

The DuPont Magazine

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DU PONT

Ivory Pyralin

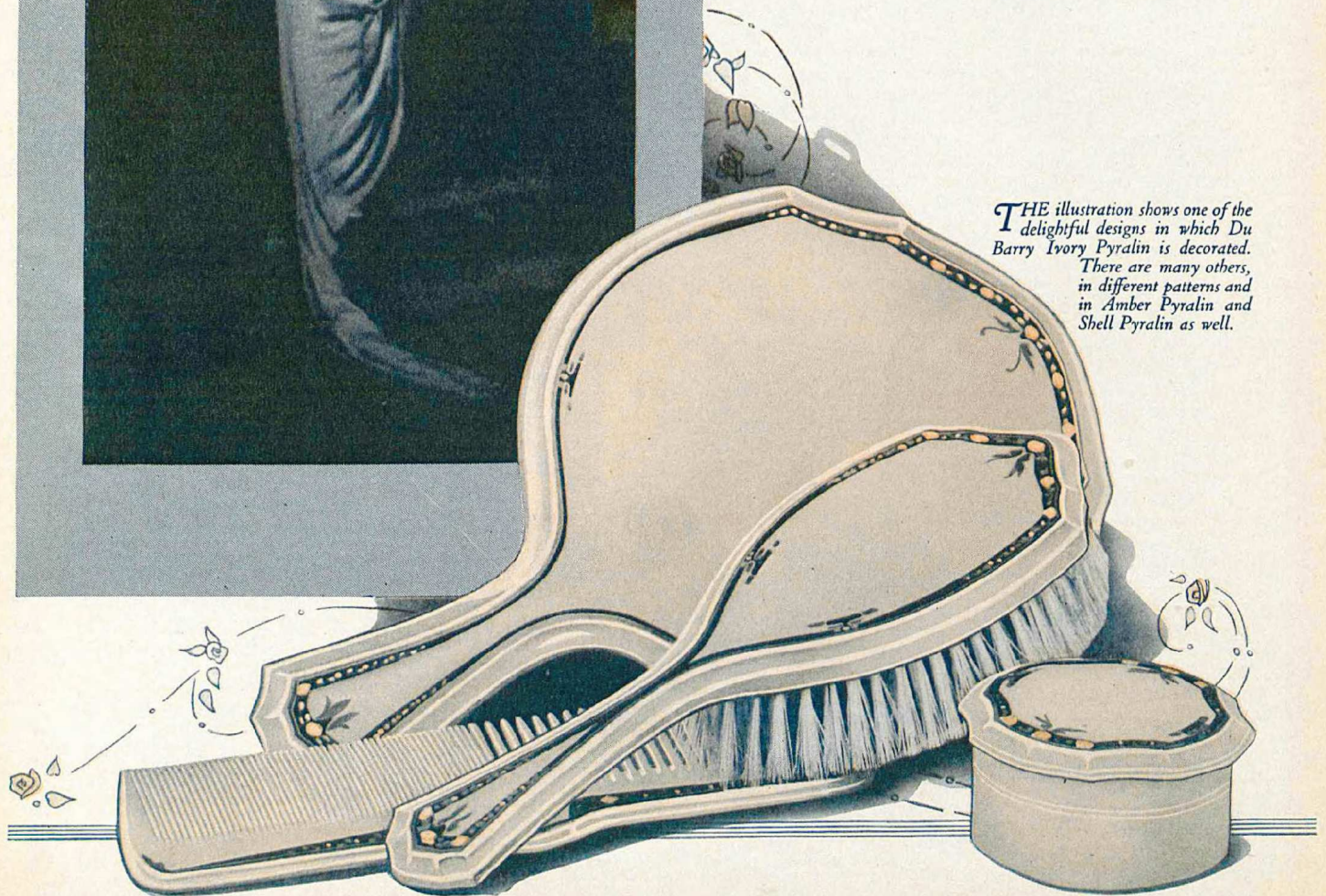
OF ALL the gifts which come to gladden her bridal day none will be more delightful than her Ivory Pyralin. Its grace and dignity make Pyralin a fitting complement for a beautiful woman. Its simple beauty never wearies. Its mellow lustre richens as the years go by.

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

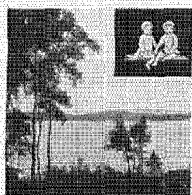
Sales Department: Pyralin Division
WILMINGTON, DEL.



THE illustration shows one of the delightful designs in which Du Barry Ivory Pyralin is decorated. There are many others, in different patterns and in Amber Pyralin and Shell Pyralin as well.



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Vol. XIV MAY-JUNE, 1921 No. 6

DYES DEVELOPMENT—A NATIONAL NEED

THE development in the United States of a coal tar chemical industry—which is the same thing as saying the development of the manufacture of dyes, medicines and poison gases—has become a question of vaster proportions than the mere legislative proposition of helping to upbuild a so-called "infant" industry. United States Senator Knox of Pennsylvania, whose wide experience in statesmanship gives great weight to his words, thinks the matter so vital that he urged the inclusion of a dye and chemical schedule in the Emergency Tariff Bill.

The leaders in Congress had announced that no additions would be made to this bill, but on Senator Knox's presentation, they changed their attitude and recommended measures to protect this industry from the flood of foreign-made goods which threatens it.

During the presentation of his argument in behalf of his amendment, he used the word "we" and was promptly asked by the Chairman of the Finance Committee whom he meant to include under that designation.

The Senator's reply was illuminating: "When I say 'we' I mean the large body of American people who are interested directly and indirectly in the upbuilding of the great dye industry in the United States."

The amendment which was submitted provided that the powers of the War Trade Board, which had been controlling imports from enemy countries, should be transferred to the Treasury Department and should continue after the formal declaration of peace between this country and Germany. The Treasury Department was given the power to exclude all dyes and chemicals if similar articles of domestic manufacture should be found available; otherwise, the foreign product should be admitted so that the dye consumers of the United States need not be hampered because of a lack of development of the domestic industry.

After reading this amendment, which included the usual legal phraseology, the Senator launched into an explanation of why he asked for this unusual piece of legislation.

"I am looking at this personally," he said, "not merely as a justifiable measure to protect an industry that sprang up during the war, sprang up almost over night, sprang up as the

*The new industry is vital for
safety and defense as well as
for commercial progress*

result of the Government's crying alarm that we had no means to meet the new and devilish devices that the German chemists had invented and which were making inroads upon our troops and those of our Allies, so that for months it seemed it was not possible for us to meet and to overcome them.

"When the cry of alarm went up, there was practically no dye industry in this country, and when I say there was no dye industry, I say in the same words there were no industries where poisonous gases could be produced, because they can only be produced in dyeworks. They are all the products of organic chemistry, or even more primarily speaking, they are the products of coal tar; and at that time, before the war, Germany had a practical monopoly of the dye industry of the world, which meant that she had a practical monopoly or an exclusive capacity for the manufacture of the greatest implement and instrumentality of warfare that has even yet been discovered.

"The examination of those great munition dumps that were captured in the last drive disclosed that more than 50 per cent. of the explosive projectiles which at the beginning of the war were loaded with high explosives were loaded with chemical gases, and if the war had lasted two years longer the probabilities are that 90 per cent. of all of the projectiles used would have been exploded by and would have diffused poison gases.

"You may talk about disarmament so far as mechanical arms is concerned, the building of ships and the casting of cannon and the making of guns and all that sort of thing; it is nothing if you do not limit Germany's capacity to make this chemical armament, and when she makes this chemical armament she is not making it at the expense of the German government and of the German people, but she is making it at the expense of the United States and of Great Britain and of Italy and of any other country that will buy dyes from her, because these plants are operated during periods of peace, for the purpose of producing things that have a peace use and peace value.

"No taxation is laid upon the German Government to construct these gigantic plants which are so flexible that they can be converted from a dye plant into a munition plant within a

week. But it is being built up at our expense. Every thousand dollars' worth of dyes that the American people buy from the German requires a thousand dollars' worth of capacity in German manufacturers; and they have just that much capacity for harm in the event of war in turning these dye plants over into manufactories of munitions.

"I have before me here a little volume that is fascinating in its information. It contains information that I do not see how any American statesman could afford not to possess. It is told in the most interesting way. It reads in parts almost like the Arabian Nights and Alladin and His Wonderful Lamp. It contains, besides some of the best speeches that have been made upon the subject, notably the one made by the Senator from Indiana, (Mr. Watson), the Senator from New Jersey, (Mr. Prellinghuysen), the report of the Ways and Means Committee of the House and of the Sub-committee of this Committee of the Senate; it contains the testimony of the military experts who have been connected with our Chemical Warfare; it contains what I consider to be one of the most interesting articles I have ever read, entitled "Chemical Disarmament" by Major V. Lefebure, and also a similar article by Dr. Charles A. Herty.

"But there is a little passage from the report made by Senator Watson that I would like to read to you, because I think it contains the germ of the whole matter. I read from page 33 of the report, the last half page:

There is another thing which the people of the United States must remember, and that is that all the most important explosives of the present day are either coal-tar products or the result of chemical processes requiring the use of coal tar, and in all dyestuff factories there is unavoidable production of large quantities of substances which are directly available for conversion into explosives, so that it is important that the Government aid the industry in every way possible.

When the importation of dyes from Germany was cut off by the war, it was encouraging to the people of this country to see the large number of people who went into the industry to serve the Government. There were large establishments and small ones, every one doing its full part. They commenced with the dyes which were the easiest to produce, and gradually expanded the production until today they are producing about 90 per cent. of the dyes needed in this country.

One who has read the story of the work of the German Government in the United States, just prior to the war knows that the chemical industry in this country, which was under the control of the German Government, was the center of espionage, German propaganda and direct Government activities. They prevented the use of coal-tar products in the munition industry. They undertook to corner the supply of phenol in the United States and prevent its use in the manufacture of high explosives, and at the outbreak of the war they stopped its importation.

The United States is virtually independent of Germany so far as the dye industry is concerned, and it is our duty to keep it so. We know what Germany will do to regain her hold on the industry in this country. We know that she will resort to State aid, cartel combinations, trade export premiums, dumping, bribery, espionage, and propaganda. She did this before, and she will do it again.

"Now, I only want to repeat in one sentence that from my point of view, devoted protectionist as I am, we ought to deal with this thing not as a matter of tariff. We ought to deal with it as Great Britain has dealt with it in the last three or four months—free trade Great Britain, her most ardent free traders making the most eloquent and earnest speeches for an embargo upon German dyes, which they passed in their Parliament for ten years, under practically the same control as is

suggested in this relation, with hardly any dissent upon the part of even the most ardent free traders—the bill here, not as a tariff proposition, but as a matter of national defense.

