



From a painting by Frank E. Schoonover

The fur-traders were the commercial pioneers of the American Northwest, and they carried du Pont powder with them

The DuPont Magazine

August

1925



Uniform quality depends upon chemical control

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Atlantic City, N. J.*

POWDER MAKERS SINCE 1802

THE DU PONT MAGAZINE



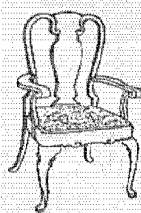
Vol. XIX

AUGUST, 1925

No. 8

The Duco Period in Furniture

Design is the distinguishing feature of period furniture, but the new Duco Period furniture is identified also by its finish



Queen Anne chair with cabriole legs

TO the few men who purchase furniture, "period" means little or nothing. To a woman it is the first consideration. The design of the piece or suite she buys must harmonize with the exterior and interior of the house, must fit in with the draperies, and must be a complement to the furniture in other rooms. It is only natural, therefore, that period or design should play a most important part in the buying of furniture.

Today, as can readily be seen in any of the stores conducting August furniture sales, a number of periods are popular. Undoubtedly, the American Colonial is by far the first choice of the public. Included in the Colonial period are "ladder-back" chairs, Windsor chairs, four-poster beds—carved or uncarved, with or without the canopy. The carved bed was a product of the Virginias. The Dutch were responsible for the ladder-back chair. New England produced the Windsor chair, the spinet desk with spiral carved legs, and the scroll designs. Duncan Phyfe was the leading furniture designer of the Colonial period and the best reproductions today closely follow his originals.

After Colonial, Sheraton furniture perhaps enjoys most popular favor. The outstanding features of Sheraton design are a restrained combination of simplicity and ornamentation. Sheraton chair back designs are readily recognizable to the initiate. The top rail of Sheraton chairs usually is broken by some ornament. The legs may be four-square, round fluted or round, belled and fluted. Sheraton side tables usually have convex corners. This designer is particularly noted for his

By MATT DENNING

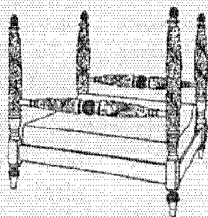
skill and ingenuity in designing combination pieces. Even today combined secretaries and bookcases are faithfully modeled after his works. As an evidence of a greater and greater trend toward simplicity, the third choice of furniture buyers in design seems to be William and Mary. This period is readily identified by the style of the legs, which are either belled at the top, octagonal tapered, or have a cabriole, or "bent knee," with a collar below. Queen Anne, another popular period today, also has the cabriole leg, but is usually

without the collar or ring below, which characterizes William and Mary. Also in William and Mary, the type of foot is an identifying part of the design. This detail is either a "bun" foot, a "pear" foot, a "cup" foot, or a "bell" foot. In authentic William and Mary reproductions the piece of wood connecting the four legs of a table—called the "stretcher"—is usually a curved X-shape with a finial in the center that looks like a chess piece. Queen Anne period features the cabriole or leg somewhat similar in shape to the bowed front legs of a bull dog.

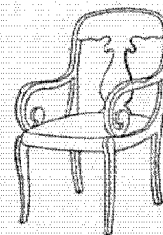
Other periods also have identifying features that are readily recognized. Heppelwhite is noted for the unusual shapes of the chair backs. These are generally shield-shaped, frequently with a rounded top, although he also produced backs in the form of hearts, ovals, and so on. His tables and sideboards, unlike those of Sheraton, usually have concave corners.

Chippendale is often called the "Master Designer."

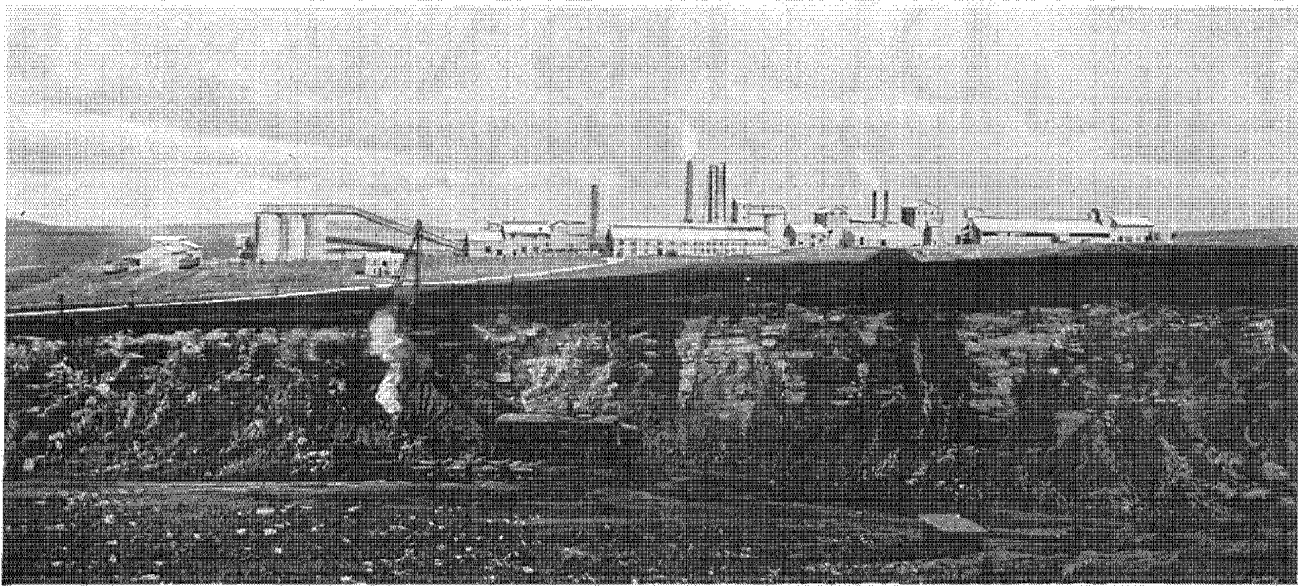
(Continued on page 16)



American Colonial carved four-poster bed



A New England Colonial chair of scroll design



General view of the plant of the Cia. Argentina de Cemento Portland at Sierras Bayas, with the quarry in the foreground

Argentina's Cement Industry

In 1915 portland cement production amounted to only 25,000 barrels a year. Now the Cia. Argentina de Cemento Portland is shipping more than 60,000 barrels every month

NORTH AMERICAN capital and management are responsible for one of the important industries established in Argentina since the World War. The plant of the Cia. Argentina de Cemento Portland at Sierras Bayas, two hundred miles south of Buenos Aires, is one of the best-equipped and most modern cement plants in the world. Argentina's cement industry is unique in that it consumes to a great extent Argentine raw materials, uses native labor, and its product is used mostly for home consumption in the development of the country.

The plant and quarry occupy over 100 acres, and the factory is equipped with the latest type of machinery. The daily output is 10,000 sacks of finished product.

Construction of the factory was completed in 1918 and the company began shipping cement in 1919. In locating at Sierras Bayas, the company took the factory to the raw material instead of taking the raw material to the factory. The plant is surrounded for acres by fertile land under which lies a 50-foot deposit of limestone. Lime constitutes 77 per cent of the chemical content of portland cement. The limestone is quarried with the aid of explosives, and du Pont dynamite is used exclusively on this operation. After the overburden of soil has been removed by stripping, holes are bored twenty-five feet from the face of the quarry with 5-inch well drills. These holes, in a straight row, are bored through the entire depth of the 50-foot limestone deposit. The shots are fired by electric current. One of our illus-

By T. E. DOREMUS

trations on the next page shows a typical blast in which 30,000 tons of rock were brought down with 31½ tons of dynamite.

The manufacture of cement is only one of the many activities which are under the direction of Mr. E. S. Morgan, the vice-president of the Cia. Argentina in Buenos Aires. Although the company was organized to manufacture cement, the location of its factory requires it to undertake the operation of many services which would be supplied by others if the plant were closer to a more thickly populated district. The company maintains a townsite for its employees, a colony of workmen's houses for its laborers, a store, a bakery, a hospital, a dairy, a school, a hotel, a farm, an electric light plant, an ice plant, and a waterworks.

The employees and their families are housed in well-built, modern and comfortable cottages, which are fitted with big open fireplaces, electric lights, hot running water, and modern bathrooms. The renting and care of these cottages, as well as of the workmen's houses, require the company to undertake the duties of both landlord and real estate agent. A comfortable hotel for unmarried men is also maintained. There is also a fine clubhouse where weekly dances and entertainments are given.

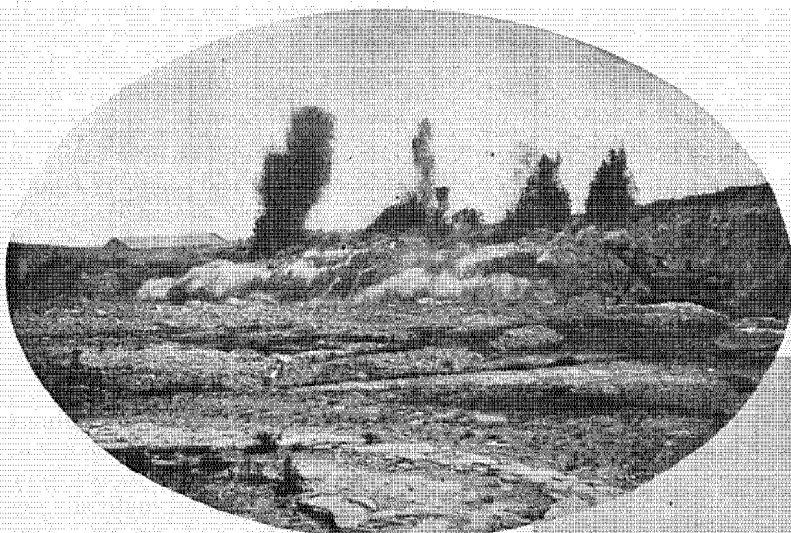
It was found to be cheaper and more convenient to grow vegetables than to ship them from Buenos Aires; so a small farm has been established to supply vegetables for the company's employees. Twenty fine Hol-

stein cows provide all the milk needed in the community, and the bakery supplies fresh bread every day.

