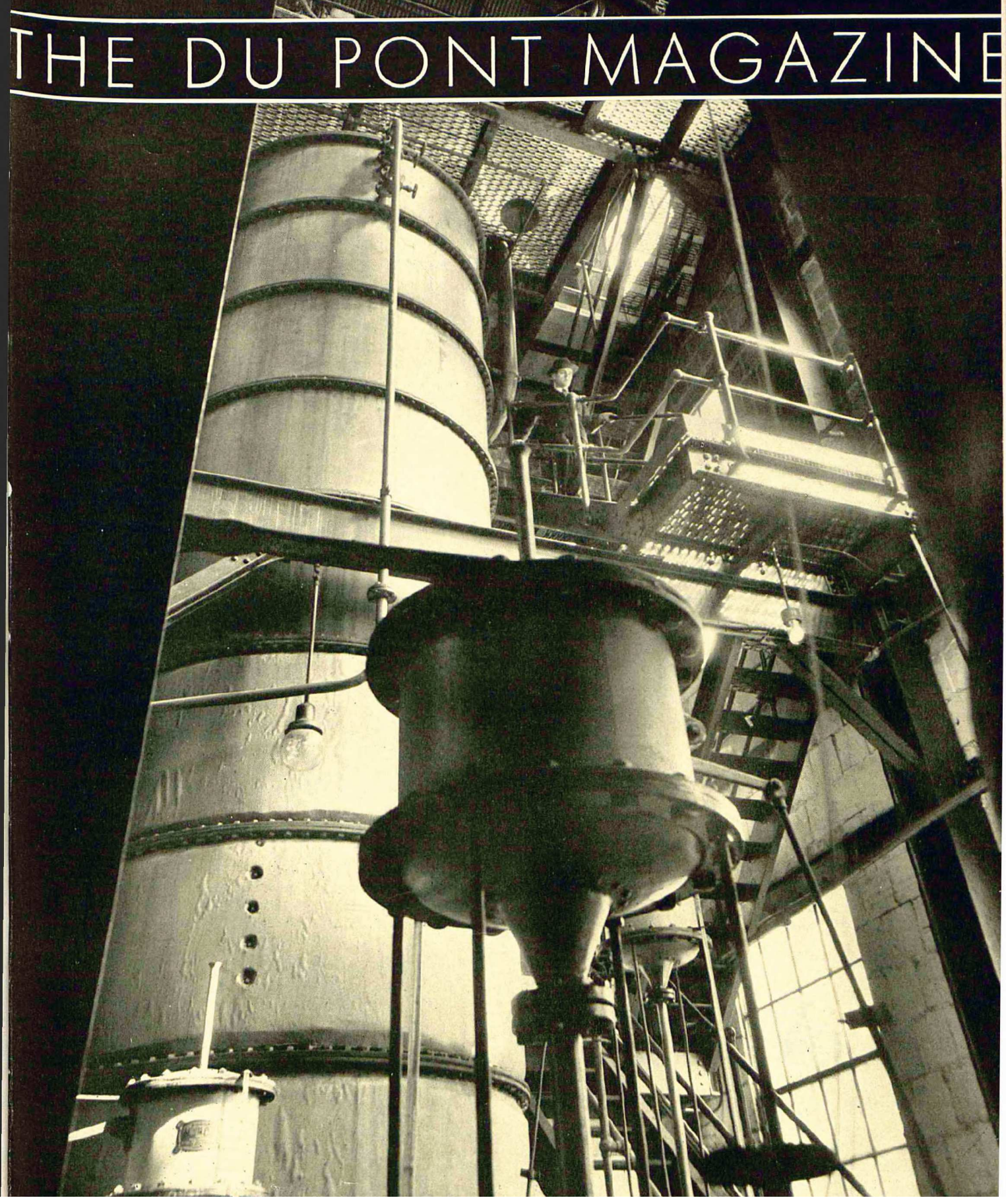