"What can be more obvious, what can be more obviously necessary, when we have been taught by lessons brought home to us in such a painful way? Who can go to the Walter Reed Hospital and elsewhere and see a boy who is half demented, suffering from the asphyxiation of poisonous gases? Who could for a moment think that the statesmen of this country should lie down and allow Germany to go on and build up and obtain once more the monopoly of the world in the manufacture of chemical armament?

"We have going off in the air in the United States of America, in round numbers, a billion dollars' of by-products. Germany does not lose one penny of the value of the coal that she uses, and the difference is that we burn our coal in the main and allow the smoke and the gases to escape in the air. In Germany they roast their coal in by-product ovens, and they gather all of the gases and all of the by-products, from which they make these chemicals and drugs. In our State, Mr. Chairman, it is estimated that we lose about \$350,000,000 in that way, and just to show you what a pound of coal and a cord of wood is worth chemically and in dollars and cents, I beg to call your attention to a few observations I made myself in the Senate. As I noted there, even in the State of Utah, where I suppose there is not so much coal burned as in many other of the Western States, the loss amounts to \$9,999,000. From one ton of soft coal, by the process of destructive distillation, you obtain 12,000 cubic feet of gas; liquor (washings), ammonium sulphate, 7 to 25 pounds; tar, 190 pounds, from which, re-distilled, we get benzene, 10 to 20 pounds; toluene, 3 pounds; xylene, 1½ pounds; phenol, one-half pound; naphthalene, three-eighths of a pound; anthracene, one-fourth pound, pitch, 80 pounds; and coke, 1200 to 1500 pounds.

"Now, gentlemen, I want to call your attention to the fact that more than one-half of the bituminous coal that is consumed in this country and converted into coke was made in the ordinary old-fashioned bee-hive ovens, and that every one of these articles that I have read to you that can be obtained—the tar, xylene, phenol, anthracene, and all these sorts of things, which all go up into the air—and the total product of that ton of coal is from 1200 to 1500 pounds.

"Take a cord of wood, for instance. A cord of wood of 128 cubic feet, is subjected to a process of destructive distillation and yields first, 80 bushels of charcoal, 11,500 cubic feet of gas, 25 gallons of tar, 10 gallons of crude wood alcohol, and 200 pounds of crude acetate of lime. Eighty per cent. of the wood that is consumed in the United States only either produces heat or charcoal, all these other products go off in the air.

"What has that to do with the dye industry? Simply this: All these things are the fundamental raw products of which dyes are made, and if there is a demand for dyes in this country that we ourselves can supply, there will be the demand for these economies, and the consumption of these valuable articles that are going to waste will be, of course, meet and proper."

THE DU PONT PRODUCTS EXHIBIT

Manufacturers who use Du Pont products, either wholly or in part, to make finished articles will be interested in a new six-page folder describing the advertising, sales promotion and service functions of the Du Pont Products Exhibit at Atlantic City, New Jersey. This folder shows exterior and interior views of the store and explains briefly the nature and character of service the Du Pont Company renders without charge to those who make use of its unique display facilities. Manufacturers interested in the Du Pont Products Exhibit can procure copies of this folder by addressing any office of the E. I. du Pont de Nemours & Company, Inc.

DU PONT STRAIGHT DYNAMITE IS NOW PRACTICALLY FREEZE-PROOF

Excepting only certain Permissible Explosives and Blasting Gelatin, all Du Pont dynamite will hereafter be made on the new low-freezing formula

THE first successful, commercial high explosive was developed in the United States about

fifty years ago. This was straight nitroglycerin dynamite composed of nitroglycerin as the explosive ingredient, combined with active base absorbents such as nitrate of soda and wood meal. Since that time many explosives have been developed. Most of them, contain some quantity of nitroglycerin combined with other explosive ingredients such as nitrate of ammonia, T.N.T., or nitrocellulose; some few, however, contain no nitroglycerin and depending for their explosive strength upon nitrostarch, T.N.T., or some other substance.

Each of these has its own peculiar characteristics and adaptability to certain kinds of work. Thus the ammonia or extra powders, while they have less shattering power than the straight dynamites, are often better suited to close work because they give off less obnoxious fumes. The nitrostarch powders have the merit of being entirely non-freezing, and permissible explosives, which have been developed especially for use in gaseous and dusty mines, have greatly decreased the dangers of coal mining and have made it possible to produce a higher percentage of lump coal.

It is doubtful, however, whether any of the newer explosives has equalled straight nitroglycerin dynamite in all round effectiveness; certainly no explosive compound has yet been found to equal it in strength, quickness, stability, and dependability for good execution in the hardest kind of work. In keeping qualities it is, indeed, superior to any other high explosive. The formula is simple and small deviations from it in manufacture make no appreciable difference in the strength and stability of the dynamite, a thing which cannot be said of any of the high explosives made on more complex formulas. While other types of explosives have, of course, their legitimate field, as the gelatins for use in metal mining, tunneling and in extremely wet work, the permissibles for use in coal mines, and the ammonia powders for agricultural purposes and for work where too great shattering is undesirable, still it is a fact that for execution in downright hard work no other explosive compares with straight nitroglycerin dynamite.

While it may be true that there are classes of work where straight dynamite is not necessary, there is hardly any kind

By S. R. RUSSELL, C. E.
Technical Representative
E. I. du Pont de Nemours & Company, Inc.

of open work where some grade of straight will not do as well as, or better than, any other high explosive.

THIS announcement marks one of the greatest advances made in the art of explosive manufacture. The Du Pont Company produced the first commercial "low-freezing" dynamite, and has since developed many other "powders" with this same characteristic. Du Pont "Straight"—probably the standard of all explosives—however, has heretofore had the disadvantage peculiar to all straight nitroglycerin explosives, namely, its susceptibility to freezing at comparatively high temperatures.

After years of experimenting in the laboratory and in the field, a new formula was discovered and proved out so successfully that it has been adopted as standard by the Du Pont Company for all straight dynamite. In actual tests this new "straight" has remained plastic at 10 degrees below zero.

The saving to explosives users in cost and in added efficiency, by the fact that nearly all Du Pont explosives are now practically non-freezing, is difficult to estimate, but it certainly will be a very large sum.

For blasting hard rock, where the maximum of shattering is desired, no other explosive equals it. It can be used in open quarrying where the material is to be crushed and in blasting rock under water. It is especially adapted for range or propagated shooting in this sort of work, and is also well adapted for blasting drainage ditches by the propagated method. Nothing equals a straight dynamite for "mudcapping or dobbing." For springing holes in rock it has no superior. In explosives parlance straight dynamite is the standard, and the strength of any other dynamite is determined by comparison of its execution with that of an equal quantity of straight. It is the dynamite by which all others are measured.

While the great superiority of straight dynamite is beyond question, it has had some characteristics which have been a disadvantage, perhaps the most serious one being its liability to freeze at temperatures below 50° Fahrenheit. As any dynamite loses some part if not all of its efficiency when it is chilled or frozen, many attempts have been made to produce low-freezing dynamites. Dynamites made of coal tar derivatives, such as nitro-benzol, or tri-nitro-toluene in combination with nitroglycerin, have been on the market for some time but until recently none of them had been found altogether satisfactory.

It remained for the Du Pont Company—always a leader in the manufacture of explosives—to perfect a straight nitroglycerin dynamite which will rarely require thawing even in very coldest climates. During the fall of 1920 the Du Pont Company placed on the market this new straight dynamite, which, while possessing all the desirable features of the old straight, has the additional one of being extremely low-freezing.

Field tests made with this dynamite indicate that it will stand up as well in cold weather as Du Pont Gelatin—an explosive that has been in use for some years and has met all requirements in very cold climates without thawing. During the past winter the new Du Pont Straight Dynamite remained soft and in good condition at 10 degrees below zero when other brands of dynamite, including some low-freezing kinds,

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WHY DEALERS SHOULD HANDLE ONE COMPLETE, SPECIALIZED PAINT LINE

SUCCESSFUL paint merchandizing is based on handling one complete line and pushing it. For years this doctrine has been preached to paint dealers with only partial success, and perhaps for a very good reason. At any rate, you will find displayed on the shelves of the average

paint store a nice assortment of manufacturer's labels, representing divided sales effort. House paint, flat wall paint, varnishes, varnish stains, enamels and wood finishes may represent three, four or even more, different labels, all selected from different lines as being the best in their class.

No one can criticize the dealer for wanting to handle the best, or question his judgment that no one line has heretofore contained all "top-notchers." So his selection has been made with the usual multiplicity of labels, additional bookkeeping, sales effort, and other handicapping factors.

Today there is one complete, standardized Du Pont Paint & Varnish line which enables the dealer to do the very thing he is doing now, but with this difference: He can stock his shelves with "top-notchers" *all sold under one label*. Each product of the Du Pont line is a "best seller" selected from lines of houses that for years have specialized and concentrated their effort on certain products until they became the standard on the market. There is no duplication of products, no diversity of names or labels. There is but one label and one name—Du Pont.

The Du Pont Company entered the paint business with the purchase of Harrison Bros. & Company, Inc., of Philadelphia, one of the leading paint houses since 1793. Harrisons Town & Country Paint, Oil Colors and Enamels were the choice of critical users for almost a century. These highly specialized products are now sold under the Du Pont label.

It was not long before the business of the Bridgeport Wood Finishing Company of New Milford, Conn., was acquired.

The Bridgeport Standard line was specialized in the manufacture of fillers, stains and finishes. For more than forty years this line was acknowledged, even by competition, as superior to any other line on the market. This group is also sold under the Du Pont label.

Following this came the purchase of the Chicago Varnish Company last year, completely rounding out the group of specialty houses. For more than fifty years the Chicago Varnish Company specialized on high grade varnishes. Many

It pays to deal in specialized products, standardized in manufacture and sold under one label

By G. A. TOUSSAINT

of these varnishes were distinctive. For instance, Supremis Floor Finish was the first varnish made especially for floors, and is today unequalled as a floor finish. Much of the finest varnished work in America is done with these products. This specialized line is now sold under the Du Pont label.

Investigate the standing of practically every high grade paint line and you will find specialization extends only to a few items. The remainder of the line may represent quality, but without specialization.

The varnish house specializes on varnishes generally, and on little else.

Specialty houses usually confine their efforts to a few specialties, and have no complete paint line.

That is the reason paint dealers have been accustomed to pick from various lines the particular products that are specialized on—products on which the reputation of the manufacturer has been built.

No dealer can pick from the Du Pont Paint & Varnish line without getting specialization, and the reputation of each product facilitates turn-over of the entire line.

The Du Pont Company bought outright the complete factory and technical organizations of each paint and varnish unit, and later consolidated them under its own supervision.