When the factory began work five years ago, the company undertook to operate a school for the families of its employees and put up a fine concrete structure. That this school might be available to all the children of the district, the building was eventually presented to the province of Buenos Aires, which now supplies the

ess, which makes it uneconomical to haul large quantities of the raw material so far. A barrel of cement in Argentina weighs 170 kilos, and one ton (1000 kilos), of raw material produces only three barrels, or 510 kilos, of cement. Therefore, six barrels of cement can be shipped to Buenos Aires at the same cost that would be required for shipping the raw material for three barrels. As the Cia. Argentina de Cemento Portland is now shipping over 60,000 barrels of cement every month, this expense is a very important item.

The prevention of waste is one of the most important problems in modern industry, and the latest achievement in the cement industry is the development of the waste heat boiler for utilizing waste heat that formerly disappeared through the kiln stack. At the head of each kiln a high chimney provides the draft necessary for obtaining efficient burning in the kiln; but instead of allowing the gases to go up this



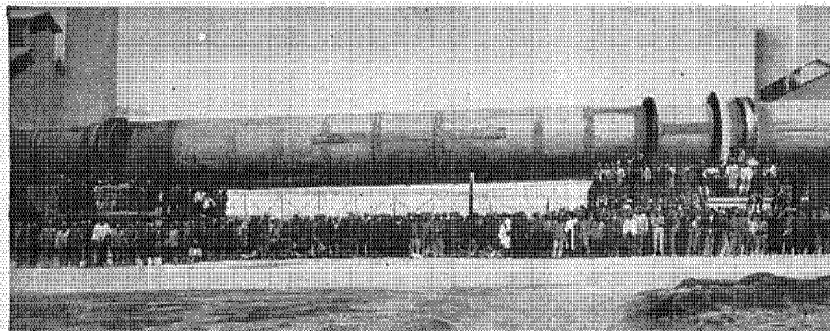
Above—This shot, which was loaded with 7,000 pounds of du Pont dynamite, brought down 30,000 tons of limestone

Right—The shovel digs in after the blast

Below—Employees and officials of the company are grouped in front of one of the big kilns. Each kiln weighs 500 tons and revolves once a minute

teachers and also operates the school.

The first question that comes to the mind of a person when told the situation of the cement factory is, why was it located so far from Buenos Aires, since the fuel has to be hauled to the plant and the cement



has to be hauled back? The answer is found in the fact that half the rock and clay that goes into a cement plant disappears in the form of gas during the burning process,

which makes it uneconomical to haul large quantities of the raw material so far. Steam developed from the waste heat of two 800-horse power boilers drives three Curtis turbines which

chimney as formerly, they are now led off under the waste heat boiler in the power house. At Sierras Bayas this waste heat supplies 85 per cent of the steam required by the big power plant.

Nearly everything that moves at the Sierras Bayas plant is propelled by electricity which is supplied by the company's own power plant, one of the most modern in the country.

(Continued on page 11)

A Modern Rubberizing Plant

Where the du Pont Company, with up-to-date equipment and strict chemical control, manufactures many kinds of rubberized fabrics

THE history of rubber, its discovery and development, is so fascinating that one is always tempted to refer to it in any article on rubber. The utilization of rubber for protective clothing dates back

By M. N. NICKOWITZ
Technical Supt., Fairfield Plant
E. I. du Pont de Nemours & Co., Inc.

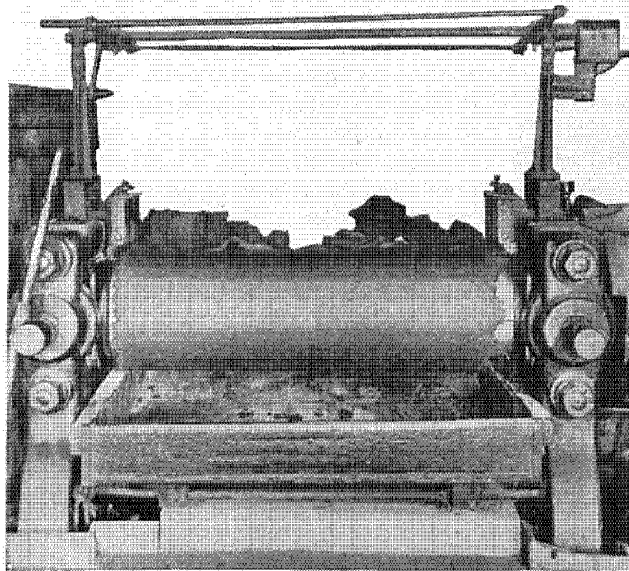
Fairfield Rubber Company, which we succeeded in this business, was one of the oldest operators in the industry. It

is also a fact that until very recently we were engaged almost exclusively in the manufacture of rubberized "carriage cloth," millions of yards of which have been made annually for automobile tops, buggy tops, etc.

More recently an intensive effort has been made to diversify the products of our Fairfield plant by equipping ourselves to develop and supply a satisfactory rubberized fabric of any description which calls for vulcanization either by dry heat or by the sulfur chloride process. In addition, a new department for the manufacture of various types of sheet rubber has been installed and is now turning out sheet rubber products on a large production scale.

The successful manufacture of rubberized fabrics requires, in addition to skilled operators, uniform essential materials, modern equipment, and the strictest type of chemical control. All of our essential materials are sampled and tested before they are used. Specifications are drawn for all materials wherever feasible, and purchases are made in accordance with them. Material in process is very carefully tested during the various stages of manufacture further to insure uniformity.

The finished product is subjected to actual and accel-

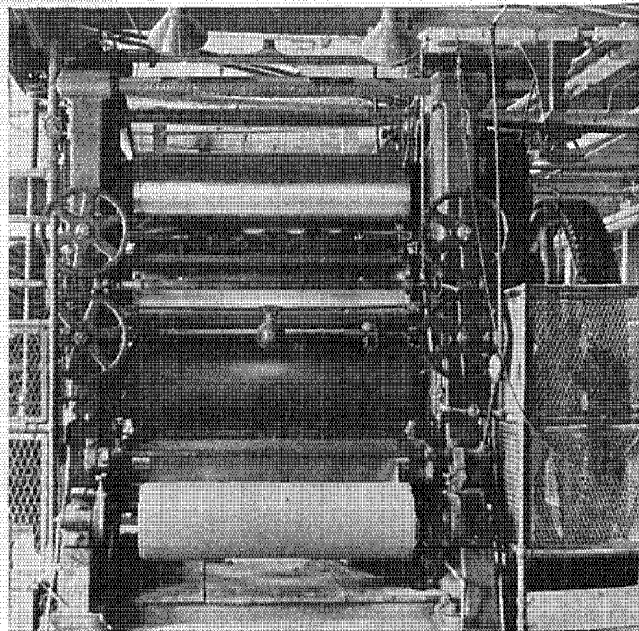


In this rubber mixing machine the rubber compound is kneaded between steel rolls running at different speeds

hundreds of years. The Indians in South American jungles, centuries ago, made waterproof fabrics by impregnating them with latex, the milky sap of the rubber plant. It is interesting to note, however, that in the early days of its discovery by the white man rubber was used mostly to make playthings and curios, and that not until almost three hundred years after the white man discovered it was it improved sufficiently to make it a substance of real commercial value. This improvement was based upon Charles Goodyear's discovery, in 1839, of the process of vulcanization.

The growth of the rubber industry has been tremendous since that day. The industry is still in its infancy and presents such interesting opportunities that it is attracting many of the great minds of the country.

Although the du Pont Company has, at Fairfield, Connecticut, one of the largest and most modernly equipped rubber-proofing plants in this country, the average man does not associate the name du Pont with rubber as instinctively as he does with many other products the company manufactures. This is because we have been manufacturing rubberized products as the du Pont Company for only a few years, although the



On this four-roll calendaring machine the rubber is made into sheets or calendered upon a fabric base material

erated aging tests. We shall not attempt to go into a detailed description of the tests made on the finished product. Sunlight and heat-aging tests are considered of greatest importance. Other tests which are conducted regularly are tensile and tearing strength, combining strength, effect of ultra-violet light (accelerated sunlight test), oxygen absorption (accelerated storage aging), hydrostatic or waterproof test, anchorage of film to fabric, uniformity of color, weight and luster, and resistance to abrasion. At some other time we hope to present an article describing in detail our methods of testing the finished products.

In addition to plant control and plant research, our laboratory is constantly developing new types of material based on our own ideas or requests from our customers. We feel that this type of service is invaluable, and we urge our customers to present their problems to us.

The equipment required to manufacture rubberized materials is fairly well standardized. In describing our manufacturing

process, we will try to adhere to the order in which the material flows through the plant. As stated above, all essential materials received at the plant are carefully sampled and submitted to our specification tests. The fabrics are given a preliminary inspection for uniformity of weave, color, width, weight and yardage. During this inspection the fabric is picked by hand to remove knots and loose threads. It is then brushed, rolled evenly and the seams sewed in preparation for spreading or calendering. The brusher removes lint which may cause a great deal of imperfect material.