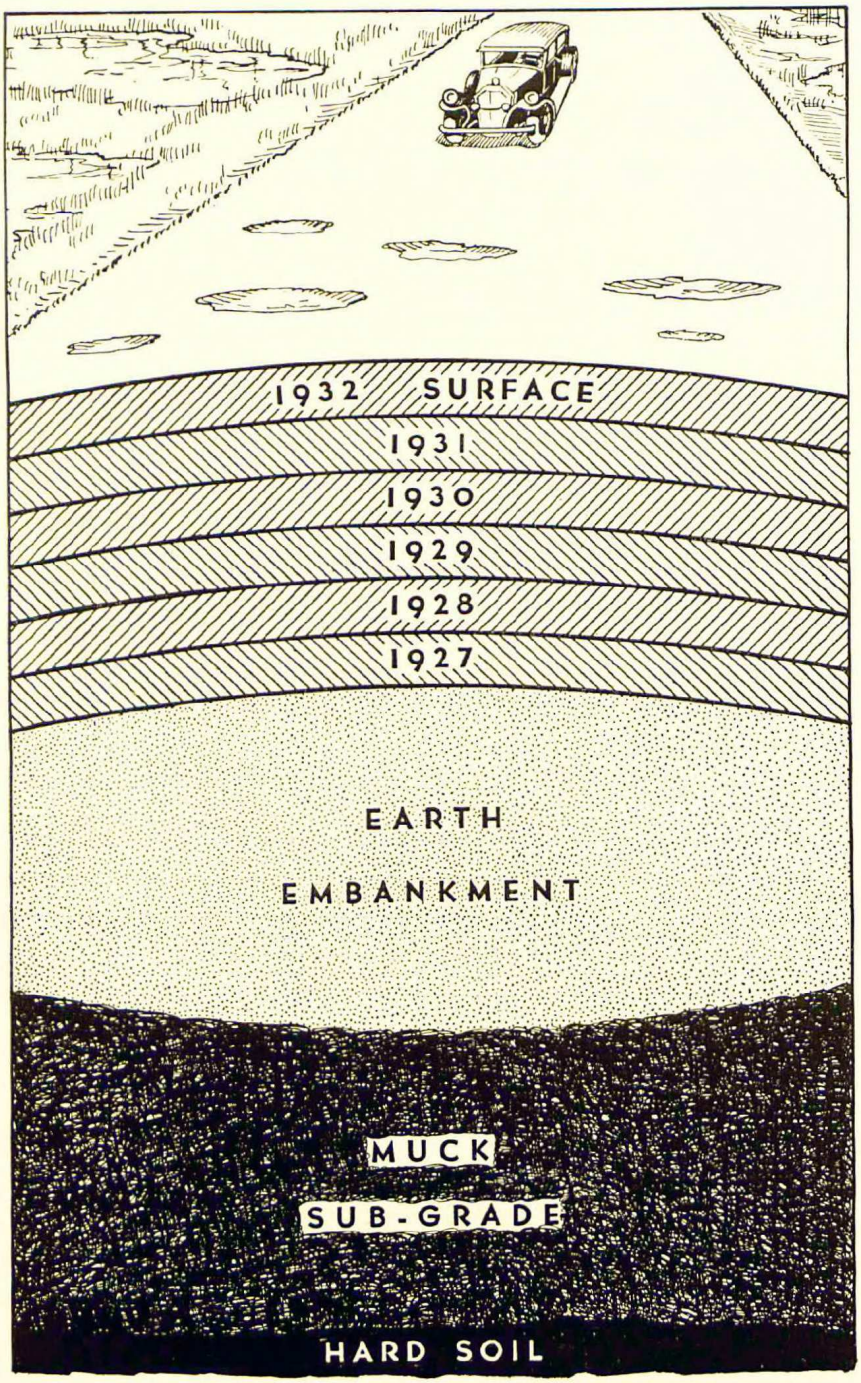
THE DU PONT MAGAZINE