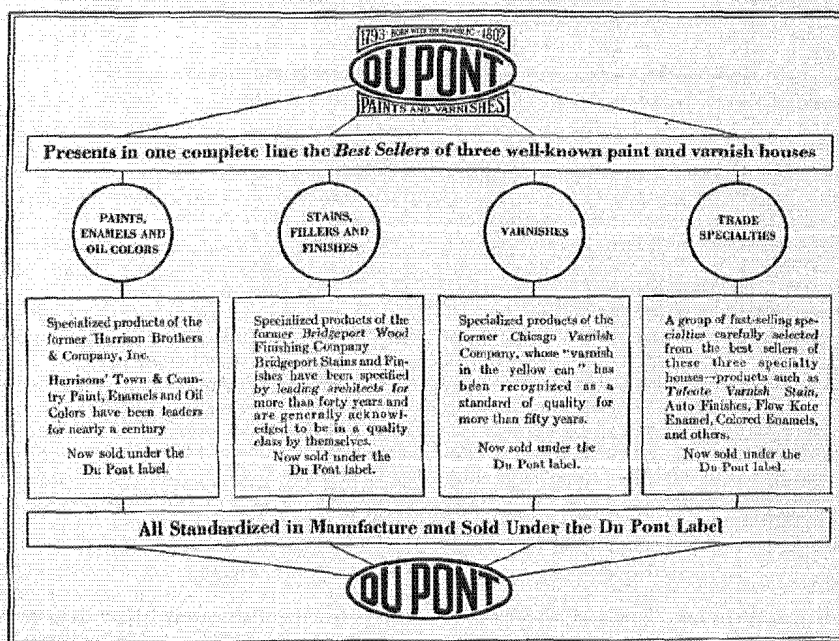
In paint and varnish specializing, factory equipment plays an important part. For instance, in the manufacture of fillers, stains, varnishes and enamels, specialization has developed factory equipment not generally used by the average manufacturer. Thus in taking over organizations intact, facilities were provided not only for manufacture, but for even further development of products through the co-operation of our own technical and chemical staff, so commonly referred to as the largest and most efficient in America.

All of this comes to the paint dealer in the finished products making up the Du Pont Paint & Varnish line. One label carries this completely specialized line.

Perhaps the greatest advantage to the dealer results from the good-will which is compounded through featuring one complete line.

A great many of the advertising features and selling helps furnished by the manufacturer stimulate the sale of more than one commodity. Full benefit is derived from this matter only where dealers

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FABRIKOID SCORES 100%

UNQUESTIONABLY popular is the car with a Craftsman Top. Most of our readers know that this radical improvement in motorcraft originated in California, but probably few people realize how completely the Craftsman Top dominates the field of fine cars in that state. Nothing illustrates this so well as a review of the passenger cars exhibited this year at the San Francisco and Los Angeles Automobile Shows.

The outstanding feature of both shows was the increased number of special custom-trimmed cars as compared with standard stock models. At the risk of monotony we are listing and briefly describing the cars shown on which the Craftsman Top, with its colorful Fabrikoid covering, was used to obtain individual and distinctive effects. Those of our readers who are associated with the automobile trimming and finishing trade will be especially interested in the diversity of color combinations developed.

The San Francisco show was held in the Exposition Auditorium and was a most successful one from the viewpoint of attendance, interest and sales. The passenger car exhibits were exceptionally attractive. Craftsman Fabrikoid was the only material of the type used on any custom-made top exhibited. It was a one-hundred per cent. triumph for this distinctive material. A review of the exhibits adds emphasis to the point.

THE SAN FRANCISCO SHOW

In the Chandler exhibit, for instance, there were two very attractive cars. One had a Peacock Blue body with blue striped plush upholstery and a blue Moorish Craftsman Fabrikoid top with inside panels and headlining of the same material. The other had a top covered with the same material, but this top was made into a special sedan. It was a modification of the regular Craftsman Top enclosure, and the first of its type constructed. It was continuously surrounded by throngs of admirers.

Templar touring car—It had a wine colored body, black fenders, black leather upholstery and a Craftsman Top covered with dark red, long grain Craftsman Fabrikoid.

A Chalmers—with a Royal Blue body and blue tapestry interior was equipped with a Craftsman Top in blue alligator grain Fabrikoid.

Hudson Super-Six Special Speedster touring car.—This car had a Rolls-Royce blue body and black fenders. The Craftsman Top was covered with black cobra grain Fabrikoid and the seat covers were edged with Fabrikoid.

National seven-passenger touring car—This was upholstered in gray and had a sedan top in gray cobra grain Fabrikoid.

Haynes—The gray, long grain Fabrikoid on its Craftsman Top harmonized well with a Royal Blue body and gray striped plush upholstery. It had aluminum rims on the sliding windows.

Jordan—This car had a wine colored body, black fenders, a maroon-trimmed interior and a Craftsman Top of dark red cobra grain Fabrikoid.

The Leach Motor Company exhibit consisted of a roadster with blue alligator grain Craftsman Top whose sliding glass windows made a complete coupe. This car had tire covers to

*Craftsman Tops in every style
and color featured at the
San Francisco and Los
Angeles Auto Shows*

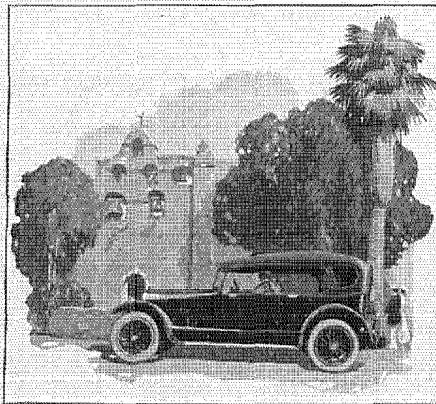
match its Royal Blue body. It had black fenders, and was equipped with an upright, nickel-plated carrier for golf clubs. It was sold the first day of the show.

Next, a Leach Chummy Roadster, with a removable auxiliary seat. The car was lined with a gray fabric and had a Craftsman Top of black alligator grain Fabrikoid.

A five-passenger Leach touring car, with a light buff-colored body and dark brown fenders, was topped with brown alligator grain Craftsman Fabrikoid and had tire covers to match. Its flexible Pyralin curtains were also edged with Fabrikoid. Nearby was a seven-passenger Leach, which had a Royal Blue body, upholstered in blue leather, black fenders, a Craftsman Top of blue Moorish Fabrikoid and tire covers to match. This car also was equipped with Pyralin sliding curtains edged with the same color of Fabrikoid as the top. Incidentally, this company standardizes on Craftsman Fabrikoid for all its cars.

Among the accessory exhibits the Angelus tire covers were shown in almost every conceivable color combination. The manufacturer uses Craftsman Fabrikoid exclusively for special covers.

The E. I. Du Pont de Nemours & Company, Inc., exhibit included a complete display of the many grains and colorings obtainable in Craftsman Fabrikoid. This booth attracted unusual attention because so many cars on the floor were provided with tops finished with this material.



THE LOS ANGELES SHOW

Unfortunately the exhibitors at the Los Angeles Show were handicapped by lack of room. The Auditorium—the largest structure in the city—had burned to the ground, making it necessary to hold the show in the Harold L. Arnold building. Although this is one of the largest buildings of its kind on the West Coast, it was not large enough for effective display of all the exhibits.

Here, too, all the automobiles equipped with tailor-made special tops were finished with Craftsman Fabrikoid. Note the following list:

Apperson touring car—upholstered in gray; it had a Craftsman Top covered with cobra grain, glazed finish Fabrikoid.

Marmon touring car—upholstered in dark gray material. The Craftsman Top was finished with black cobra grain Fabrikoid.

Mitchell—This car was upholstered with brown plush and had a Craftsman Top of brown long grain Fabrikoid.

Nash—It was upholstered in gray striped plush, and was distinguished by its gray Craftsman Top of buffalo grain Fabrikoid.

Winton—This car had a Craftsman Top of glazed cobra grain Fabrikoid.

Chevrolet touring car—upholstered in dark gray. The Craftsman Top was covered with gray and white Craftsman Fabrikoid.

Buick coupe—This car had a black body and a gray Craftsman Fabrikoid Top; it was upholstered in gray plush.

Franklin touring car—It had a dark blue body, upholstered in blue plush, and a gray and white Craftsman Fabrikoid Top.

Liberty touring car—The top was covered with gray

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THE REQUISITES OF TRAVEL

THE vacation season has started off with a rush. From now on until early fall the trains, boats and highways will be thronged with people seeking pleasure and recreation. Resort hotels, mountain inns, boarding houses and summer camps will soon be headquarters for thousands of vacationists. Just now they are getting ready to travel.

The needs of tourists and vacationists are numerous and varied. Even before the average person thinks of poring over a railway time-table or hotel guide, clothes, luggage and scores of personal accessories are carefully inspected. Things that ordinarily pass muster for home use are discarded as unfit for use away from home, because strangers are prone to judge character by appearances and everyone likes to create as favorable an impression as possible.

Time was when old clothes and a shabby looking suit-case served well enough for traveling purposes. A trip on the train meant the loss of most of the comforts of home. Today with travel facilities vastly improved, any one can "travel and be at home" if he knows how—and most people do know how because they go prepared to enjoy home comforts.

Incidentally, that explains why dealers are now showing merchandise that will make the strongest appeal to those who are getting ready to go away. They are featuring high class merchandise—the kind that intrigues the imaginations of those who plan to travel comfortably with due regard for the "eternal fitness of things."

Take luggage accessories for instance. No one thinks of going on a trip without all the articles required for the daily toilette. But there is this handicap; the toilettware for home use is often ill-adapted for traveling needs—the pieces are too heavy and too bulky. For this reason traveling bags and cases fitted with Pyralin bag-fitting sets appeal to buyers because all the articles are of a size and shape to fit compactly into the traveler's luggage without occupying too much space or adding materially to its weight.

Especially are they appreciated by women travelers who dislike, as they say, "to live in a suit-case" unless some provision is made for keeping all the intimate personal possessions—including toilet articles—separately contained. It satisfies a woman's instinct for orderliness to have each toilet accessory fitted into its own compartment, always

Traveling bags and cases fitted with Pyralin toilet articles are readily salable at this season

handy, always visible, instead of hidden away in her luggage where she cannot find it without removing a lot of other articles that are not improved in appearance by handling. Moreover, every woman feels a sense of pride when she can display a fine set of toilettware before the critical

eyes of fellow-passengers in the Pullman car dressing room.

The advantage to the dealer in stocking bags fitted with Pyralin articles is that there are already thousands of women—and men, too—who use Pyralin toilettware in their homes every day, and who know its characteristic qualities of beauty and utility. These people exercise the same discrimination in selecting toilet articles fitted in bags for travel use as they do in buying a set of Pyralin for home use. For this reason the wide-awake dealer who displays a stock of Pyralin-fitted luggage finds his old customers are excellent prospects and enthusiastic buyers of these necessary traveling accessories; and if he and his salesmen make a practice of calling attention to fitted bags in connection with the sale of dresser articles, the suggestion frequently results in larger individual sales and an increased turnover.