The preparation of the rubber compounds is of utmost importance. In order to turn out the best type of material, this operation must be as near fool-proof as possible. Each ingredient has a definite function to perform and omissions or substitutions are ordinarily easily detected. The batches are weighed on precision scales which are checked periodically. The compounds are mixed in either of two ways. Black compounds such as

are used for carriage cloth are mixed in large internal mixing machines which are capable of mixing 900 pounds each per hour. The temperature and time of mixing these compounds are very carefully controlled by automatic recording devices. Our colored compounds are mixed on steel roll mills such as shown in the first illustration. These mills

consist of two polished steel rolls running at different speeds. On these mills, corset compound, bright colored apron compounds, white compound, and others are mixed.

After mixing, the compounds are all strained through very fine screens which remove all the dirt and foreign particles that may have been incorporated in the compound during the mixing. The strained compounds are then sheeted out and permitted to "rest" for twenty-four hours so that the rubber will set and give a more uniform finished product.

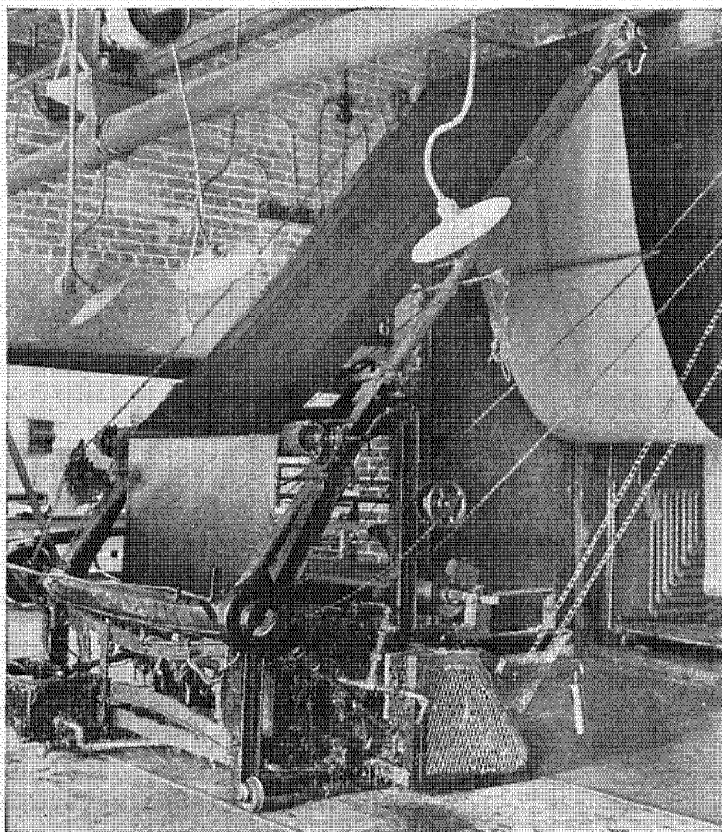
The compound is then ready to be made into sheet rubber products or calendered on to fabrics. This work is done on either a three

or four-roll calender. Our plant is equipped with both types. A picture of the four-roll type is shown on page 4. This machine consists of four steel rolls carefully ground. They are approximately 64 inches in width and 24 inches in diameter, and are steam heated.

Before feeding the calender with the compound, it is softened and warmed up on the mixing mills. It is then fed into the calender between the upper two rolls. These sheet the rubber out on to the second roll from which it passes on to the third roll. Between the second and third roll a sheet of compound is likewise placed to prevent calender skips. This, together with improved control of weight and gauge, is the advantage of the four-roll calender over the three-roll. The fabric is passed into the calender between the two bottom rolls and the rubber film transferred to the fabric.

Starch or a quick-drying varnish that dries free from tackiness is applied as the fabric leaves the calender.

(Continued on page 15)



The varnish is applied in the trough at the front of this machine. At the rear the varnished material is festooned and passes into the vulcanizing ovens

Two Unique Loud Speakers

We supplement the pictures on this page with a brief description of the new Puratoan speakers—made in part of Pyralin

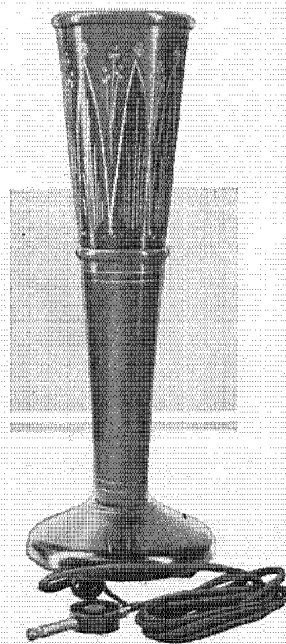
EVERY one who is interested in radio knows that no matter how excellent a radio receiver may be, a high-grade loud speaker is needed to insure perfect sound reproduction. We feel certain, therefore, that among the thousands of Du Pont Magazine readers many of them will be interested in two unique speakers that have recently been put on the market.

One of them is in the form of an attractive amber colored vase which can be placed on top of the radio set. It stands about fourteen inches high, and is made of Pyralin, tastefully decorated in black. Concealed within the base, we are told, is a high-grade reproducing unit that produces a very fine quality of tone. The Pyralin sides of the vase form a tone-arm which serves to soften the sound, eliminating the metallic ring that many people find objectionable in loud speakers made of other materials. This vase-speaker sells for \$14.00.

The other type is a miniature console, about fifteen inches long by six inches high. It is made in two color effects—one, in a rich shell Pyralin; the other, in attractive red mahogany colored Pyradiolin—the material widely used in making radio panels. The shell Pyralin model contains the same reproducing unit as is used in the vase speaker, and retails for \$16.00. The Pyradiolin model, which is said to be equipped with an exceptionally high-grade reproducing unit, sells for \$25.00. The Pyralin tone arm is a feature of both models.

Both consoles are richly decorated. Our illustration suggests but does not disclose the beauty of chased surfaces set off by gold markings, the attractive grille work covering the bell of the tone-arm, the high-polished, lustrous surfaces of inherently beautiful materials. To

By L. B. STEELE



The vase loud speaker is amber colored with black decorations

appreciate its beauty, one must see the console itself.

These unique loud speakers are made and guaranteed to give satisfaction by the Custeloid Company, Incorporated, who selected Pyralin for this use not only because it is attractive in an outstanding way, but also because it was found to insure the reproduction of better tone qualities than any other material.

When the Custeloid Company first exhibited these loud speakers at the radio show held a few months ago in the Hotel Pennsylvania, New York City, all the radio authorities who listened in were very favorably impressed. The unique appearance of the loud speakers never failed to attract attention. We are informed that a large number were sold at that time, and that the company looks for a strong demand for them during the coming season.

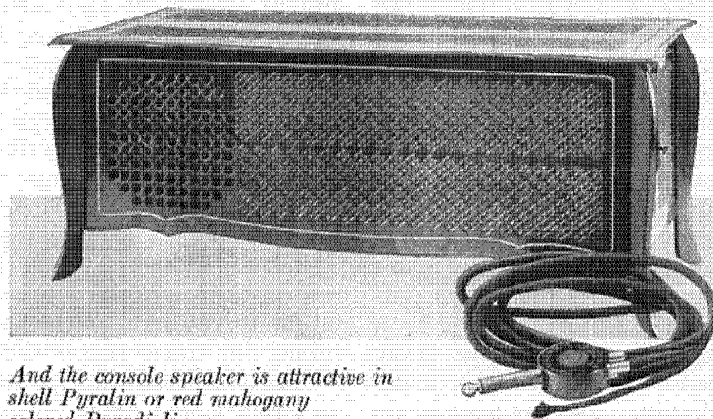
More detailed information will gladly be forwarded to any who may be interested. Dealers who desire to handle these products in their territory are also invited to write for full particulars. All

inquiries should be addressed to the Custeloid Company, Inc., Ozone Park, Long Island, N. Y.

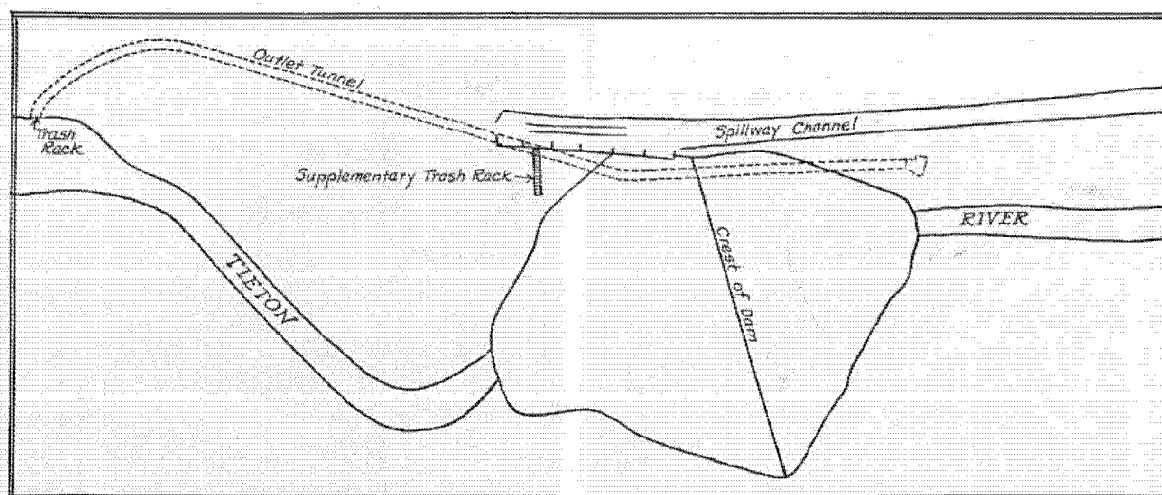
* * *

Pyralin is used in the manufacture of thousands of products, and the long list continues to expand. You have learned that Pyralin is well suited for the manu-

facture of loud speakers, and that its use adds valuable qualities to the finished product. Manufacturers of other articles may find that it can be used with equal advantage in their own products. The Pyralin Research Laboratory at Arlington, New Jersey, will be glad to work with any manufacturer who desires to give Pyralin a trial.