COSTS GO UP..

when the sub-grade goes down!



HOW LONG can you afford to maintain a hard surface over an unstable sub-grade?

This is a question you've probably asked yourself if you've ever had a difficult Fill Settlement problem on your hands. You know that costs keep going up unless the muck is permanently removed.

The diagram on the left is not exaggerated. Du Pont engineers, in their study of Fill Settlement, have run across numerous projects similar to it. Roadways re-surfaced year after year, at increased maintenance costs, simply because the sub-grade keeps dropping.

No highway engineer wants the broad sweep of roadway spoiled by that stretch of broken, sunken pavement over a swampy area. Aside from the cost, it puts a blot on a good job and imperils the safety of motorists.

There is a way to get rid of the unstable sub-grade *permanently*. Use Explosives. The effectiveness of explosives in this work has been demonstrated in all sections of the country.

Du Pont has developed three different methods of blasting which singly, or in combination, will fit *your* project. These methods are described fully in a booklet called "Use of Explosives for Settling Highway Fills."

We will gladly supply you with a copy of this booklet. Simply write to the Explosives Department of the du Pont Company.

DU PONT
REG. U.S. PAT. OFF.

E. I. du Pont de Nemours & Co.
Incorporated
Explosives Department
Wilmington, Del.

THE
DU PONT
MAGAZINE

VOL. XXVII APRIL, 1933 No. 4

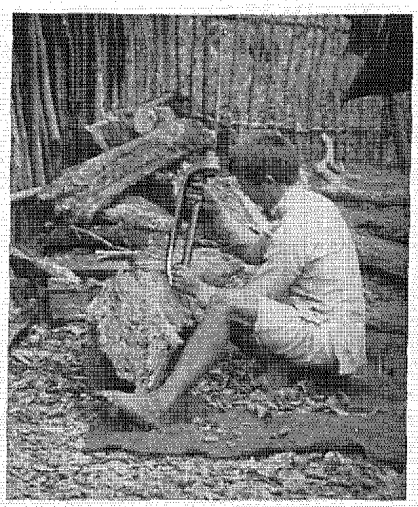
The Camphor of Commerce

There are two chief sources of supply . . . . . Japan and Germany, but synthetic camphor is now being made in America by the du Pont Company

WINTER has passed, but many a venturesome child—and adult, too—goes outdoors to greet the spring without a top coat for protection, and he pays for his zeal through the nose—a "runny one." The family physician knows what is best for a "co'd in the head," but before he comes, wives, mothers and grandmothers know just what to do. They rush to the medicine chest for camphor and to the kitchen for sugar. Mixing a dose of these ingredients, the patient has to take a heaping teaspoonful, which is always short on sugar and much too long on camphor, even if only a drop be added.

The water-white liquid is prepared from what is commonly but mistakenly called "camphor gum," which is not a gum, but a crystalline substance, with certain medicinal virtues. Pharmacists use it in compounding cold tablets and thirty-odd other preparations. Curators know its value in preserving museum collections. Housewives store away clothes in camphor balls to keep the moths away. But the total consumption for such purposes is only a "drop in the bucket" compared to the amounts used in the manufacture of industrial products, and that is what makes this story worth the telling.

Camphor is an indispensable raw material in the pyroxylin plastic industry. As a plasticizing agent in transforming chemically-treated cellulose into "Pyralin" and photographic film, nothing better has so far been found for the purpose. Approximately two-thirds of all the camphor produced—the total runs into eight figures in a normal year—is consumed by makers of plastics, with American manufacturers at the head of the list. Whence comes this important commodity? We shall see.

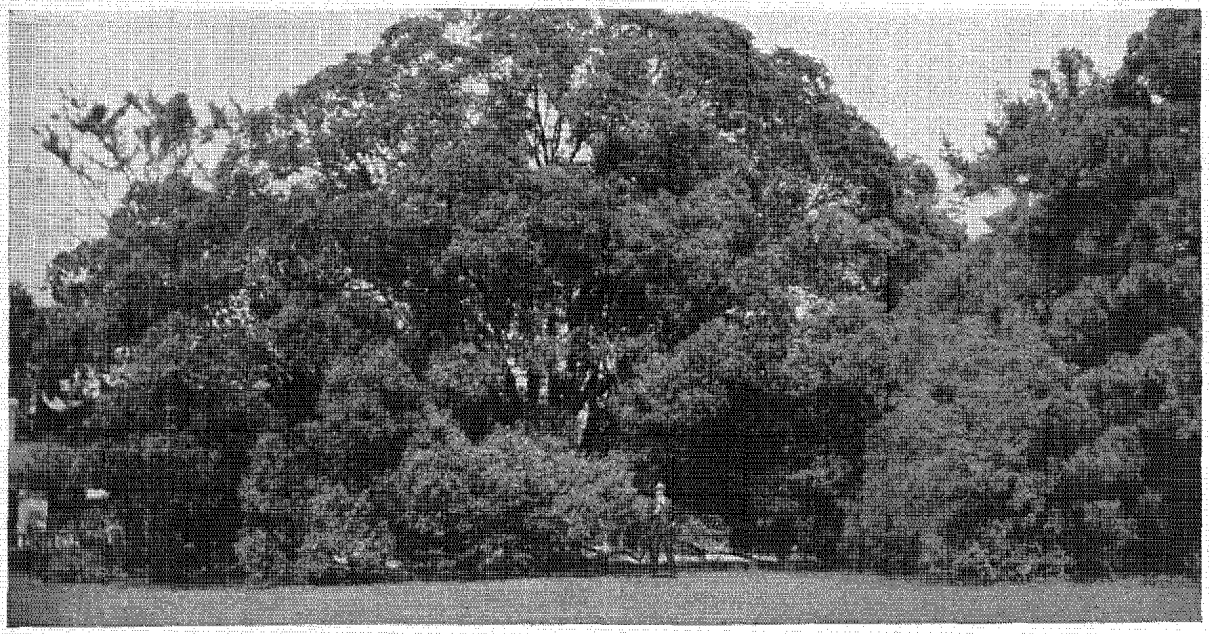


BURTON HOLMES PHOTO BY EWING-GALLOWAY, NEW YORK

A familiar scene in the hinterland of Formosa, where native workmen chip camphor logs into fine pieces to distill the wood

For centuries practically all the natural camphor used in the United States has been imported. Originally, it was procurable from China, the East Indies, Japan, Formosa and other far eastern lands where camphor forests were abundant. The trees were cut down, chopped into thin chips and subjected to a steam distillation in small portable retorts. As the camphor volatilized, it was passed through a condenser—usually a bamboo tube terminating in a tub of cool water—and there collected as crude camphor and camphor oil. Unfortunately, this method of production destroyed the tree.