Ivory Pyralin fourteen-piece bag-fitting sets are made in either Du Barry, La Belle or Plain Patterns, decorated or undecorated; also in Shell Pyralin and Amber Pyralin in the Du Barry and La Belle Patterns. Several manufacturers of

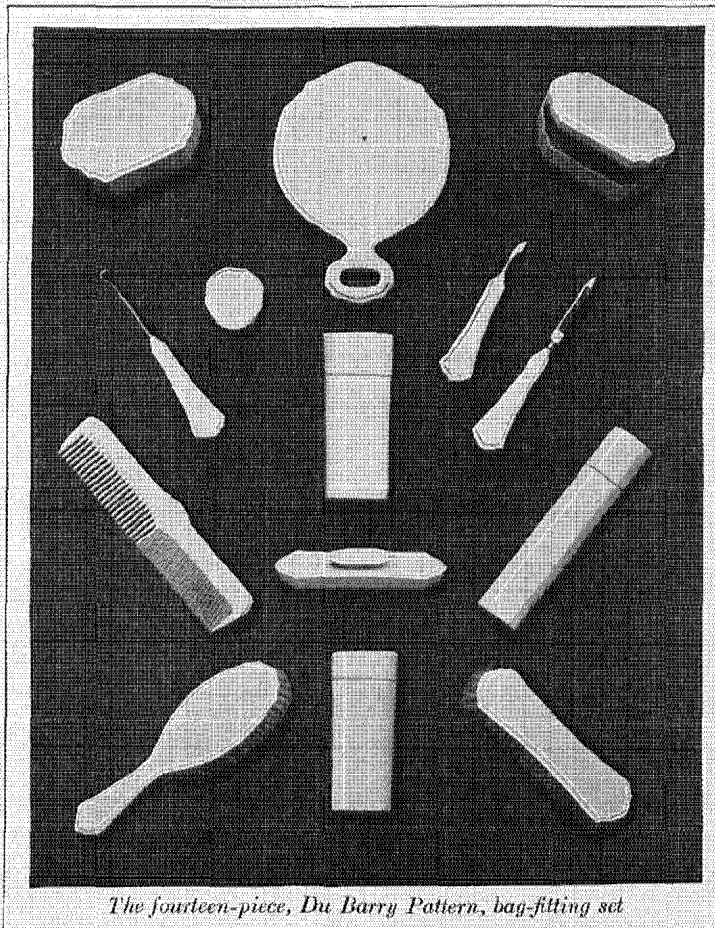
fine luggage have on put the market various types of bags and cases fitted with these pieces and they have proved to be fast-moving, popular merchandise.

This year Pyralin dealers and manufacturers using Pyralin articles have the support of the largest advertising campaign ever launched by a manufacturer of toilettware.

Sales-stimulating copy is reaching eight million homes, and twenty million selected readers. Needless to say those who cooperate in this campaign are the largest sharers in its benefits.

While toilettware and luggage are staple, year-round merchandise, salable at any season, it is nevertheless true that goods of this kind move most rapidly and in greatest volume during periods of seasonal demand.

Dealers will make no mistake in giving prominent display now to bags and cases fitted with Pyralin articles while the tide of summer travel is running strong.



The fourteen-piece, Du Barry Pattern, bag-fitting set

MULTIPLYING LEATHER

THE needs of mankind multiply with amazing rapidity. Were it not that scientific discovery, creative chemistry and the mechanical arts have somehow managed to keep pace with the enormous demand for natural products, or something equally good or better, industrial progress in many lines would long ago have halted for lack of raw materials and manufactured products of many kinds.

Take leather, for example. If the world's requirements for leather were to be supplied by hide leather as it was made a

How leather is multiplied by splitting and finishing operations is explained in this article

By O. H. BRIGGS

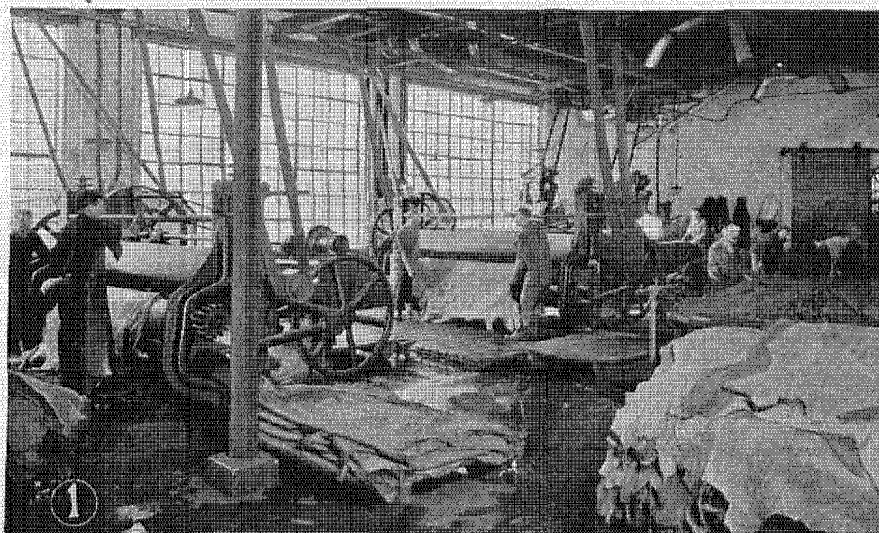
treated with salt for thirty days to prevent putrefaction. The next operation takes place in the beam house where the hides are washed in clean water to remove all dirt and salt. Here they are put through the green fleshing machine

which removes all superfluous flesh that will not ultimately make leather. Following this operation the hides are placed on frames and lowered by means of an electric crane into concrete tanks containing a solution of lime and water. After a week's immersion in this solution the hides swell and the hair becomes loose. They are next lifted out and put through the unhairing machine. Then they are passed through the fleshing machine again to remove any superfluous fat missed in the first operation. After a final rinsing they are ready for tanning.

The scene now shifts to the tan yard, an immense building equipped with hundreds of huge concrete vats. Here the hides are placed on frames and lowered into a mild tanning liquid, which is strengthened every day for a period of ten days. The tanning process has not been completed at this time, but is sufficiently ad-

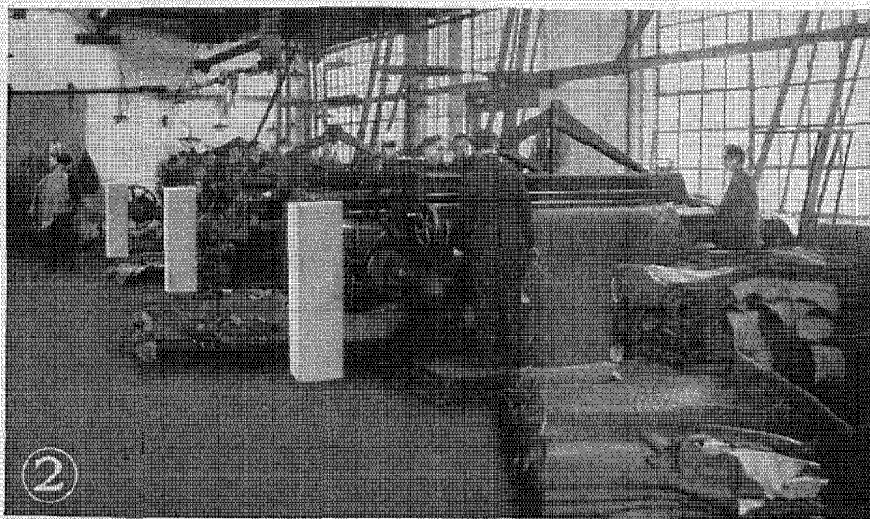
vanced to put the leather in condition to be split. Naturally, when the leather is taken out of the vats it is thoroughly saturated with the liquors. Accordingly, the next

operation is to pass it through wringers to remove all excess moisture. This is done in a room called the preparing room; see illustration number 1. The rough edges are then trimmed and the hides selected by weight for splitting. In



century ago, the industry would be paralyzed almost overnight. Production simply couldn't keep up with demand. Fortunately ways have been found to multiply the amount of usable leather that can be produced from a single hide. Probably the original process of curing skins was that of simply cleaning and drying. In contrast, the modern practice, while it involves both of these operations, calls for many other essential operations before hide stock is made into finished leather. Hides are still hides, but leather is a product transformed by the chemical and mechanical means rather than by natural agencies. The processes now used in making it have been developed through a known period of more than 3000 years.

For the purpose of a trade definition the hide of an animal consists of three layers; the outer, which has no blood vessels and is hard and bony; the inner true skin which is made up of gelatinous fibres, and the fatty under tissue in which the perspiratory and sebaceous glands are imbedded. The inner layer or true skin is by far the most valuable and serviceable to the leather manufacturer. Some idea of how leather is made may be gained by following in sketchy detail

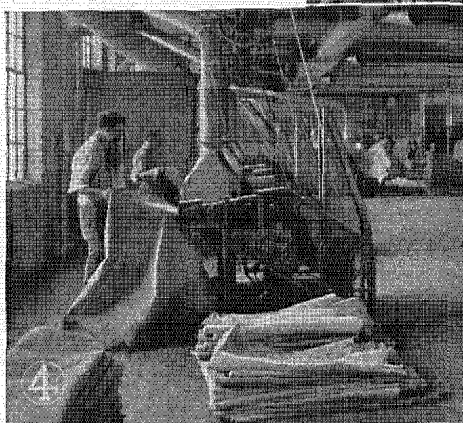
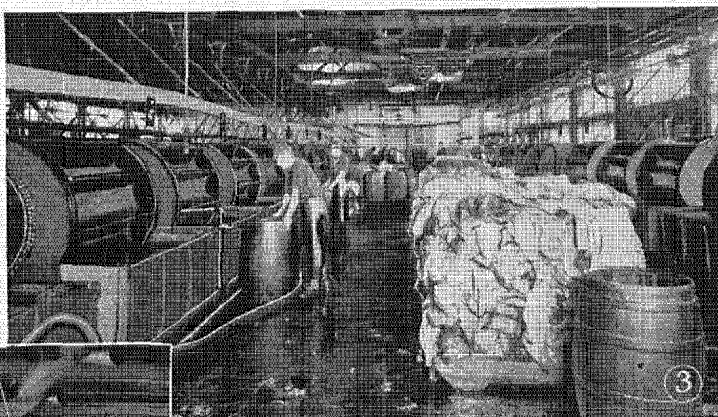


operation is to pass it through wringers to remove all excess moisture. This is done in a room called the preparing room; see illustration number 1. The rough edges are then trimmed and the hides selected by weight for splitting. In

the splitting room (2) the leather manufacturer produces three or four sheets of product from a single hide. The operation itself is of especial interest because of its importance in the industry. Hides, because they are variable in thickness and irregular in shape, are difficult to split; at least, that was true before the ingenious belt-knife splitting machine was devised. The most vital part of this machine is the belt-knife, which travels hundreds of feet per minute, its cutting edge kept sharp by two emery wheels continually grinding. Flexible rubber rolls hold the hide at uniform tension under an adjustable gauge-roll as the rapidly moving knife slices the leather in sheets of the thickness required. As the illustration shows, the hide is passed into the machine on one side and is withdrawn on the other, with one full pattern split off. Each hide is passed through this machine three or more times, multiplying, as it were the number of hides procurable from a single animal.