And the console speaker is attractive in shell Pyralin or red mahogany colored Pyradiolin



The plan of the Tieton Dam, giving the location of the spillway channel and the outlet tunnel

To Irrigate 70,000 Acres

The Tieton Dam in Washington, the highest of its kind in the world, has been built. Approximately 460,000 pounds of explosives were used on the job

ON June 17, 1902, the late President Roosevelt signed a bill creating the U. S. Reclamation Service and making it possible to bring under cultivation a vast acreage of arid lands throughout the West.

One of the most successful undertakings of the Reclamation Service is the irrigation plan in Yakima County, Washington, known as the Yakima Project. Work on this job, which was begun in 1906, contemplates the ultimate irrigation of 500,000 acres. The three units first completed and in operation supplied water for the irrigation of approximately 225,000 acres. The fourth unit, known as the Tieton Reservoir, was completed within the past few months. It is situated on the Tieton River, at Rimrock, Washington, about 26 miles from Nachez, the nearest railroad point, from where all supplies were hauled to the work by motor truck. Work on this unit was commenced in 1917 but was discontinued in June, 1918, because of war conditions, and was not resumed until April, 1921. Since that time construction

By A. W. STANCHFIELD

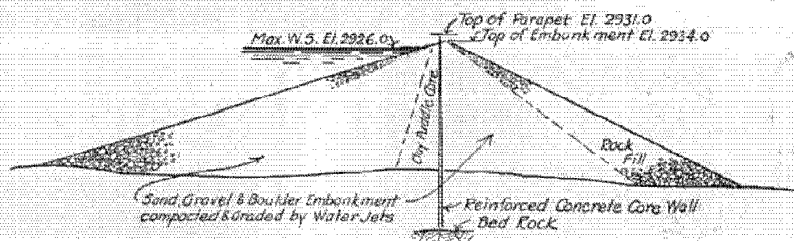
was in progress. With this end in view a tunnel was driven completely around

the west end of the dam site. This tunnel is 19 feet high, 22 feet wide and 2,120 feet long, and successfully handled the flow of the river during construction operations. It was also built so that, with suitable gate control, it could be used as the outlet for the reservoir.

The dam itself is of the earth and rock fill type with a concrete corewall extending longitudinally through it from solid bedrock to the crest and keyed into the solid rock at the base. In the river channel the bedrock was overlaid with ninety feet of porous material carrying considerable water. The excavation of this material for the construction of the lower section of the corewall presented an interesting engineering problem.

If open trench methods were used, it would be necessary to open up a

considerable area of trench, and in the event of flood waters overtopping the cofferdam, the sand and gravel moved by the water would fill the trench. The problem was solved by sinking shafts

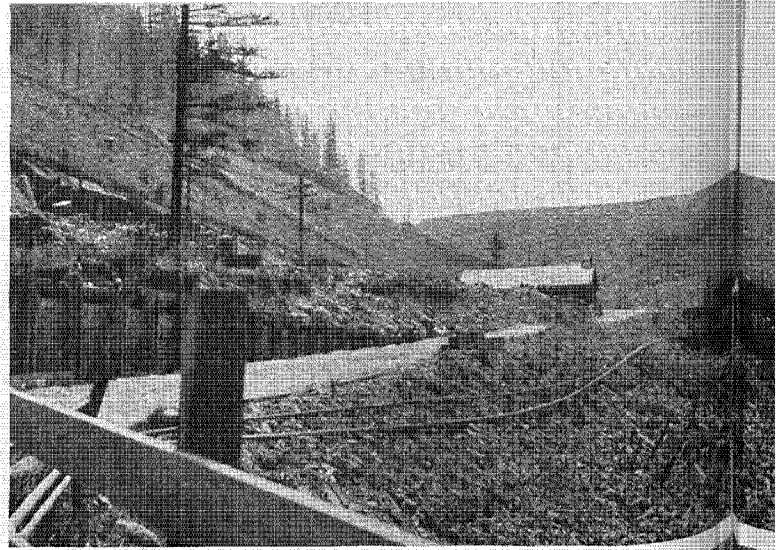
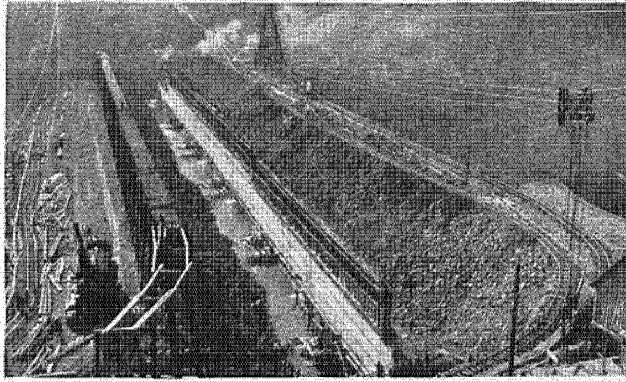


This sketch shows a typical section of the dam

through the porous material into the bedrock at intervals of 150 feet along the line of the corewall. From these shafts drifts of the necessary width were driven

(Continued on page 14)

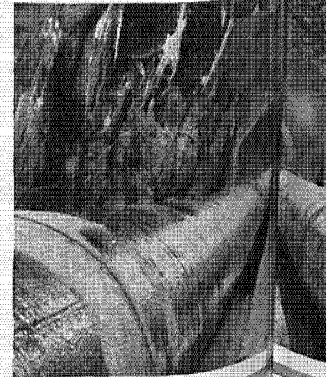
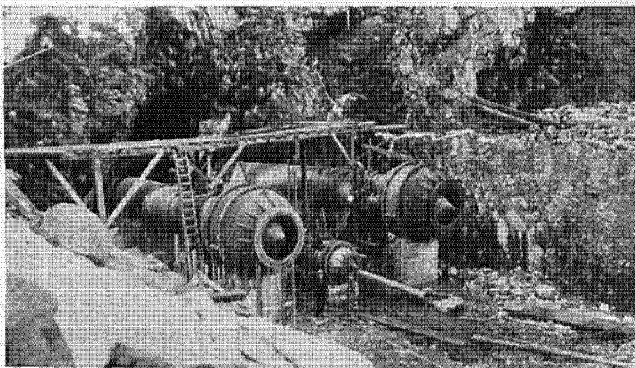
Views of the Construction of Tieton Dam—Part of the



Left above—Showing the dam under construction, with a view of the corewall and fills. Left—Cutting out the spillway. Below—The fill on the upstream side during construction. Note the hydraulic giants washing material to the corewall. Center above—A panoramic view of the dam as it looked when completed except for the spillway



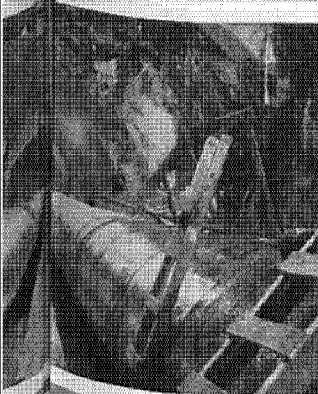
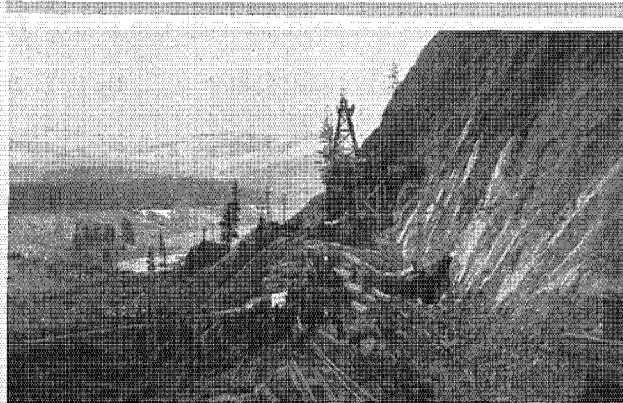
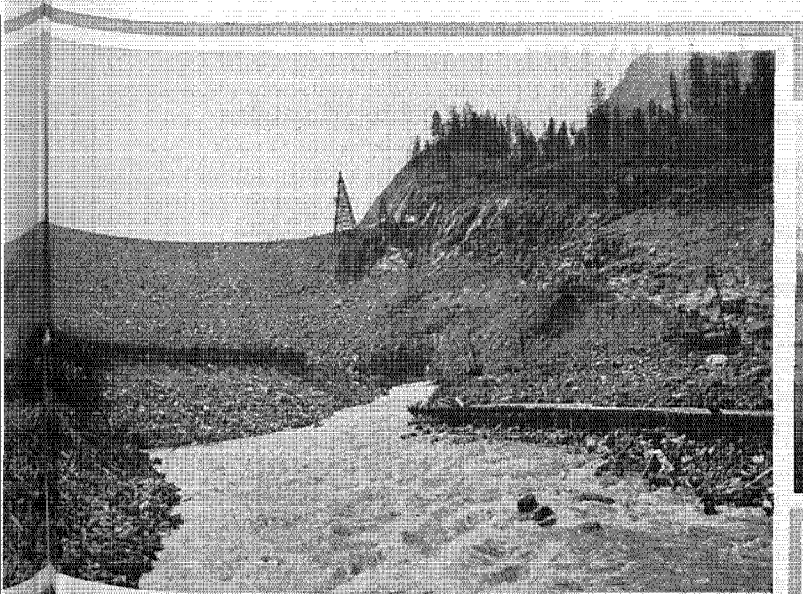
Below—Three needle valves — two 60-inch and one 24-inch — control the flow from the reservoir