As an interesting sidelight it may be noted that years ago in China it was not uncommon for a family numbering as many as 2,000 people—including both direct and collateral relations—to hold an ownership equity in a single camphor tree. But so strict were the Chinese regulations that before a tree could be sold, a license had to be obtained from the government authorities and also from local officials. The proceeds,



COURTESY, T. E. DOREMUS

The camphor tree is also valued for the shade it affords. This one adds to the beauty of the campus of St. Johns University, Shanghai, China. Compare its size with the figure of the man in the foreground

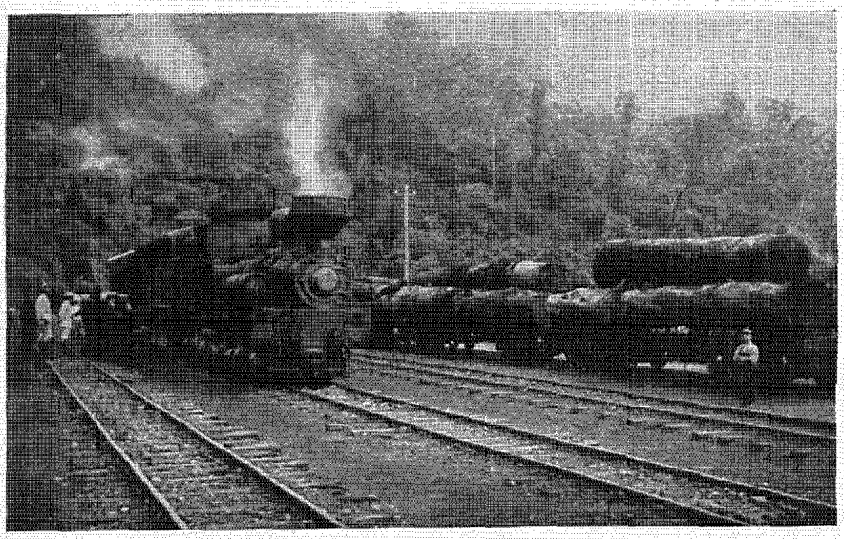
sometimes amounting to hundreds of dollars, were equitably divided among the owners. The yield from one large tree was sometimes as much as a half ton of camphor.

Before the pyroxylin plastic industry in the United States got well under way, camphor was obtained from several sources. Then the demand steadily grew. The deforestation of camphor trees proceeded more rapidly than before and the product became relatively scarce and expensive. Following the war in 1895 between China and Japan, the Island of Formosa came into the hands of the Japanese. Since 1899 practically all the world's supply of natural camphor has been controlled by the Japanese Government, through two bureaus that have regulated production, controlled distribution and fixed prices.

Chinese rulers had tried to establish a monopoly on camphor centuries before. For a long time they enforced strict control of the industry by repressive measures. History records that in one year, 1720, over 200 violators of the regulations were officially decapitated.

Until comparatively recent years in Formosa, camphor gathering has been, and in some regions still is, a risky business; for the savages in the hinterland, where the trees grow, are head hunters and one must always be alert, well armed and guarded to save his precious neck. Doubtless conditions are much better now than they were under Chinese rule, but the Japanese still have to deal with an occasional native uprising.

During the present century notable improvements have been made in the industry. Wasteful practices have been abandoned in the forests. Modern equipment and improved methods have been introduced to increase yields. Camphor trees are cut down and the logs are transported by rail to large distillation plants and refineries where trained operators get everything of value out of the wood. The Japanese have also carried for-



COURTESY, CHEMICAL MARKETS, NEW YORK

Large-scale operations in Formosa. Camphor logs are transported to the distilleries and refineries located at the seacoast. This is the modern method of production

ward a program of reforestation to insure a future supply of the trees.

For years, American manufacturers had to buy their camphor requirements from the Japanese monopoly agents on an allotment basis. The buyer never could be certain of getting more than a ninety-day supply at any price, and he never knew whether he could procure another lot or what he would have to pay for it.