After the hides are split they are sent to the re-tan room (3) where they are again placed in the tanning solution until they are completely tanned and also treated with oil, a process which requires only two or three days, because the splits are now much thinner than the original hide.

The splits are now stretched on frames and taken to the drying loft where they remain until all moisture has been removed. This requires about twenty-four hours. It may be noted in passing that from the time the stock leaves the



drying room up to the finishing point, it is known as russet leather.

The next operation takes place in the shaving, softening and russet departments, (4) where the leather is made pliable and any variations in thickness caused by the splitting machine are shaved off.

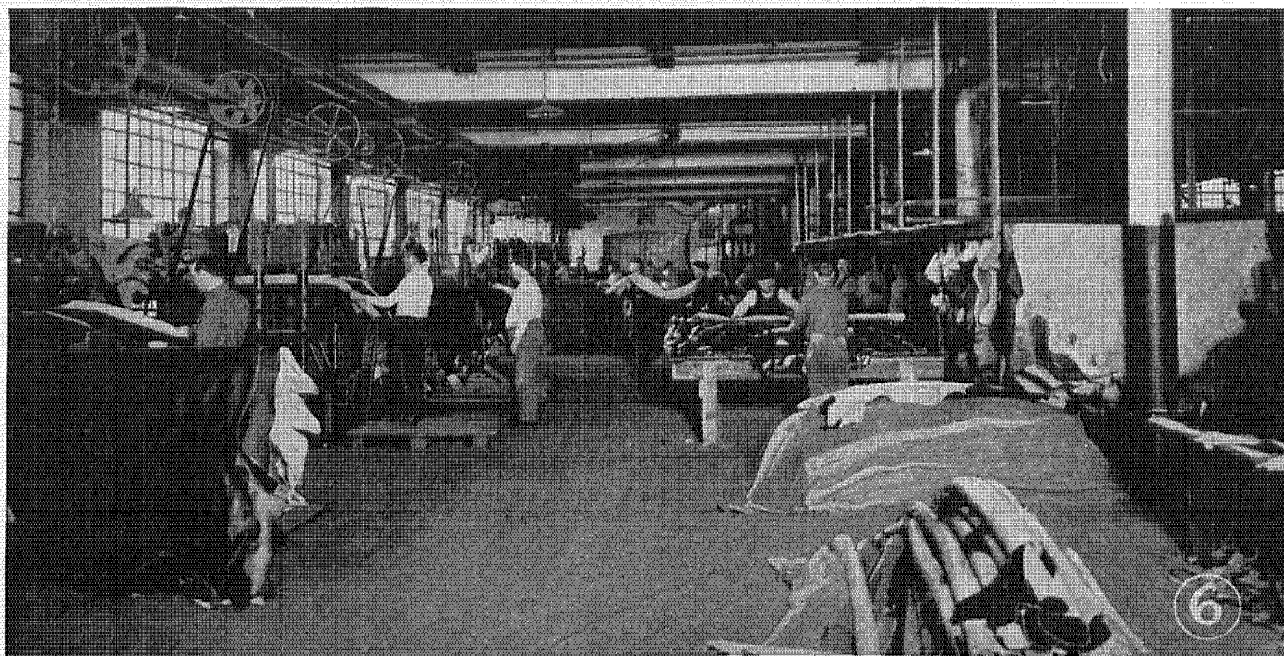
When the hides are split, the top piece or first cut is known as the grain or hair side of the split. The next two pieces, or cuts are known as splits. These grains and splits vary in size, thickness and quality and are therefore sorted before they are sent to the finishing shops.

The means employed to finish leather vary greatly with the purpose for which it will be used.

In the factory under observation practically all the grain leather and a very large proportion of the split leather produced is used by the automobile trade for upholstery purposes.

The finishing of grain leather, because of its smooth and uniform surface, is accomplished merely by the application of a very light coating of specially prepared and colored linseed oil, and then embossed to produce whatever design or "grain"

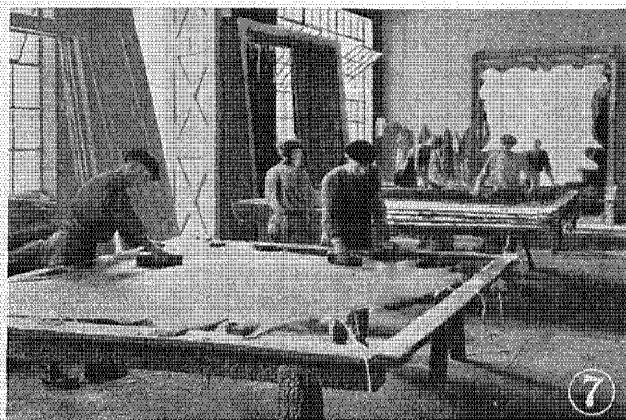




may be desired on the finished leather. In the case of split leather, however, a much heavier coating is required to cover the fibrous character of the surface. The film deposited by heavier coatings of linseed oil, which was the original method of finishing split leather, possesses neither great strength nor durability; but perhaps its most serious defect for this purpose is the brittleness which develops with age or at low temperatures, which causes the finish produced in this manner to crack very easily.

The first improvement over the linseed oil finish for split leather was the use of a solution made by dissolving scrap celluloid in amyl acetate and wood alcohol, with the addition of castor oil to render the film flexible, and of course the pigments necessary to produce the desired color. It was soon found, however, that a by-product like scrap celluloid was subject to too wide variation to produce a reliably uniform finish, and the next step forward was the preparation of similar solutions from nitrocellulose made especially for this purpose in place of scrap celluloid. While this improvement overcame the most serious defect of lack of uniformity, objections previously overlooked soon became prominent—principally the wide fluctuation in price to which amyl acetate was subject, due

to the irregularity of the supply of the raw material from which it is made and most of which at that time had to be imported from Russia, and the very strong foreign odor which this solvent imparted to the finished leather. Because



of its poisonous character, the use of wood alcohol also was objectionable on account of endangering the health of the workman applying the solutions to the leather.

It was at about this stage of the art that the Du Pont Company, who thru its chemical plant at Parlin, N. J., had been in touch with the situation almost since the first attempts were made to use materials of this character in the finishing of split leather, undertook intensive development work looking toward the production of a reliable and uniform solution that would be free from the objections previously mentioned. The co-operation of a number of progressive leather manufacturers, in testing the various combinations developed during the course of this

Continued on page 15

DEMOLISHED WITHOUT DAMAGE

TRADITIONS cluster around college buildings—around some more than others. That explains why the destruction by fire of the Marquand Chapel at Princeton University a little more than a year ago caused such widespread regret. For thirty-nine years the sons of Old Nassau had gathered there each morning for devotional exercises. But fire is no respecter of properties or of traditions either. When the last ember lost its dull, red glow, nothing remained of the chapel but a fragment of one wall and the lofty old tower.

Although blackened by smoke and flame, this old tower, nearly a hundred feet high, withstood the fire demon because its walls were built of solid masonry, thirty inches thick, twelve feet square at the base, and ten feet square where it joined the circular base supporting the cupola above.

Before erecting a new structure on the site, it became necessary to take down the tower, and the Matthews Construction Company of New York City was awarded the contract. Preparations were made to erect a gin pole, to construct scaffolding and pull down the tower piece by piece. Hardly had the work started when the contractors realized that it would be a very costly undertaking, not only on account of the height of the structure but because of the hard, unyielding materials of which it was built.

It occurred to Mr. Matthews, president of the company, that explosives might be used to fell the tower. Several engineers were called in conference to determine whether it were safe to use explosives, considering the proximity of the tower to the new Recitation Hall, the University Library and other valuable buildings. The consensus of opinion was that it was hardly practicable; the buildings were too close, the risk of damage too great.

In truth, the hazard was a very real one. None of the buildings were further than fifty feet and the new Recitation Hall was only thirty-nine feet away. Indeed, so completely was the tower hedged in by valuable property that the only direction it could possibly fall without serious damage was in line with

Princeton's old chapel tower was razed with dynamite—another instance of Du Pont service

the ruins of the chapel. Could it be made to fall that way? The contractors thought so.

They submitted their plan to the university authorities who were skeptical about the possibility of doing the work with explosives without damage. One ruin was enough. The

likelihood of another was altogether too imminent if the tower were tipped over by an explosive blast. Assurance was lacking that the tower *would* fall in the direction desired.

Notwithstanding this the contractors, realizing that the use of explosives was the most economical way of doing the work, called into consultation Mr. C. V. Weaver, who is identified with the New York City office of the E. I. du Pont de Nemours & Co., Inc., as special representative. He went to Princeton, examined the structure, noted the location of the buildings nearby, and finally stated that the work could be done safely with explosives at a very considerable saving in cost, time and labor.