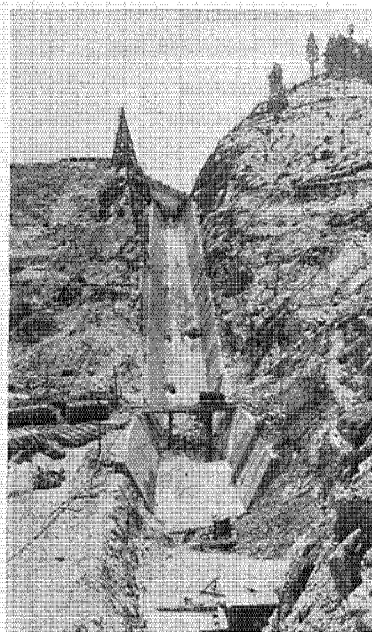
Above—Seventy-two-inch pipe valve. Looking upstream from reservoir area to be flooded to 60 feet above ground. The completed dam can see the spillway in foreground



Great Irrigation Project in the State of Washington

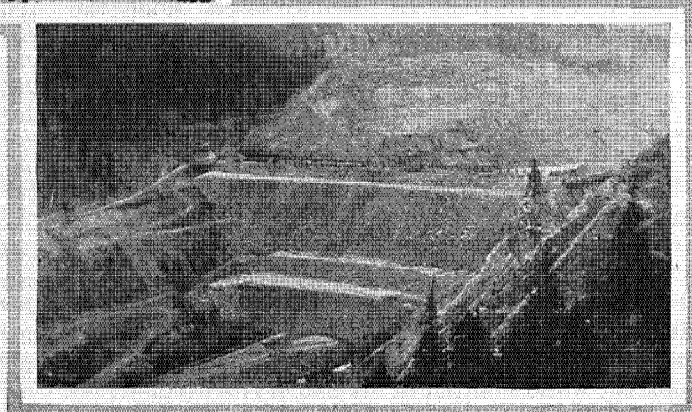
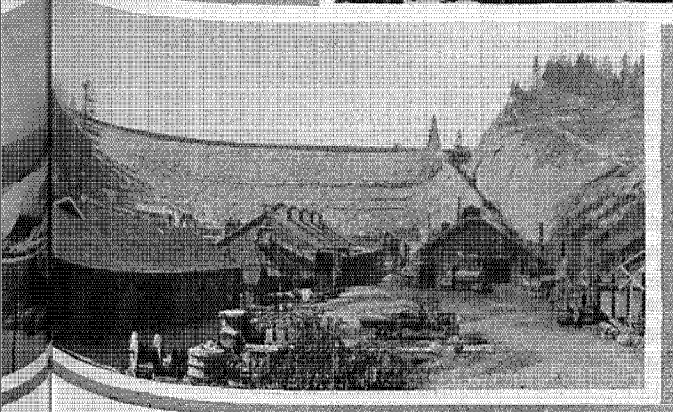


Right above—Starting work on the spillway at the west end of the dam. Right—The spillway at a nearly completed stage. It is capable of handling four times the known maximum flow of the Tieton River. Below—Making the fill. Note the four terraces in its construction. Nearly two million cubic yards of material and rock went into the two fills



Below—Another view of the completed dam, which is 900 feet long and 25 feet wide at the crest

Left below—The pipes connecting the dam, with a view of the reservoir. Right below—The background at the right you can see the warehouses are in the



The Rise of Rayon

This fast-growing youngster in the textile family is changing the dress habits of nations

ROBED in garments of costly silk" . . . "Embellished with delicate carvings of ivory." These two phrases are close linked with age-old traditions of dress and ornamentation and savor of the courts of kings and potentates.

By S. L. JOHNSTON

Thus with an apparently unlimited market for products possessing the distinctive and attractive qualities of silk and ivory, it is not surprising that chemists, years ago, sought to make silk-like and ivory-like materials in unlimited quantities. They have succeeded beyond their expectations. Starting out to make real ivory and real silk, they produced other materials so similar in appearance to ivory and silk that for many years they were widely known as artificial ivory and artificial silk—both misnomers.

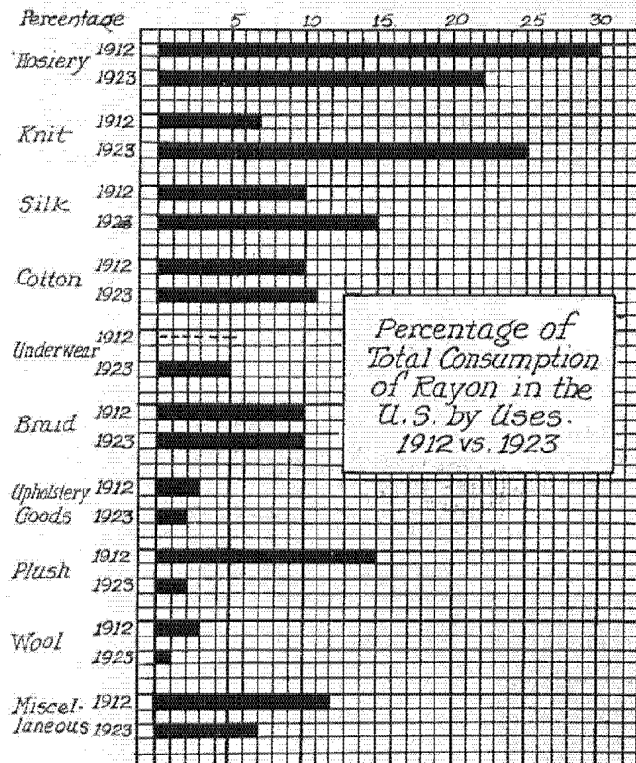
Ivory Pyralin is not ivory, artificially made; rather, it is Pyralin made to look like ivory, and so faithfully does it reproduce the color, grain, luster and other properties and qualities of the natural product that for all practical purposes it is better than ivory itself.

Similarly, Rayon, formerly known as artificial silk, is not silk, artificially produced, but is a product in a class of its own. Rayon is a vegetable fiber as opposed to silk, the animal fiber. It is a synthetic fiber, not a natural one. Yet in beauty, texture and "feel" it is comparable only with silk, and for many purposes it is better than cocoon silk.

Both Ivory Pyralin and Rayon are made from cellulose, a component of all vegetable life. So long as there are growing things these products can be made at relatively low cost and in such quantities as may be needed. That is why articles of Pyralin and garments of Rayon are within the price range of everyone.

The parallel has been drawn to point out the fact that Rayon, like Pyralin, while first conceived as a substitute for a natural product, has developed a real market for itself, but not at the expense of real silk. Indeed, Rayon has actually stimulated the market for wool, cotton and silk. Its use in combination with these textiles has brought about unusual effects and color combinations in textiles that otherwise would not have been possible.

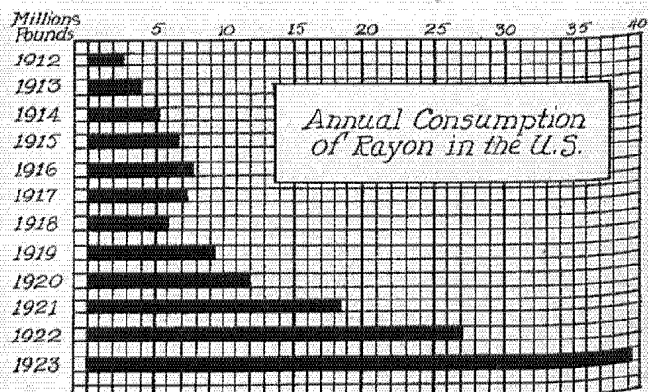
It is natural that the United States should be the largest consumer of Rayon. Our middle class and even



For silk and ivory were once the symbols of wealth, caste and distinction. In one sense they still are.

But modern civilization has upset many a tradition. Scientific progress and modern industry have so changed the external evidences of distinction that the Colonel's lady and Judy O'Grady are not only sisters "under the skin," but they look alike, dress alike and the average man cannot tell one from the other.

One doesn't have to be "born to the purple" these days to possess the silken garment or to enjoy the allure of ivory, for silk culture has grown into a great industry with an enormous output, though there has never been enough silk to go around. Were elephant farming practicable, that industry too would have developed and ivory would be commonplace. But real ivory is scarce. Only the very rich can afford it. Real silk, too, is relatively scarce. Production has trailed behind demand for several years. Our country alone could easily consume the world's output of silk and of ivory too.