Presumably, fifty years ago, no one could foresee that such a condition might exist, but it is a coincidence that in 1880 the U. S. Department of Agriculture imported camphor berries, or seed, and young trees from Japan, and had them planted in southern and southwestern states. Perhaps in a friendly soil and climate they might grow into beautiful shade trees. Doubtless many of the lusty specimens in Florida are from plantings made at that time. At any rate, when plastic manufacturers began to think of camphor farming in America as a protection against the Japanese monopoly, they looked to Florida as a promising place to start.

This idea was not a new one, for the possibility of growing camphor trees had been under investigation in many other climatically-favored regions of the world. Plantings had been made in India. One thousand acres of camphor trees were under cultivation in Ceylon in 1908. It was found that the tree thrived in Java, Trinidad, German East Africa, Madagascar, Egypt, the Gold Coast, Portugal, Spain, France and Italy, Madiera, the Canary Islands, Jamaica, Brazil, Argentina and Australia.

While all the work instituted by government and private interests was not carried forward with a commercial objective, presumably those who sought to cultivate this tree for its shade also considered the possibility of eventual profits.

About 1907, Japanese camphor reached its highest pre-War price—$1.24 for a pound of the product refined in America—and this stimulated further efforts to grow camphor trees on domestic soil. One of the then largest manufacturers of pyroxylin plastics invested a considerable sum of money and started to grow camphor trees on a tract of 3,000 acres at Satsuma, near Palatka, Florida. And in 1913 the Arlington Company, now Du Pont Viscoloid Company, Inc., decided to develop and operate a 12,000-acre camphor farm at Waller, Florida. The land was acquired and plans made for growing the trees in hedgerows, and periodically cutting off and distilling the leaves and tender shoots. Operations were started in June, 1914, and plantings were made in November. Other projects were launched in Texas and California, but they were soon abandoned; the World War broke out.

Other work then became more urgent. Domestic requirements for camphor multiplied with the increased demand for pyroxylin plastics, and the wholesale price of the refined product in New York City rose from 48 cents a pound in June, 1914, to $1.00 in September of that year. It reached a high point of $3.65 a pound in January, 1920.*

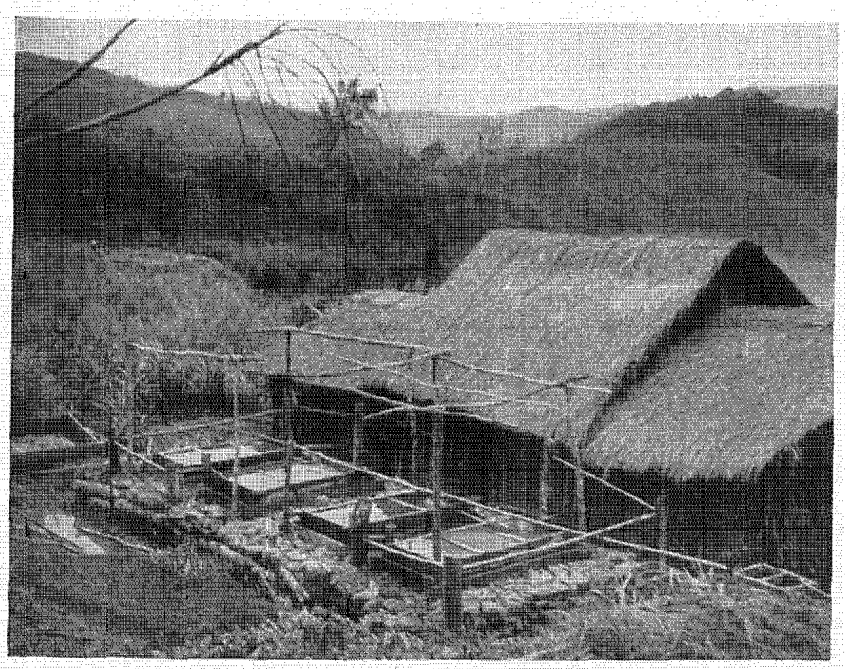
But controlled camphor supplies and high prices during the World War and immediately thereafter brought the question of synthetic production sharply into focus. As a matter of fact, during the Russo-Japanese War similar conditions had

*Prices from Oil, Paint and Drug Reporter.