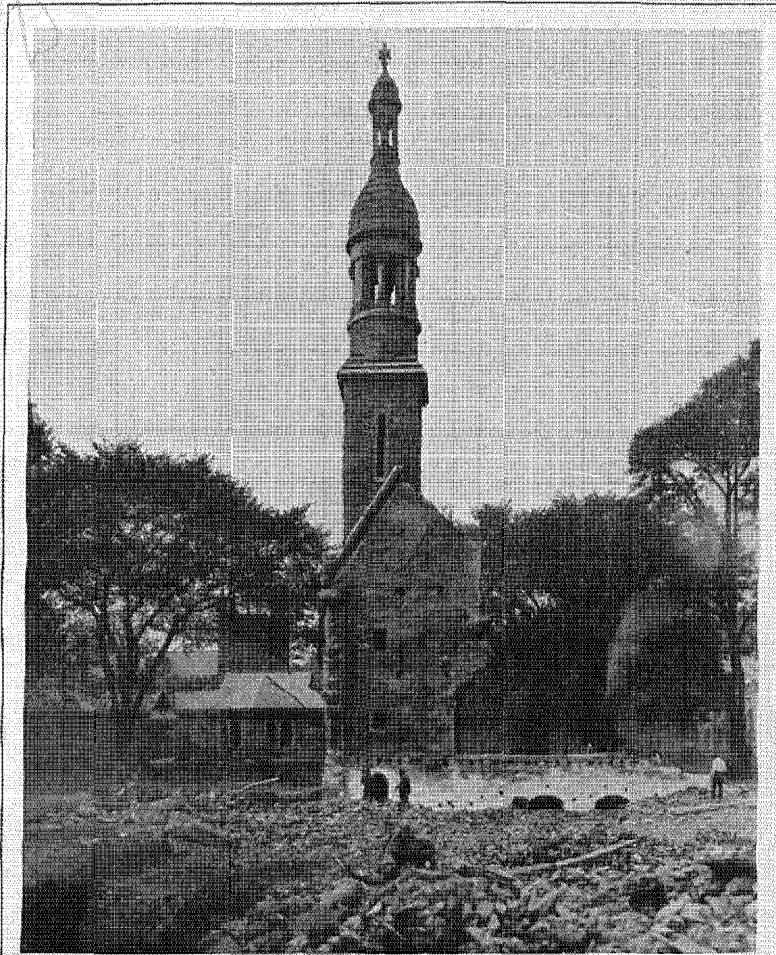
The authorities were again approached and Mr. Weaver carefully explained to them just how the operation would be carried on from the boring of the holes to the firing of the final shot; how the base of the tower would be weakened on

the side it was destined to fall, how certainly it must fall in that direction. But the tragic thought persisted, what if through some error of judgment it should fall on the Library with its priceless book treasures, on the new Recitation Hall or on any of the other nearby buildings! Eventually, however, permission was granted to shoot the tower and work was started.

Under Mr. Weaver's direction 1½ inch holes were drilled into the foundation walls to a depth of 18 inches. They were spaced on the average about 20 inches apart as shown in the accompanying illustration.

At this point the spectre of property damage again loomed up in the minds of the university authorities.

Naturally they felt the weight of responsibility for permitting the work to be accomplished by explosives. Work was stopped while Mr. Weaver explained



The chapel tower eventually fell on the ruins in the foreground

in detail how the charges would be placed and fired and how the tower would eventually topple over on the ruins. With this reassurance, permission was granted to proceed with the loading. Unquestionably the tower could have been brought to earth satisfactorily with one shot, but hundreds of windows in the nearby buildings would have been shattered by the concussion. For this reason only two or three holes were loaded and fired at a time. Du Pont Red Cross Extra 40 per cent. dynamite—a slow acting grade—was used. Fifty pounds sufficed for the work, although from twenty to twenty-five shots were fired before the final blast tore away the section that held the tower still upright.

Like a mammoth tree at the last stroke of the woodman's axe, the tower swayed as if uncertain which way to fall. It was a moment of tense excitement. Then the great mass of masonry leaned slightly, then more and more until, with accelerated momentum, it crashed to earth just where Mr. Weaver said it would.

No one has stated how many days would have been required to tear down the tower piece by piece with hand labor, or what the expense would have been by this method, but we do know that blasting operations were started at one o'clock in the afternoon and at four the tower lay stretched in broken bits across the ruins of the chapel. It was done without damage—without breaking a single window, without property loss of any kind.

The university authorities and the contractors were highly pleased with the results of the work, and the latter offered to pay Mr. Weaver for his services. Naturally the offer was declined, for the technical representatives of the Du Pont

Company are employed to render assistance to explosives users as a regular part of their duties. In recognition of the service rendered, however, the Matthews Construction Company sent the following letter which speaks for itself:

"Messrs. E. I. Du Pont
de Nemours & Co., Inc.
Wilmington, Del.

Gentlemen;

We wish to express to you our appreciation for your generosity in loaning us your Mr. Weaver to assist in wrecking the steeple of Marquand Chapel.

This proposition was no easy task, as the steeple was twelve feet square at the base, built of thirty-inch stone walls resting on a three-foot stone foundation. We were also handicapped by the close proximity of the surrounding buildings, there being only one direction in which the tower could be safely thrown. The tower was one hundred feet high, and had it fallen in any one of the three directions, it would have done great damage to the expensive

buildings, two of which were not more than fifty feet away.

The blasting was so ably handled by your Mr. Weaver, that we were enabled to drop the tower in a space that had been excavated to receive it.

Again thanking you for your co-operation in this matter, we remain,

Yours very truly,

MATTHEWS CONSTRUCTION CO.

Technical representatives of the Du Pont Company are continually rendering assistance to explosives users in all branches of industry. The demolition of the Marquand Chapel tower is only one instance of many that might be cited to show that Du Pont explosives are always dependable for work requiring its most careful use and that Du Pont service is being maintained in accordance with the Company's traditional custom.

"KEEPING TABS ON THINGS"

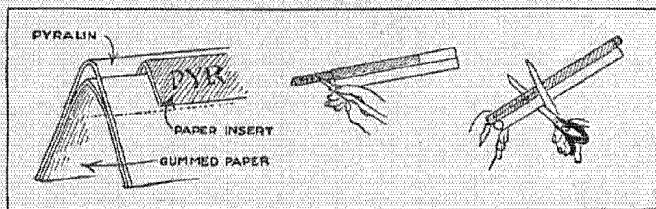
THIS expression, used figuratively, is also used by the file clerk in a literal sense. Tabs are indispensable in his work; he needs them just as a mariner needs his compass, for they guide him along the route to finding things quickly in his files. Index tabs enable him to locate a particular card or folder among hundreds of others in the fraction of a moment; they are the speed tools of his trade.

Tabs receive hard usage. That's why it is so difficult to keep tabs on things. Ordinary cardboard tabs bend, crack, tear, soil with handling, wear out in time and break off. Manufacturers have learned to reinforce them and one of the best materials used is pyroxlin sheeting. Transparent Py-

ralin sheeting is extensively used because it is light in weight, and strong; it does not crack or tear, is transparent, water-proof, cleanable and easy to work. One of the latest types of

index tabs brought to notice is the product of a manufacturer who uses Pyralin sheeting to make tab strips. His suggestion is that these strips can be cut as required and applied on folders, cards, guides and the like.

How are they used? The illustration shows you. With the tab prepared, moisten the gummed surface and fasten in position over the edge of the folder, card or whatever is to be indexed. That's all. The Pyralin protects the insert—keeps it as clean as if it were under glass, besides making the tab rigid and durable.



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E. R. MANCHESTER..... *Editor*

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Vol. XIV

MAY-JUNE, 1921

No. 6

The publication of this number of the magazine has been delayed on account of the printers' strike, which has interfered with our production schedule.

Vice-President H. F. Brown has been elected as a member of the Executive Committee of the Du Pont Company, and will be in charge of the Development Department. He will also give particular attention to the Chemical Department, which will report to the committee through him hereafter.

The Military Sales Department has been re-established as an independent unit with Vice-President William Coyne in charge. Major K.K.V. Casey and Messrs. C.I.B. Henning and A. Lissner have been transferred to that department.

The commercial sale of sporting powders has been placed under the jurisdiction of L. P. Mahony, Director of Sales, Explosives Division, with E. R. Galvin as Assistant Director of Sales. The latter, however, will use the title, "Manager, Sporting Powder Division."

R. H. Sheppard has been appointed Assistant Director of Sales, Paint and Varnish Section, Paints and Pigments Division.

E. A. Orem has been appointed Assistant Director of Sales, Acids and Chemicals Division, succeeding A. F. Hubbard, resigned.

ALEXIS I. DU PONT

In the death of Alexis I. du Pont, May 30, following an illness of less than two weeks, the Du Pont Company has lost the services of one of its best known and most popular executives. For many years Mr. du Pont had been secretary and a director of the E. I. du Pont de Nemours & Company, Inc. His father was the late Eugene du Pont, a former president of the Company.

Alexis I. du Pont was trained as a chemist at Harvard University. Following his graduation in 1892 he began work in the laboratory at Carney's Point, New Jersey, which was then the principal smokeless powder plant of the Du Pont Company. Eleven years later he was elected secretary and a member of the board of directors. In these capacities he served the interests of the Company with diligence and ability until the time of his death.

Although Mr. du Pont's official duties required a great deal of his time, he was nevertheless keenly interested in many activities outside of business. He was a loyal alumnus of Harvard and contributed largely to scholarships and other

endowment funds of his alma mater. He was an enthusiastic sportsman, and took an active interest in many social, civil, and sport organizations in Wilmington and elsewhere.

His was a personality that attracted friends in all circles. Wherever he was known he was held in high esteem as a broad-minded, whole-souled man of charming personality and democratic instincts. As such he was sincerely beloved by a host of friends. His kindness of heart prompted him to give generously to every worthy cause, although the public rarely knew of his benefactions. For these characteristics and sterling personal qualities Mr. du Pont will long be remembered by those who enjoyed his acquaintance and especially by those who knew him best as a loyal and devoted friend.

WHY DEALERS SHOULD HANDLE ONE COMPLETE SPECIALIZED PAINT LINE

Continued from page 4

handle all the commodities so featured, or those logically grouped in sales effort. The statement rings absolutely true that no other paint and varnish line can offer the dealer a more highly specialized quality in a complete line under one label, than the Du Pont line. By reason of this, the modern paint dealer can materially cut down his investment, likewise his clerical and bookkeeping cost; have an easier kept stock, and eliminate to a marked degree slow moving and left-over merchandise.

There is only one quality in the Du Pont line to sell. Read over that sentence twice. It will set you thinking. Every individual product is self-supporting in quality.

Every can of Du Pont Paint that goes over a dealer's counter carries the Du Pont oval. It is a guarantee to the customer that the contents of the package are the best for the purpose. Here is where good-will is created. Every other Du Pont Paint Product in store is advertised as the result.

But how many Du Pont Paint products are you advertising in this manner—just one, two or three? If so, that's where the cumulative value of this advertising is lost. Why not build the business structure right; solidly from the bottom up? Put your efforts behind the complete Du Pont Paint and Varnish line. Get the maximum of co-operation and backing which is made possible by reason of a better assorted line and greater volume of business.

FABRIKOID SCORES 100%

Continued from page 5

Craftsman Fabrikoid with the upholstery in a matching color.

Gardner—upholstered with black leather; the Craftsman Top was covered with blue Craftsman Fabrikoid.

Wescott—This car had a Craftsman Top of black cobra grain glazed Fabrikoid and a brown Fabrikoid headlining.

Peerless touring car—The Craftsman Top was covered with black cobra grain Fabrikoid, glazed finish.

Dodge touring car—its Craftsman Top in gray Cobra grain Fabrikoid matched the color of the body and its upholstery.

Oakland touring car—The dark blue Craftsman Top harmonized beautifully with a dark blue body, which was upholstered in black leather.

One of the most attractive exhibits was that of the Leach-Biltwell Motor Company, of Los Angeles. This company displayed a coupe with a Craftsman Top in brown baby alligator grain Fabrikoid on a beautifully finished brown body, with upholstery to match; also a Leach touring car with a blue Craftsman Top and blue-painted body.