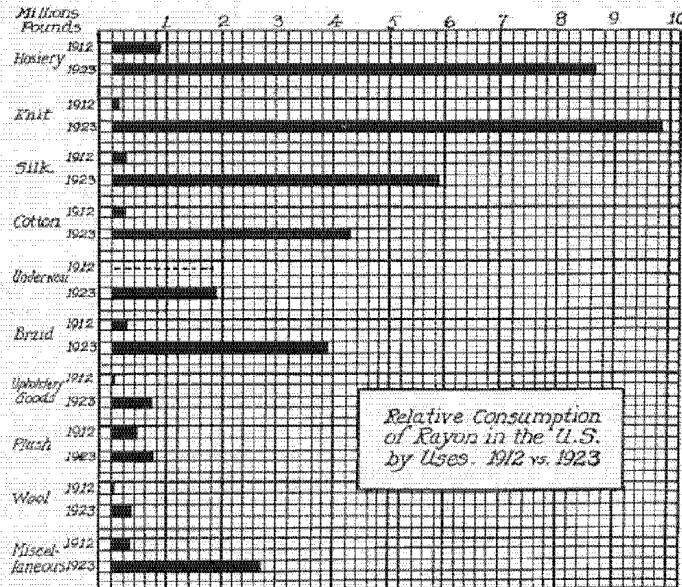


our wage earners, having adopted a higher standard of living than similar classes in most foreign countries, demand garments in keeping with it. And the Rayon industry has furnished a large share of the material used.

How this industry has forged ahead is told by the accompanying graphs. Two of them show comparatively the consumption by uses in percentages and pounds for the years 1912 and 1923 and the third shows the poundage consumed annually from 1912 to 1923—a record without parallel in the textile industry. You will note that in 1912 the consumption was $2\frac{1}{2}$ million pounds; in 1923, nearly 40 million pounds, an increase of almost 1500 per cent.

When Rayon was first produced in this country its chief use was in the manufacture of hosiery, for at that time it had not been developed sufficiently to give the softness and texture demanded for practical use in other textile products. Today all this is changed. While it is true that hosiery manufacturers consumed more than ten times as much Rayon in 1923 as they did in 1912, the percentage has greatly decreased, and other branches of the textile industry are using Rayon in a larger proportion. Our

graph reproduced below best illustrates what changes have taken place in the use of this textile fiber, and points to a great advance made in producing a fiber of greater softness, strength and utility.



Analysis of the data shown here proves that Rayon now enters intimately into the manufacture of practically all classes of textiles and has become an accepted part of our daily lives. No synthetic fiber could have won a place among the leading textile materials of the world unless it possessed real merit. Rayon has gained that eminence. Listed in the order of importance, the world's production figures for 1923 show:

Cotton . . .	9,000,000,000 lbs.
Wool	2,600,000,000 lbs.
Rayon	97,000,000 lbs.
Silk	87,000,000 lbs.

While Rayon is not a leading contender for premier honors, you will note that it has already forged ahead of natural silk to the extent of ten million pounds. Considering its accelerated production during the past two years, one cannot doubt that Rayon will steadily rise in importance in the textile trades, for this product meets the needs of the day for beautiful, serviceable, reasonably priced garments of all kinds.

Argentina's Cement Industry

(Continued from page 3)

are connected to three General Electric alternating current generators of 1250 kw. each. These turbogenerators revolve at the rate of 3600 revolutions a minute without any noise or vibration and are among the many marvels that arouse the admiration of visitors at the plant.

Before American capital gave Argentina one of the most modern cement plants in the world, only 25,000 barrels of cement were being produced in that republic annually. From a million to a million and a half barrels were imported every year. The importance of establishing a national industry for the manufacture of cement became very apparent in the last years of the war and in the years immediately following the armistice, when it was almost impossible to import cement.

In 1915, Argentina used 1,425,000 barrels of cement and in 1916, 1,050,000, of which all but 25,000 barrels

each year was imported. During 1924 the republic's consumption of cement was approximately 2,050,000 barrels, of which 750,000 barrels were manufactured by the Cia. Argentina de Cemento Portland.

The local plant is now producing twice as much cement as it was possible to import under war restrictions, which is sufficient evidence of its economic importance to the country at large.

The officers and executives of the Cia. Argentina de Cemento Portland are H. Struckmann, president; E. S. Morgan, vice-president and general manager; H. C. Wheaton, assistant manager and purchasing agent; R. A. Hummel, general superintendent; A. C. Hillegass, sales manager; J. M. Barker, treasurer; J. H. Leikhim, assistant treasurer and auditor; G. Johansson, superintendent at Sierras Bayas.

THE DU PONT MAGAZINE

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E. R. MANCHESTER.....Editor

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No. 8

The Fur Traders

NO history of the United States would be complete if it did not give the fur traders credit for opening up to trade the vast territory west of the Mississippi River. True, Lewis and Clark, Pike, Long and other government agents had explored the region at the head of their troops, but the fur traders were the commercial pioneers of the West. They established friendly relations with the Indians by trading with them and thus prepared the way for the permanent settlement of the region by the whites.

In exchange for pelts they offered cloth, trinkets, spices, guns, ammunition and manufactured products and commodities of many kinds. Penetrating new country where white men had never gone before, they risked their lives to advance the interests of the fur trading companies who employed them. Probably they did not realize the part they were to play as nation builders, but the fact remains they helped to win the West.

Du Pont gunpowder and the trusty rifle were their constant companions and protectors as well as a part of their stock in trade. It is of record that E. I. du Pont de Nemours supplied the American Fur Company, of which William Astor was president, with 25,000 pounds of powder a year. This product, too, played an important part in winning the West, as every American knows.

We call the fact to mind in our front cover illustration, which is a tribute to the fur trader. The painting is by Frank E. Schoonover, whose work is so well known to the American public that further comment is unnecessary.

Choose the Right Tool for the Task

WHEN a carpenter undertakes to cut a board in two, he uses a saw. He may have a dozen saws available, but he chooses just one—the one best adapted for the work at hand, considering the texture of the wood, its condition, the direction of the grain and other factors.

Likewise, the man who undertakes a ditch-blasting job needs dynamite, and it is just as important for him

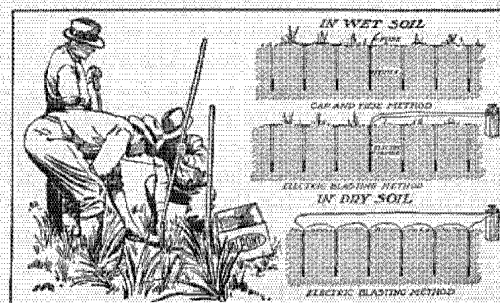
to use the right kind of dynamite as it is for the carpenter to select the right kind of saw for his work. For there are several kinds of dynamite, and the blaster will do well to consider the type of material to be blasted, its condition, whether wet or dry, and perhaps other factors, before he makes a selection.

Ditch blasting is effective in all classes of ground from solid rock to loam, but the density of the material and its moisture content are factors to be considered in selecting the explosive to use. In dry earth or rock one may use a type of dynamite that would be wholly unsuitable under wet conditions. It is therefore important to use good judgment in choosing the right tool for the task.

There are two distinct methods of ditch blasting—the propagation method and the electric method. The first is suited to wet soils only, and we recommend that only 50 or 60 per cent *straight* nitroglycerin dynamite be used. By this method only one cartridge—in a line of holes properly spaced and loaded—is primed. When this cartridge is set off, it detonates the entire line of charged holes instantly. The important things to remember about ditch blasting by the propagation method are these: (1) The ground must be wet, and the wetter the better. (2) Use only 50 or 60 per cent *straight* nitroglycerin dynamite.

Ditch blasting by the electric method is effective either in wet or dry soils. Each hole is primed with an electric blasting cap, with the wires connected in series and all fired simultaneously by means of a blasting machine. Low strengths of Red Cross Extra or gelatin dynamite can be used when this method is employed.

We make the distinction here between types of dynamite and methods of their use because of late several ditch blasting failures have been reported to us. The trouble in most instances has been that the blaster did not use the right tool for the task. Those who contemplate drainage work will find the du Pont booklet, "Ditching with Dynamite," a valuable guide in selecting the right type of explosives to use under varying conditions. Requests for copies should be addressed to any branch office of the Explosives Department, or to the Advertising Department at Wilmington, Delaware.



The illustration shows the various methods for blasting ditches

Paint in the Fall—for Best Results

And let du Pont Prescription Paint Service help you inspect your buildings and select the proper paints to use on them

By R. C. SHEELER

ANYONE charged with the responsibility for the maintenance of industrial plants and equipment should know the advantages of doing outside painting during the fall months.

There are a number of reasons why fall painting is a good thing for the life of a structure:

1. Surfaces in need of paint should not be permitted to remain unprotected during the winter months. Weather conditions are usually much more severe in winter and have an extremely harmful effect upon an unpainted surface.

2. The heat of the summer has thoroughly dried out the moisture from the pores of the wood, so that there is better penetration of the life-giving oil of the paint, insuring maximum preservation.

3. The weather is usually more stable and better suited for painting than in the spring, and there is less chance of having the freshly painted surface spoiled by frequent rains.