(Continued on page 15)

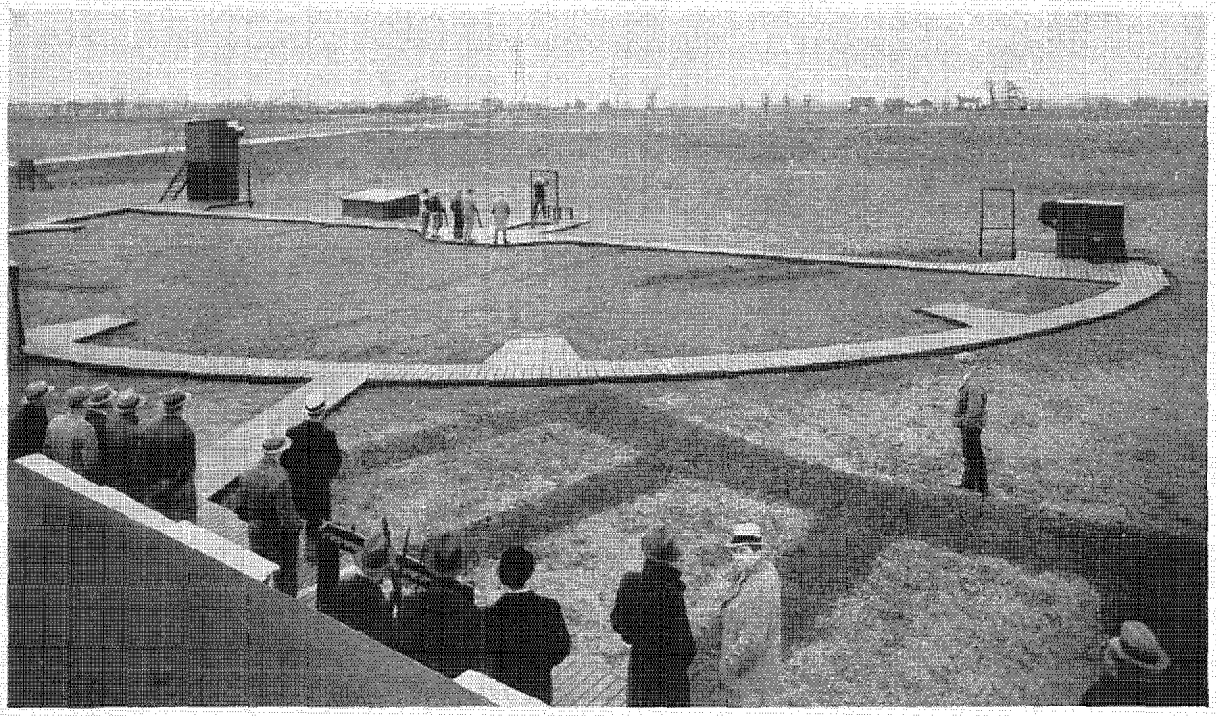
CAMPHOR IMPORTS

Year	Crude Camphor		Refined Camphor		Synthetic Camphor		Total Camphor	
	Pounds	Value Per Pound	Pounds	Value Per Pound	Pounds	Value Per Pound	Pounds	Value Per Pound
1923	3,640,812	.637	3,240,322	.735	488,684	.619	7,369,818	.679
1924	1,862,518	.541	2,112,065	.648	682,035	.554	4,656,618	.585
1925	2,369,413	.549	1,583,902	.602	1,834,988	.502	5,788,303	.549
1926	2,018,971	.574	1,169,779	.652	2,944,478	.529	6,133,228	.567
1927	1,689,714	.480	1,480,851	.556	2,933,784	.430	6,104,349	.474
1928	4,364,661	.378	1,176,047	.505	2,264,916	.357	7,805,624	.391
1929	4,203,795	.376	1,431,438	.554	3,957,282	.348	9,592,515	.391
1930	1,058,000	.396	1,032,000	.540	3,524,990	.349	5,614,990	.393
1931	2,009,665	.356	1,151,773	.474	1,798,116	.327	4,959,560	.373
1932 (11 Mos.)	1,799,204	.285	941,459	.353	1,416,331	.278	4,156,994	.298



BURTON HOLMES PHOTO BY EWING-GALLOWAY, NEW YORK

A typical camphor still in Formosa. The stoves are operated in the thatched buildings. The camphor is collected in the equipment outside. Note the water boxes



The Skeet layout at the Nassau Trapshooting Club, Inc., of Mineola, New York. It is one of the fields designed and built by Mr. Simonson

Skeet As a Recreation

If you like field shooting you'll enjoy this sport for the thrills it affords . . .

By WILLIAM SIMONSON

SKEET to some is a mere name. Others know it as a form of clay-target shooting, but to those actively identified with the sport, it is one of the most fascinating of all recreational pastimes.

The present popularity of Skeet is testified by all classes of shooters. Some experts who have been closely associated with guns all their lives prefer Skeet to any other form of shotgun shooting, except perhaps actually hunting feathered game. Others are ardent devotees and do no field shooting whatsoever.

