESSED TO OUR NEAREST OFFICE

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

ACIDS AND HEAVY CHEMICALS

Newark, N. J.
240 Vanderpool St.

Philadelphia, Pa.
35th & Grays Ferry Rd.

CHEMICAL PRODUCTS

Boston, Mass.
Harvey Building,
Chauncey & Bedford Sts.

Chicago, Ill.
1814 McCormick Bldg.

New York, N. Y.
21 E. 40th Street

San Francisco, Calif.
1614-25 Chronicle Bldg.

DYESTUFFS

Boston, Mass.
274 Franklin St.

Charlotte, N. Car.
232 W. First St.

Chicago, Ill.
1114 Tribune Bldg.

New York, N. Y.
8 Thomas St.

Philadelphia, Pa.
210 N. Broad St.

Providence, R. I.
709 Hospital Trust Bldg.

EXPLOSIVES

Birmingham, Ala.
601 Brown-Marx Bldg.

Boston, Mass.
Harvey Building
Chauncey & Bedford Sts.

Buffalo, N. Y.
Prudential Bldg.

Chicago, Ill.
1814 McCormick Bldg.

Denver, Colo.
406 Ideal Bldg.

Duluth, Minn.
Hartley Bldg.

Huntington, W. Va.
401-19 Robson-Prichard Bldg.

Joplin, Mo.
Cosgrove Bldg.

Kansas City, Mo.
225 Scarritt Bldg.

New York, N. Y.
120 Broadway

Pittsburgh, Pa.
1200 May Bldg.

Portland, Ore.
244 Stark St.

St. Louis, Mo.
17th Floor, Arcade Bldg.

San Francisco, Calif.
1614-25 Chronicle Bldg.

Seattle, Wash.
Hoge Building
2d Ave. & Cherry St.

Scranton, Pa.
701 Traders Bank Bldg.

Spokane, Wash.
721-22 Old Nat'l Bank Bldg., Riverside Ave. & Stevens St.

Springfield, Ill.
Reisch Bldg.

FABRIKOID AND RUBBER FABRICS

Boston, Mass.
Harvey Building
Chauncey & Bedford Sts.

Chicago, Ill.
1814 McCormick Bldg.

Denver, Colo.
406 Ideal Bldg.

Detroit, Mich.
1933 Dime Bank Bldg.

Indianapolis, Ind.
803 Merchants Bk. Bldg.

New York, N. Y.
21 E. 40th Street

San Francisco, Calif.
1614-25 Chronicle Bldg.

LITHOPONE, DRY COLORS & PIGMENTS

Boston, Mass.
Harvey Building
Chauncey & Bedford Sts.

Chicago, Ill.
1814 McCormick Bldg.

New York, N. Y.
21 E. 40th Street

Philadelphia, Pa.
35th & Grays Ferry Rd.

San Francisco, Calif.
1614-25 Chronicle Bldg.

PAINTS AND VARNISHES

Boston, Mass.
Harvey Building
Chauncey & Bedford Sts.

Chicago, Ill.
1814 McCormick Bldg.

Flint, Mich.
Flint Varnish & Color Works

New York, N. Y.
21 E. 40th Street

Philadelphia, Pa.
35th & Grays Ferry Rd.

San Francisco, Calif.
1614-25 Chronicle Bldg.

PYRALIN

Boston, Mass.
Harvey Building
Chauncey & Bedford Sts.