4. There are no flies or gnats to spoil the appearance of the newly painted work.

Before having any painting done, make a thorough

inspection of all surfaces inside and outside, so that a painting schedule can be prepared to include everything necessary to be repainted. We suggest that this inspection be made with one of our engineers who can confer with you regarding any questions that may arise concerning your paint problems. Have this inspection made thoroughly so that you may begin at once on a constructive maintenance program that will bring you splendid returns over a period of years. Under du Pont Prescription Paint Service, any unusual or abnormal conditions in your plant that would react unfavorably upon the average paint coat are taken into consideration and a finish recommended that will give good service. Furthermore, your entire paint needs may be standardized and charted so that in future you will have complete guidance in attending to your painting problem. A plan such as this results in lower maintenance costs and at the same time more efficient protection for each exposed surface.

If you are interested in this idea, we suggest that you communicate with any of the branch offices listed under "Paints and Varnishes" on the inside back cover of this number.

Another Use for Pyralin

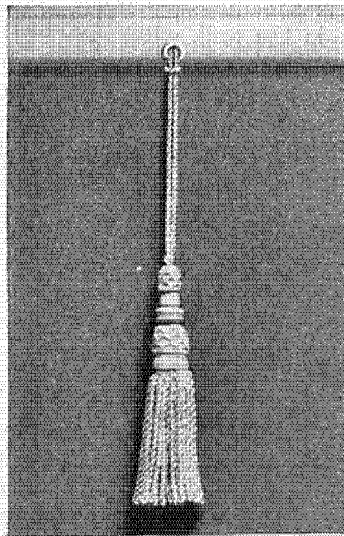
STRAPHANGERS cannot help listening to the conversation of their fellow passengers. Last night, for instance, while swaying on my strap and trying to avoid crushing the feet of three ladies sitting nearby, I caught these exclamations:

"Oh, isn't that perfectly dear!"

"Stunning — and what a pretty design!"

Now what could they be talking about? Glancing down, I saw that one of the homeward-bound shoppers was proudly displaying a silken cord and tassel — you know, the type used on window shades. The body of the tassel was unusually attractive; it was fashioned out of some cream colored material and neatly designed to give the impression of a net-covered fabric.

One of the ladies commented on its fine appearance and the owner said: "That's one reason why I like these cords so well. The salesman told me that rigid part is made of Pyralin, and that if it becomes



The tassel body is made of Pyralin

soiled by the children's sticky fingers, it can be cleaned easily with soap and water and made to look as good as new."

"Where did you buy these tassels?" asked one of the trio. And the one addressed mentioned the name of a local department store.

"Wonder if I could buy tassels like these to match my shades, which are darker than yours," continued the lady.

"Yes, indeed," was the reply; "they come in twelve different colors."

The trio left the car presently, and left me wondering if Pyralin in this finished form were not a new use. Subsequent investigation proved the hunch to be correct. The tassel is a product of the H. F. Walliser Company, a manufacturer of drapery and upholstery trimmings, at 23d Street and Allegheny Avenue, Philadelphia, and also at 1436

Wrightwood Avenue, Chicago, Ill. We add these addresses so that any reader who may be interested can write for full details about them.

To Irrigate 70,000 Acres

(Continued from page 7)

along the center line of the corewall. On the completion of the first drift, a second drift was driven on top of it, and the material was trapped into cars in the first drift. When the second drift was completed the first one was filled with concrete. A third drift was then driven over the second and the material trapped into cars on the second drift. When the third drift was finished the second was filled with concrete and the fourth commenced, and this operation was repeated until the corewall reached the surface. On one occasion the water did overflow the cofferdam, but the shafts were covered with plank, and when the flood subsided the water was pumped out and the work resumed.

Above the surface the corewall is heavily reinforced both vertically and horizontally. From bedrock to crest it is 321 feet high and varies in thickness from five feet to one foot.

Material for the fills was hauled to the dam from the pits in cars and dumped from trestles on the outer slopes of the fills. Waterjets from hydraulic giants were then used to wash it toward the center. For the fill on the downstream side all clay and mud were washed from the material, leaving nothing but clean sand and gravel to go into it. On the upstream side, clay and silt from the filling were collected in a pool and made to puddle against the dam for the greater sealing effect.

On either side of the corewall hundreds of thousands of tons of loose material exert a tremendous lateral pressure against the comparatively thin wall. An excessive pressure on either side might work irreparable damage. Every precaution was taken to avoid this and readings were made daily to detect any deflection in the wall. During construction the upstream fill was kept from three to six feet higher than the fill on the downstream side, to prevent any tendency of the more stable sand and gravel to push the corewall over into the soft materials on the upstream side. The fill on the upstream side has a three-to-one slope; the downstream fill has a slope

of two to one. Into these fills went 1,570,000 cubic yards of material, and in addition, 425,000 cubic yards of broken rock from tunnel and spillway excavation was deposited on both slopes.

The spillway is cut through solid rock at the west end of the dam and is capable of handling four times the known maximum flow of the Tieton River. The spillway channel is concrete lined and discharges into the river channel well below the toe of the dam.

At the crest the Tieton Dam is 900 feet long and 25 feet wide. The distance from the toe of the fill on the upstream side to the toe of the fill on the downstream side is 1,110 feet. The total height of the dam from foundation to crest is 321 feet and from river bed to crest, 233 feet. It is said to be the highest dam of its kind in the world. Since 1921 approximately 460,000 pounds of explosives have been used in its construction.

The damming of the Tieton River will flood 2,500 acres; the resulting reservoir will have a gross capacity of 202,500 acre feet of water, sufficient to irrigate 70,000 acres. The surface of the water in the reservoir will be 2,926 feet above sea level, assuring sufficient elevation to permit the water to reach, without pumping, all the land which is to be served from this unit.

The fact that irrigation is a success is borne out by recent census figures. They show the increase in the total number of farms in Washington to be 18 per cent, while the increase in the number of irrigated farms is 73 per cent. In a few years what is now sagebrush land will be producing potatoes, alfalfa and apples and aiding Yakima County to uphold her reputation as one of the most productive sections of the United States.

For the data in this article I am indebted to the courtesy of the officials of the U. S. Reclamation Service, and for the details of construction—of the corewall especially—I have referred to the article in the *Pacific Builder & Engineer*, by F. T. Crowe, formerly construction engineer on the project.

Nurserymen Use Dynamite

A NEW use for dynamite is reported by Daniel N. Pomeroy & Son, of Lockport, New York, nurserymen, where the explosive was employed with unusual success in digging trees. Last fall, because of the very dry season, trees were not dug until a severe frost came; and then at a time when it was impossible to use shovels.

About seven sticks of dynamite were placed in holes driven by a sledge in the center of the nursery row. In

this way they were able to take out about twenty-five trees at a time without the slightest injury to the tap roots or fibrous roots. Often these tap roots are four feet long. The nurserymen stated that in all their experience in digging and shipping trees, they never sent out such a fine lot as those shipped since they started to use dynamite. They continued to use the explosive for the same purpose last spring, although the trees could easily have been dug with shovels.

Jot It Down—Do It—Tear It Out

THERE, in eight words, you have the idea that has made the Robinson Reminder so popular. This memorandum book contains a pad perforated into coupon-size sections so that you can tear out any

memorandum when it ceases to be of use, regardless of when it was made or where it is located in the reminder. All other notes are left undisturbed until attended to.

This memory jogger is efficient because it keeps live notes only; it is the clean desk idea applied to one's memorandum book.

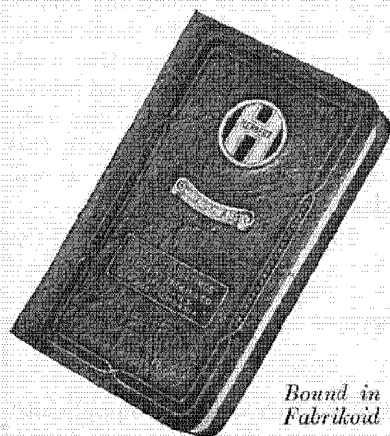
The Robinson Manufacturing Company, of Westfield, Massachusetts, makes these reminders in sizes for both the vest pocket and the coat pocket. You can buy them at stationery stores everywhere.

An extensive business is also done with concerns who buy these reminders in quantities for distribution as advertising gifts. In such cases they are made up so as to be especially appropriate for the use of the company that distributes them. This is quite practical, because

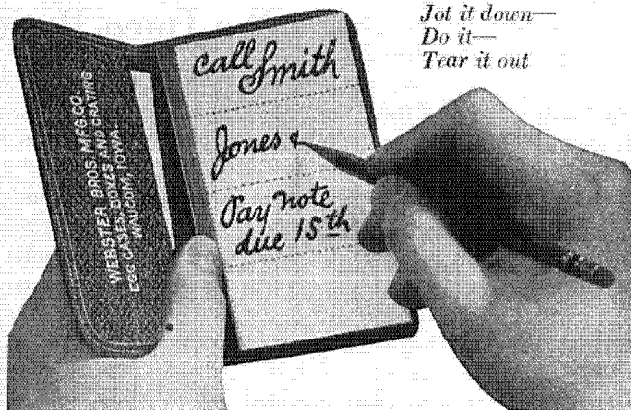
the Fabrikoid covers of these books can be embossed so as to bring out the trade-mark, slogan, plant, package or name of the concern, or any combination of these, in striking relief. Then by the Superfinish process the covers can be colored to give particular emphasis to these features while enriching the general effect.

One of our illustrations shows how the trade-mark, slogan and name of a manufacturer were embossed on one of these Fabrikoid covers, making it as faithful a "reminder" of that concern as of the memos entrusted to it.

The Robinson Reminder pads are also detachable, so that the advertiser, by sending out new pads occasionally, can keep the interest of his prospects alive.