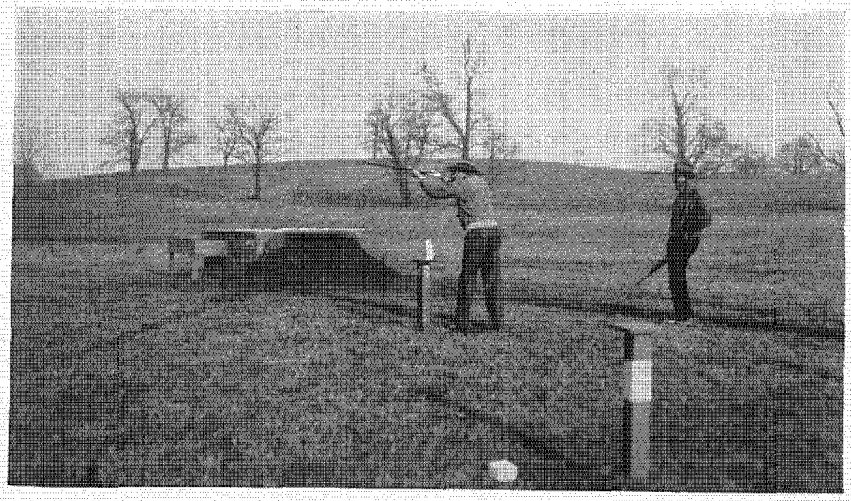
The game is attracting hundreds of sportsmen each year and has been characterized by a steady and rapid growth in popularity, but many of its strong points are yet to be appreciated fully by the general shooting public. During the past four years it has grown from infancy to boisterous youth, and one with a world of possibilities ahead.

The resourceful men who designed the game visualized actual field conditions and sought to duplicate them as nearly as possible, with the result that in shooting a string of twenty-five targets one has to shoot at least once at very nearly every angle at which a quail or partridge would fly, including doubles. Indeed, the element of surprise approaches that experienced in field shooting over a dog, because the release of the target may be delayed from one to three seconds, and the gun must be held below the elbow when the target is called for.

Originally, men took up this sport to improve their field shooting, but now the game has become an end in itself as well as a means of increasing one's skill as a hunter.

The favorite field gun, which in nine cases out of ten is the right one for Skeet, is now regarded in the same light a golfer looks upon his pet niblic or mashie, although the gun is considered even more important because of its greater individuality.

It might be thought by those who are not acquainted with Skeet that, after having shot a few times, the various angles can be easily mastered;



Skeet is becoming very popular in many parts of the country. This action view was taken at the Point Lookout Grounds, near Centerville, Delaware

that breaking the targets then becomes a mere routine and that the game will soon lose its zip. But such persons need to know that a Skeet target starts out at slightly over one hundred miles an hour and from some positions there is less than three-fifths of a second in which to break it.

Ask a man who knows the thrill of grinding these speeding targets into dust whether or not it is easy, and pardon him if he is a bit emphatic in saying that such action demands a high degree of physical-mental coördination, and that while ability and experience make for good scores, there is never absolute perfection!

Now one of the most attractive features about the shooting racket, ever since sporting arms first came into being, is its sociability. Up through the ages, old cronies have gathered and vied with each other. Many new friendships have been made over flint-locks and muzzle loaders, and they are still doing the same thing today while shooting Skeet, a sport which will accommodate any number of people from two to fifty or more.

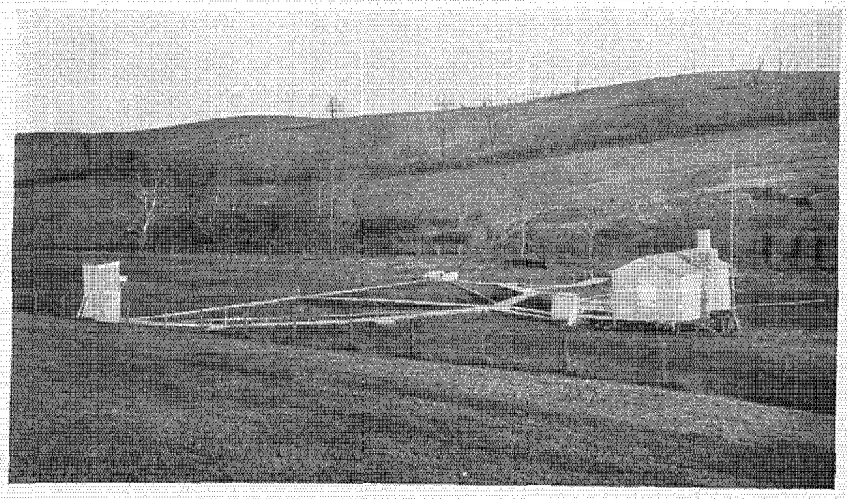
Skeet is now most popular in small communities where people with the same common interests in guns and out-of-doors have banded themselves together. Then, too, Skeet shooting has been added as an extra feature to the programs of trapshooting clubs; and some country, yacht, and outing clubs are introducing the game to their members.