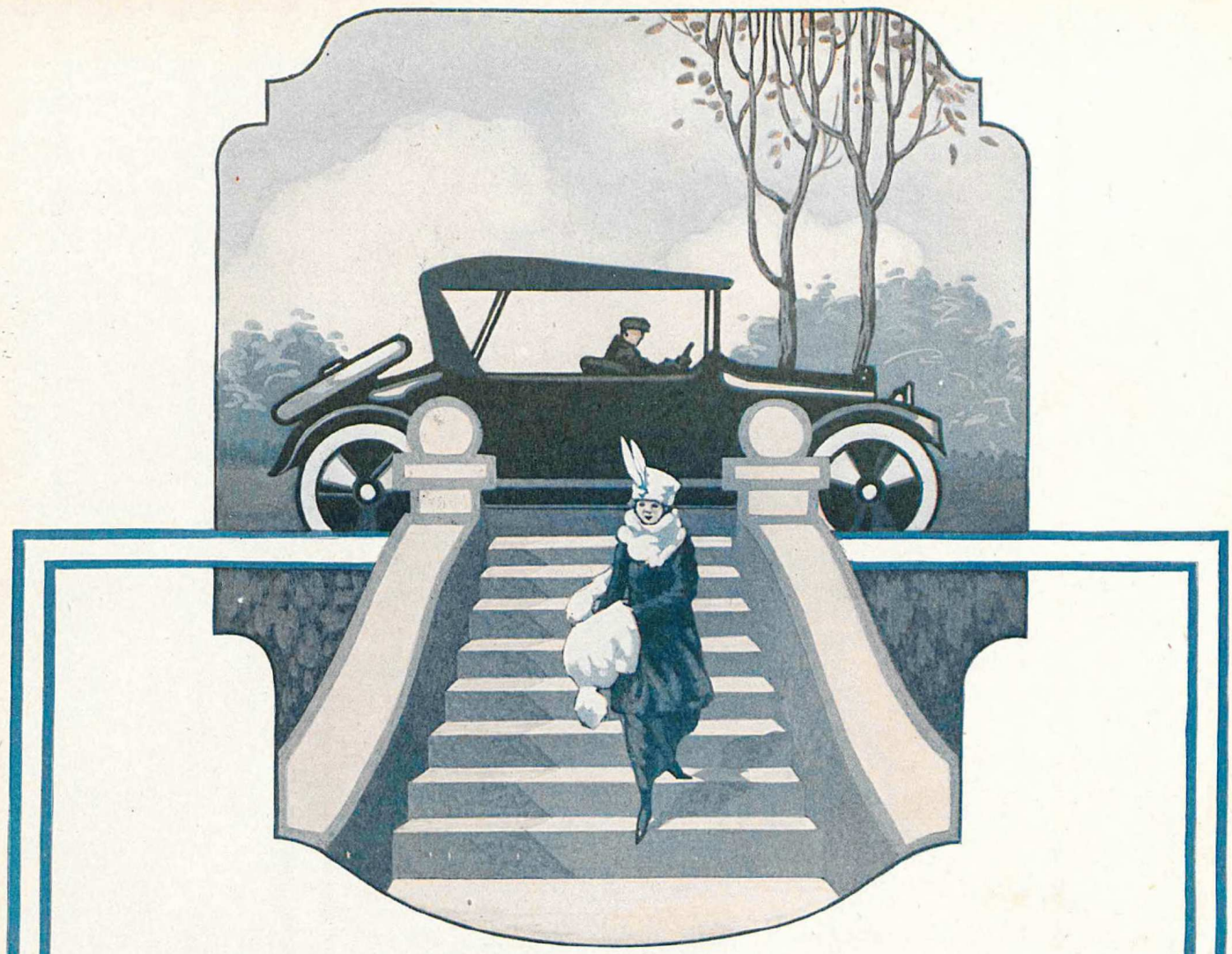
Chicago, Ill.
1814 McCormick Bldg.

Detroit, Mich.
Pyralin Sheeting only
1933 Dime Bank Bldg.

New York, N. Y.
21 E. 40th Street

St. Louis, Mo.
17th Floor, Arcade Bldg.

San Francisco, Calif.
1614-25 Chronicle Bldg.



Give the Used Car a Spring Coat

Du Pont Auto Finishes will brighten up the finish on your car, so that it will be a credit to your business and social activities. They renew the car from top to fenders in bright, snappy colors that rival the original finish. *Write for card showing line of colors.*

E. I. du Pont de Nemours & Company, Inc.
Sales Dept.: Paint and Varnish Section
Wilmington, Delaware

Branch Offices and Warehouses:

BOSTON, Harvey Bldg. — NEW YORK, 21 E. 40th St. — PHILADELPHIA, 35th & Grays Ferry Road — CHICAGO, McCormick Bldg.
KANSAS CITY, 1224 W. 9th St. — MINNEAPOLIS, 411 Washington Ave. N. — SAN FRANCISCO, Chronicle Bldg.





First to Protect the Buyer

IN the early days of the Explosives Industry, dynamite was sold just as Dynamite. The user had no means of telling what strength powder he was using until the Du Pont Company inaugurated the standard practice of putting the exact strength of the explosive on every box and on every cartridge.

Explosives buyers were quick to recognize the value of this method of marking. As a result this practice was rapidly made a general one throughout the industry.

This is merely another instance of that spirit of service which has been the guiding principle of this organization since the first Du Pont founded the Explosives Industry in the United States in 1802.

Du Pont Service enters into every phase of the production and use of explosives. Our facilities in plant, laboratory and in the field have made it possible for us to develop this service to an unusual degree—first in producing explosives of remarkable and uniform value; and second, in aiding our customers in all matters pertaining to their handling and use.

This Du Pont Explosives Service is yours to command in solving your own explosives problems.

Branch Offices:
Birmingham, Ala.
Boston, Mass.
Buffalo, N. Y.
Chicago, Ill.
Denver, Colo.
Duluth, Minn.
Huntington, W. Va.
Joplin, Mo.
Juneau, Alaska
Kansas City, Mo.
New York, N. Y.
Pittsburgh, Pa.
Portland, Ore.
St. Louis, Mo.
San Francisco, Calif.
Scranton, Pa.
Seattle, Wash.
Spokane, Wash.
Springfield, Ill.

Du Pont Products Exhibit
Atlantic City, N. J.

E. I. DU PONT DE NEMOURS & CO., Inc.
Sales Department: **Explosives Division**
WILMINGTON, DELAWARE