*Bound in
Fabrikoid*



*Jot it down—
Do it—
Tear it out*

A Modern Rubberizing Plant

(Continued from page 5)

This prevents sticking. The coated fabric then passes over an automatic weighing scale which flashes a signal when the material is over or under weight. This equipment is invaluable in controlling the weight of our finished material.

Sheet rubber products are sheeted out in much the same way, except that the rubber is not sheeted on to the fabric. It is sheeted out, dusted with starch and wound on a shell.

The next step for coated fabrics depends on the type of material. Carriage cloth is embossed in any of several grains by being run through the steel rolls of large embossing machines. Other types of calendered products such as raincoat material, bathing belt and bathing bag material, etc., are ready for vulcanization as soon as the excess starch, applied at the calender, is removed.

Carriage cloth, after being embossed, is ready for varnishing and vulcanization. The illustration on page 5 shows our varnishing machine, which likewise festoons

the material in the vulcanizing oven. The luster and viscosity of the varnish are under the constant attention of the chemical department in order to insure uniformity at all times. The temperature of the vulcanizers is controlled by automatic controllers and a record is kept of the temperature throughout each run.

Unvarnished material is festooned in the same type of vulcanizers and handled in a similar manner.

Material vulcanized by means of sulfur chloride is likewise festooned in acid-proof chambers, and the temperature is controlled by means of time-temperature controllers. When the vulcanization is complete, the material is neutralized and ready for inspection.

Sheet rubber products are vulcanized by means of sulfur chloride in the same manner except that the sheet rubber products are tumbled in an atmosphere of sulfur chloride.

Another type of coating which we have not touched upon is "spreading." Many of our thinly coated fabrics

are prepared by spreading a solution of rubber on the face of the fabric.

Double texture material is prepared by combining, by means of a doubling machine, two coated fabrics. The doubling machine consists of a steel and rubber roll running together under pressure. Many of the fabrics are coated completely on the spreaders and others are finally calendered. The fabrics coated completely on the spreader go through the same final operations as those coated on the calender.

After vulcanization, the material is finally taken to our inspection department where it is given a most rigid inspection. Samples of the finished product are obtained for the laboratory and a record is kept of the quality of each lot. Our laboratory watches the material through-

out its journey through the plant. Our inspectors are concerned chiefly in watching the uniformity of our products for quality, appearance, color, luster, weight and width.

We trust that this brief sketch of our activities in the production of rubberized products will convince you that we have the equipment and experience for producing almost any product of this kind in which any reader of this magazine may be interested. We particularly welcome inquiries that may lead to coöperative work with concerns who are now converting rubberized fabrics of any type into finished products. We have been very successful in working out new ideas for and with this trade. Any inquiry you may wish to direct to us will have the most thorough consideration.

The Duco Period in Furniture

(Continued from page 1)

The "ball and claw" foot is a typical Chippendale detail. However, Chinese Chippendale pieces usually have four-square, ornamented legs.

The Louis XIV period delights in the rococo ornamentation of elaborate and intricate carving. The table legs are massive, shaped like pedestals and highly embellished with carving. One expert has said that if you can find a piece of furniture with every inch covered with intricate carving, the design is surely Louis XIV.

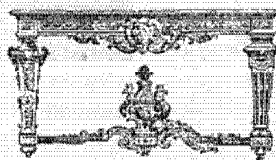
Louis XV is also characterized by a great deal of carving, but the legs are of the modified cabriole variety. In addition, most authentic Louis XV pieces make elaborate use of inlays and gilding.

Straight lines, reed-like fluting, carvings which simulate draperies, the use of the vase or urn in decorative panels are identifying marks of the Adam period.

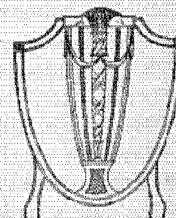
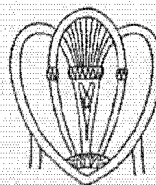
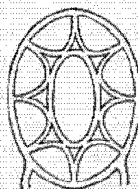
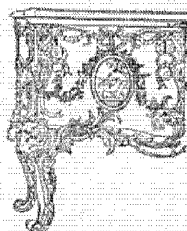
Other periods offer fruitful fields for study. There is the Italian Renaissance, Tudor, Jacobean, Empire and others. It is interesting to note that while the word "period" is usually associated with design only, that is not strictly correct. Period, when rightly interpreted, also has a bearing on both construction and finish. Jacobean and Louis XIV and Spanish Renaissance are

massive; Empire and Colonial are sturdy; Heppelwhite, light and airy. In the same way, finish has an influence on the period, whether it be the gilded carvings of Louis XV, the fumed oak of Jacobean or the so-called "French" or oil-rub finish of many of the earlier designers. So increasingly important a part is finish playing in design today that the du Pont Company is now speaking of the "Duco Period" in furniture. In explanation, it is added that the Duco Period refers to the modern era when the materials and design no longer outlast the finish.

Of what use is it to buy a well-made and authentic reproduction of some chosen period if the finish will fail in a year or two? The Duco Period is preferable, because with this finish, the furniture you buy today will remain until the pieces are passed on to other generations as true heirlooms. Of more immediate concern is the fact that Duco Period furniture will resist most of the use and abuse that pieces must meet in everyday life. Ice water, boiling coffee, salt air, the hottest weather have no effect on Duco. It will not chip, nor can it crack, craze or lose its original luster with age. When visiting the furniture stores during the August sales it will pay you to ask the salesman about Duco and the Duco Period in furniture.



A Louis XIV table



Left—Detail of a Louis XV piece. Above—Examples of Heppelwhite shield-back chairs: First, with Prince of Wales plume for decoration; second, the oval; third, the heart and loop. Right—Sheraton shield-back chair



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

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*Explosives for all industrial, agricultural,
military and sporting uses.*

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Chicago, Ill., 1814 McCormick Bldg.

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Duluth, Minn., Hartley Bldg.

742 E. Superior St.

El Paso, Tex., 410 Mills Bldg.

Huntington, W. Va.

Robson-Prichard Bldg.

Joplin, Mo., 816 Joplin Nat'l Bank
Bldg.

Kansas City, Mo., 225 Scarritt Bldg.

Miami, Florida, Converse Bldg.

105 First St., Southeast

Mexico City, Mex.

Edificio de La Mutua, 406

New York, N. Y., 120 Broadway

Pittsburgh, Pa., Fulton Bldg.

Portland, Ore.

Northwestern National Bank Bldg.

St. Louis, Mo.

17th Floor, Arcade Bldg.

San Francisco, Calif., 569 Mission St.

Seattle, Wash.

Hoge Bldg., 2d Ave. & Cherry St.

Scranton, Pa., 710 Traders Bank Bldg.

Spokane, Wash.

721-22 Old National Bank Bldg.

Riverside Ave. & Stevens St.

Springfield, Ill., 716 Reisch Bldg.

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*Fabrikoid for automobile tops, body cover-
ing and upholstery; bookbinding, furni-
ture, luggage, novelties, etc. Pontop for
auto tops and curtains. Tontine shade
cloth. Ventube for mine ventilation.*

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San Francisco, Calif., 569 Mission St.

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Du Pont Rayon Company, Inc.

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*An easily workable corrosion-resistant
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*A complete line of paint and varnish prod-
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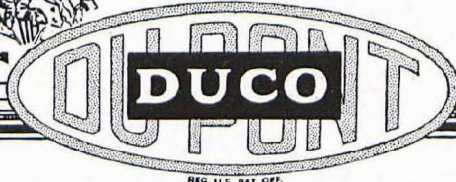
Chicago, Ill., North American Bldg.

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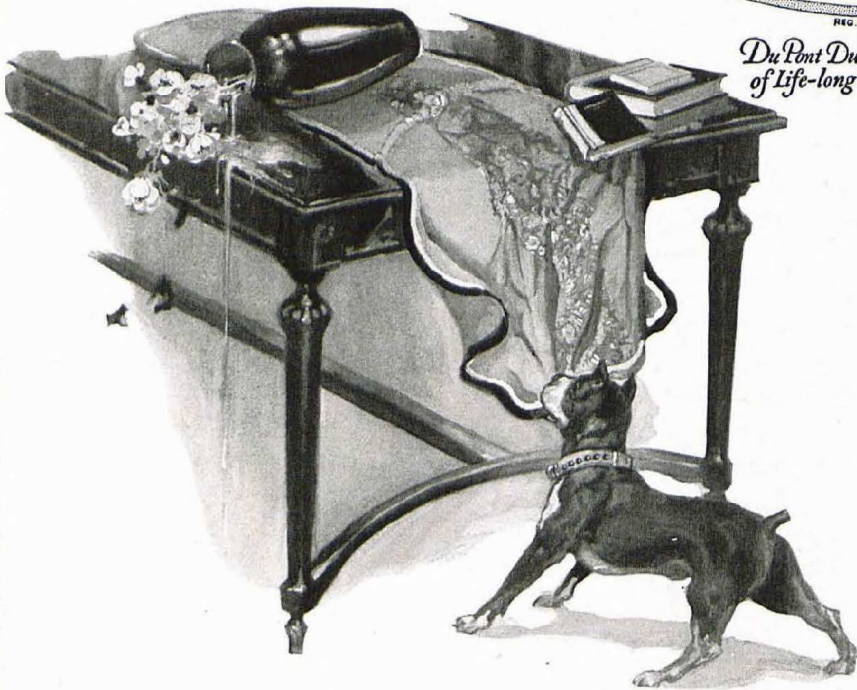
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