At Los Angeles as well as at San Francisco more cars than ever were shown with tops of the permanent, solid frame type—and every one was a genuine Craftsman Top. Fabrikoid scored a full 100 per cent.

SELLING BLASTING SERVICE

THE sale of explosives for agricultural purposes, unlike the sale of explosives for mining or quarrying, is essentially a dealer's problem. As such it presents special difficulties but it also has its own peculiar advantages. On the one hand, the dealer in agricultural explosives can expect to sell only a relatively small quantity to

any one purchaser. He must make a great number of small sales. Moreover, he has for his prospective customers men who are not accustomed to handling explosives. Many a farmer hesitates to buy dynamite because he is afraid of it and does not know how to use it. On the other hand, the field for explosives in agriculture is very wide. There is scarcely a farm where some explosives could not be profitably used. A large ditch may be needed to drain a whole farming community or a small ditch to drain a single farm or a single field. There may be several acres of cutover land which could be put under cultivation if the stumps were out, or there may be a few scattered stumps which take up space and impede cultivation in the fields already under tillage. There may be rocks and boulders to be removed or fruit trees to be planted.

All these are jobs for explosives; and one dealer of our acquaintance, Mr. G. H. Gravenor of Parksley, Accomac County, Virginia, has built up a successful explosives business by doing big and little jobs of this kind for farmers who live in that general territory.

The Eastern Shore, widely known for its sea-food industries, is even more justly famous for its truck farms. The Virginia portion of the shore, consisting of Accomac and Northampton Counties grows especially fine early potatoes but as large areas in these counties are cutover or still wooded, a considerable amount of land clearing has to be done. Until five years ago the work of clearing was largely done by colored workmen who dug out the smaller stumps by hand and left the larger ones to be "farmed around."

When the war produced a shortage in the food supply of the nation, farmers everywhere were urged to raise more foodstuffs. How they arose to the occasion and filled the fast emptying larders of the world, is now history. For the farmers of the Eastern Shore to increase their crops meant that they must increase the acreage under cultivation; they were already securing large yields from the tillable areas. As labor was scarce, they turned to explosives as a quick and economical means of land clearing.

Mr. Gravenor, who as a road contractor in Accomac County had employed an experienced blaster and had himself learned to handle explosives, saw the need for better methods of distributing explosives to the farmers and for skilled men

One dealer's method of increasing his sale of explosives for agricultural purposes

By C. I. COHEE, Jr.
Technical Representative
E. I. du Pont de Nemours & Co., Inc.

men to use them to the best advantage. When a farmer wanted a field cleared of stumps he would sell him the necessary explosives at the usual retail price and would supply the men to do the blasting and would superintend the job himself, charging \$3.00 a day for his own time and for the labor of his men at the rate of \$.75 an hour. Farmers were very glad to avail themselves of this service and the demand for explosives grew, up and down the peninsula. In several instances woods were cut down, the timber was sawed, stumps were removed and the land was planted in potatoes in four to five month's time. In order to give his customers in North-

ampton County the same prices at which he sold in Accomac County, Mr. Gravenor secured an agent at Nassawadox, Dr. Widgen, and had a carload of explosives shipped there direct from the mill. Although he had then considerably more than a carload at Parksley, this was good business as reshipments from Parksley would have necessitated an increase in the price of one-half a cent per pound to cover freight.

As his work grew he found that

the use of hand augers for boring holes under the stumps to be blasted was consuming too much time and labor and he began to look about for a power boring machine. After trying out several, he purchased two of the Cowan-Alford gasoline power machines, each of which is capable of replacing ten to twelve men boring holes by hand. These he hires out at a small rental, \$1.10 an hour including the operator, to those having land to clear.

His next step was the purchase of a two-ton motor truck to transport the blasters, dynamite, boring machines, and other equipment from place to place. By this truck he also makes deliveries of explosives to farmers who can do their own blasting.

Visualizing the farmer's needs and supplying them has been the method of Mr. Gravenor's success. Now all that is necessary for the farmer to do is to call Mr. Gravenor or Dr. Widgen on the telephone and state how many acres he wants cleared. Within a few days a truck drives over to his farm with all the explosives, equipment and workmen required to remove stumps at the rate of from two hundred to a thousand per day, depending upon the acreage to be cleared or the need for haste in completing the work. With such facilities for

Continued on page 16



One of the delivery trucks used by this enterprising explosives dealer

PLANNING THE OUTDOOR RIFLE RANGE

OUT of doors you'll find the clan of rifle shooters these bright, balmy June days, if there is any place where they can pursue their sport. The indoor range, which served well enough last winter, is now hopelessly outclassed by the superior attractions of outdoor shooting grounds. Who wants to shoot within the four walls of a stuffy room—in June? The red-blooded rifleman does not, that's sure.

For this reason many rifle clubs are planning to establish outdoor ranges. The question of selecting and equipping an outdoor range is one requiring no small degree of attention. In the following paragraphs some of the more important factors are presented with the hope that the suggestions made will lighten the labors of those who are undertaking projects of this kind.

The first requisite of an outdoor range is, of course, safety. Even .22 calibre rifles have great ranging power and in the case of high-power rifles the distance which a bullet will wander is greatly increased. In selecting a site this all-important factor of safety must be considered. Let a single accident occur and not only will the range be closed by injunction, but rifle shooting will receive a "black eye" in the whole community.

The second essential is accessibility. The finest range situated in some out-of-the-way place will attract a few rifle "cranks" and, perhaps, one or two newcomers in the game who are full of enthusiasm, but if a club hopes to have a real crowd out, with plenty of competition and good fellowship, the range must be conveniently located. Any old kind of range where the boys may shoot as long as they wish and then catch the trolley home, where visitors may drop in to watch the matches for a few minutes—

and eventually join in the sport—will not fail to have its full quota of attendants. There are many men and women who would rather shoot than watch a baseball game in which they can take no part. But if the rifle range is away out in some inaccessible locality while the baseball park is nearby and easily reached by trolley or auto, Mr. and Mrs. Average Citizen will go to the baseball game. The necessity for a good location is too often overlooked by new clubs just laying out their ranges. When the club is new and there is plenty of enthusiasm the members may walk miles to shoot but there

The more important things to keep in mind are set forth in this article

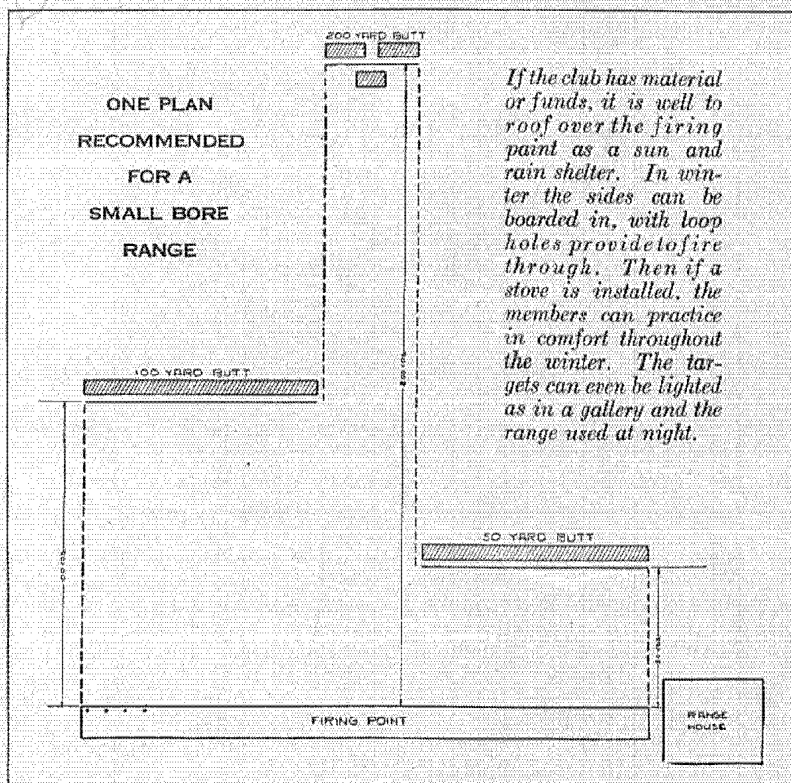
By C. B. LISTER

comes a day when attendance lags because it is "too hot," "too cold," "thought the range would be too wet" and other excuses. Finally the club secretary finds that his once large and active membership has dwindled to four or five of the faithful. Put your range where the least interested club

member can have no excuse for not coming out and put it where strangers can get a glimpse of the game and a longing to try their skill.

The third general consideration to be borne in mind is the direction of fire. It is, to say the least, decidedly uncomfortable to have to shoot "into the sun." When the slanting rays of the afternoon sun blaze directly into the eyes of the shooters the range automatically closes. Accordingly, an attempt should be made to have the direction of fire north or northeast. This permits of shooting all day long. Of course, if most of the shooting is done Saturday afternoon or in the evenings during the summer, the line of fire may be east without greatly inconveniencing any except the "early birds." North to northeast is, however, considered the best direction.

Closely associated with safety are the various kinds of back stops. The nature and size of the back-stops will, of course, depend on whether the range is for small bore—.22 calibre shooting—or for high velocity work with military or high-power sporting rifles. Simple back stops of the type shown in the accompanying sketch are ample for the .22 range, but for a military range an artificial backstop needs to be high, wide, and thick. Moreover, it needs constant repairs so that ordinarily every attempt is made to have the military range so situated that some natural backstop may be used. This may take the form of a stretch of swamp land, a body of water too shallow for navigation, a wood too thick for hunters to



wander through, or, best of all, a high hill. Whatever the kind of backstop used, remember the key word—*safety*.

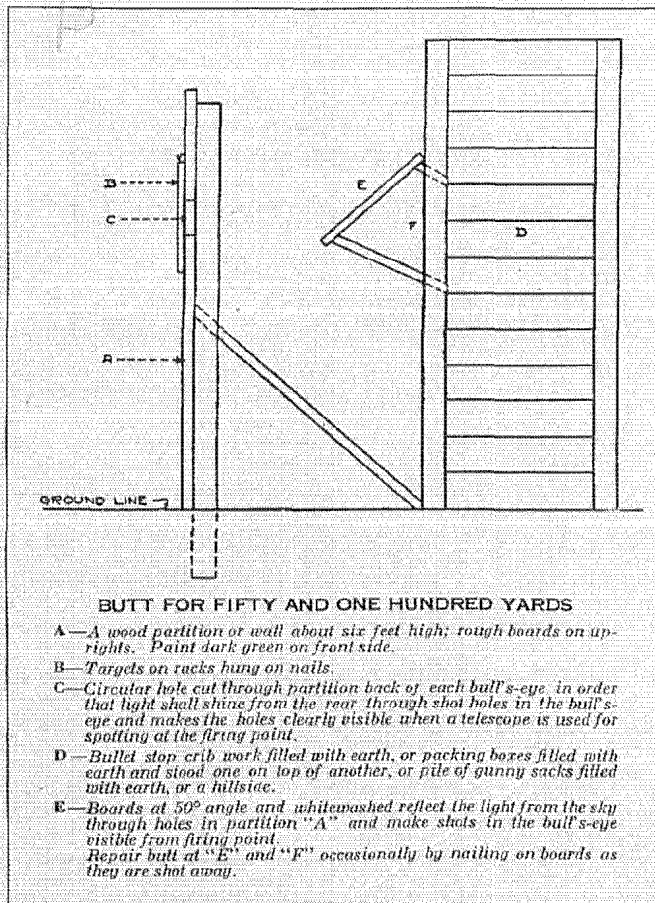
Backstops suggest the question of marker pits. On small-bore ranges—except at the 200 and 250-yard ranges—no markers are required. On military ranges, all of which are 200 yards or over, the markers' shelters are of two kinds. The first is a pit into which the targets sink for "spotting." As the marker stands below the ground level he is, of course, entirely safe in such a shelter, but drainage problems will arise if the pit is dug in some kinds of soil. The second type

is built up much the same as an artificial backstop. The marker stands behind the butt and the targets are pulled down behind it for "spotting."

The lay-out of firing points will depend on local conditions. The ideal plan is to have all firing points on a line with the targets "en-echelon" or in "steps" at the various ranges. This keeps all the firers under the eye of the executive or range officer and is, moreover, the safest possible arrangement. In other cases the firing points are "echeloned" and the targets placed on one line. On small ranges just a few targets, all in one butt, are used and the various ranges are marked out. Only one range is available at a time, but rarely are more needed for club matches and practice shoots. As the target pits or butts are probably the most expensive part of the range equipment, this simple lay-out is usually the one best adapted for the needs of a small club.

It is well to have the firing points raised slightly and, if practicable, sodded. The "borderline" shooter is not attracted by wet, muddy, firing points; raised, sodded points will eliminate this trouble. The points should be marked with neatly painted stakes numbered to correspond with the targets.

A rack for use in cleaning the rifles and for holding them when not in use is a handy accessory as is also a field



desk, and chair for the convenience of the secretary or range officer in "squadding" shooters, approving targets, and attending to other duties. Range furniture of this type can be made on the ground by any member of the rifle club who is handy with a set of carpenters' tools. Other accessories such as black-boards, score-boards, marking-disks and spotters can also be made at little expense. Black-boards should be 23 inches by 48 inches, mounted on easels. A serviceable score-board can be made of $\frac{3}{4}$ -inch pine, 12 inches by 18 inches, with a clip at the top to hold the score cards. Marking-disks should be of three sizes: 10 inches in diameter for short range, 20 inches for mid range and 30 inches for long range. The spotters will be made of circular pieces of paste-board, $2\frac{1}{2}$, 5 and 10 inches in diameter for the respective ranges just mentioned.

Complete blueprints for military rifle ranges or sketches for small-bore ranges will be gladly furnished free upon request to the Military Sales Department of the E. I. du Pont de Nemours & Co., Inc. Club

sometimes have ranges where some peculiar problems are presented, where the prepared plans will not fit. Under such circumstances, if a letter is written to the company explaining the difficulties in detail, prompt attention will be given to it by the company.

MULTIPLYING LEATHER

Continued from page 9

experimental work, was of considerable value, and the net result was the placing at the service of the entire leather finishing industry the type of nitrocellulose solution (or "dope" as it is termed in the trade) that has been in general use ever since. The principal solvents used in these solutions are ethyl acetate denatured alcohol, and benzol, all of which are of low cost, on account of being derived from raw materials that are regularly produced in large volume in this country and practically free from the odor and health-endangering objections of the former amyl acetate wood alcohol solutions.

The film or coating, deposited on the surface of the leather by the solutions or "dopes" now in general use, is exceedingly strong, tough, durable, and waterproof, yet sufficiently flexible to meet the requirements of good upholstery leather; is not subject to cracking with age or at low temperatures, and provides an excellent medium for retaining the impressions of embossing plates almost indefinitely. Splits from hides of good quality, properly tanned, and carefully coated with the present-day standard "dopes" are even superior to grain leather for purposes where the finished product is subjected to weather exposure and particularly rough usage—as,

for example, the upholstery of some automobiles and buggies—because of the greater toughness and durability of the finish in comparison with the light oil coating that is used over the natural soft surface of grain leather.

Illustration (5) shows the application of dope by means of stiff brushes to the surface of split leather, three coats being usually required to complete the finish. Illustration (6) shows the embossing room where the leather receives impressions from the plates of the embossing machines.

The process of finishing patent leather (7) is also an interesting one, requiring nitrocellulose solutions, but they are of an entirely different character than the dopes employed in finishing split leather. Illustration (8) shows how patent leather hides are sun-dried in the yards of the General Leather Company, through whose courtesy we are able to present the accompanying illustrations.

After the leather is finally finished it is passed through an automatic machine which measures the number of square feet in each piece. Despite irregularities in shape this machine does its work accurately and quickly, whereupon the leather is rolled in tissue paper, and packed for shipment.

DU PONT STRAIGHT DYNAMITE IS NOW PRACTICALLY FREEZE-PROOF

Continued from page 3

subjected to the same temperature were frozen hard.

In fact the success of this dynamite has been such that the Du Pont Company has decided to discontinue the manufacture of the old, high-freezing straight and of other low-freezing straights. Hereafter the only straight dynamite sold by this company will be Du Pont Straight made on the new low-freezing formula. This is in line with the company's manufacturing and sales service policy.

For many years Du Pont chemical and ballistic engineers have been exceptionally successful in their efforts to make explosives more economical, more serviceable, more perfectly adapted to the needs of those who use them in quarry, farm and mine. The discovery of a formula to make straight dynamite proof against freezing in zero temperatures is only one example—a recent instance—of their achievements in the field of industrial research. The new "straight" is fully tested and proved; the formula for making it has been made standard in all plants of the Company producing dynamite; the product is now available to all explosives users, who will recognize in the sequence of these developments the Company's traditional plan of rendering Du Pont service.

The development of this new low-freezing straight dynamite is a manufacturing achievement, the significance of which will be thoroughly appreciated by those who use explosives either for industrial or agricultural purposes. The perfected "straight" can be used in industrial operations the year round—in winter, when the mercury hovers around the zero mark as well as in the heat of midsummer. Thawing, with its loss of time and attendant dangers, has practically been eliminated. Farmers will be able to use the new straight for propagated ditch blasting operations during the cold months of

early spring and late fall, when there is less of other work to do on the farm. Heretofore, such ditching work could not be accomplished with straight dynamite at temperatures lower than 50 degrees, Fahrenheit. In a word, the new product retains every virtue possessed by the old, but its utility has been greatly increased by making it adaptable for use at all seasons of the year.

The Du Pont Company stands back of this new low-freezing straight with the fullest guarantee that it is the highest quality dynamite it is possible to manufacture.

SELLING BLASTING SERVICE

Continued from page 13

doing land clearing work, it is not surprising that Mr. Gravenor has been called upon to do a large amount of work in the territory he serves. In no small degree his success as an explosives dealer has resulted from his carefully planned service policy.

When explosives first came into use on the Eastern Shore they were employed chiefly for land clearing but more recently they have been applied extensively for drainage, and during the last two years half the explosives sold by Mr. Gravenor have been for ditching. For this he generally uses 60 per cent Du Pont Straight Dynamite in propagated shots, while for stump blasting he uses either 50 per cent Du Pont Straight or 60 per cent Red Cross Extra. He also carries 40 per cent Red Cross Extra in both his magazines.

The effect of selling blasting service as a means of stimulating a demand for agricultural explosives is forcibly shown in Mr. Gravenor's sales. From 1915 to 1919, his sales increased 6000 per cent, and in the year 1920 they doubled those of 1919. His explosives business, which was at first a side undertaking now occupies all his time and returns a good profit on his investment.

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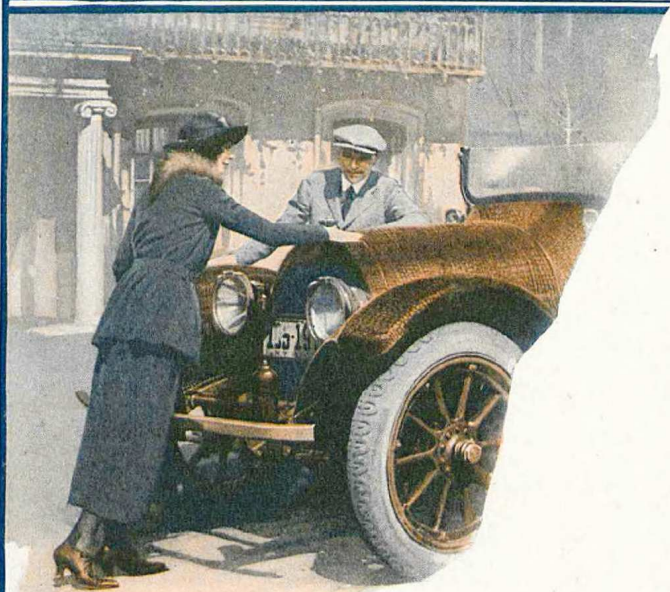
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FABRIKOID

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Result of continuous research
toward improvement of product

THE first commercial "low-freezing" dynamite was produced by the Du Pont Company, which has since developed a large number of similar explosives. Now a new step forward is taken. The following is an excerpt from Bulletin No. 26 to Du Pont Salesmen:

"We have requested the Operating Department to discontinue the manufacture of high-freezing straight dynamite and to make all strengths of Du Pont Straight on the new low-freezing formula. Field tests with this low-freezing straight indicate that it is fully the equal of our high-freezing straight in strength and that it will stand up as well in cold weather as our Du Pont Gelatin, or Red Cross Extra grades. Recent field examination showed that it remained plastic at ten degrees below zero. . . The low-freezing straight will give satisfaction at freezing and lower temperatures. . ."

In the Du Pont Laboratories chemical and ballistic engineers are constantly searching new methods for making Du Pont Explosives more efficient, more economical and more perfectly suited to the needs of industry.

This last remarkable advance in the art of explosive manufacture is merely an example of the work of these men, which results in month-to-month, almost day-to-day, increase in the efficiency of Du Pont Explosives—for as soon as an improvement has been thoroughly proven out, it is immediately adopted in all Du Pont plants.

Such work as this—constantly meeting, even anticipating, industry's requirements—surely comes under the head of Du Pont Explosives Service.

E. I. du Pont de Nemours & Co., Inc.

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