A large number of sportsmen maintain Skeet grounds on their own private and country estates, some individually and others coöperatively with their friends. It is here probably that the possibilities of Skeet can be most fully utilized. Under such circumstances the beginner really learns the game, slowly, surely and soundly, with distractions reduced to a minimum. The old shooter can engage in matches with his pals to his heart's content. The son, daughter, or any member of the family can be taught to break the targets until the time comes when Dad can no longer offer to give them a handicap. It might be noted the game is adaptable to all ages and to both sexes, for guns ranging from the 12-gauge down to .410 can be used with good results.

The problems of equipment and installation are neither complicated, nor is the expense awesome. All that is needed is a small, fairly level clearing to accommodate two traps mounted facing each other and forty yards apart. One is at the ground level; the other, ten feet above the ground. If bushes surround the field, they add to its natural charm. A clear skyline is desirable as an aid in spotting the targets quickly, but they can be obtained in colors which will contrast well against any particular background.

The cost of installation is nominal and is practically the only expense involved, for the traps are now far past the experimental stage, and require little attention except for occasional minor adjustments. Operation is simple and can be satisfactorily accomplished by three boys.

Any one who may desire to know more about Skeet equipment or where to purchase traps, guns, ammunition and other accessories, may procure such information by writing to E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware.

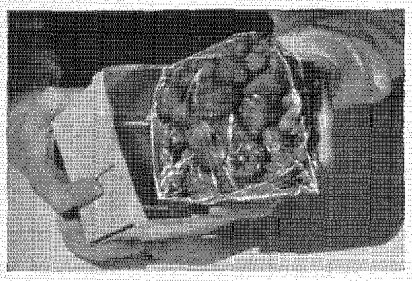


Another interesting place where enthusiasts enjoy the sport at the Burris Run Skeet Field, Yorklyn, Delaware

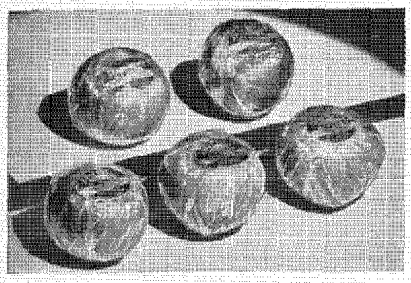
"Cellophane" Goes to the Country

Du Pont cellulose film is "making good" at a new job—protecting fresh fruits and vegetables . . .

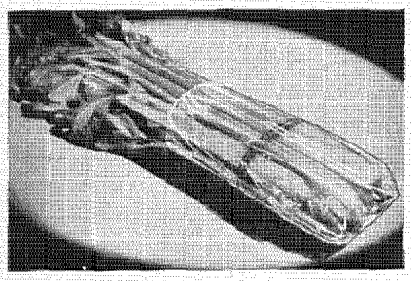
By J. M. COWAN



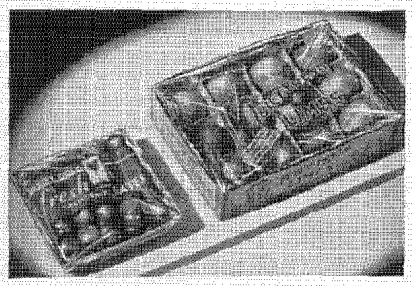
Proud To Be Shown



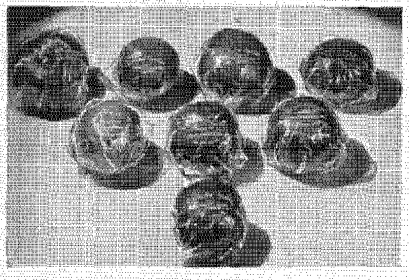
Apples at Their Best



Assuring Crisp "Nerve" Food



Yes, Fresh Dates and Limes



Ready for Soup or Salad

RECENT years have seen the remarkably rapid adoption of transparent Cellophane protection to a wide variety of food products which now reach your table as fresh, clean and appetizing as when they left the packing plant. Today, you hardly eat a meal which does not include at least one food, kept better in this protective cellulose wrap.

And now, Cellophane actually goes to the farm to keep "fresh" fruits fresh and to retain that dewy, "just-off-the-farm" flavor of green vegetables. Berries, apples, tomatoes, asparagus and a host of these farm products seem to have been waiting for just such a packaging idea.

Take berries, for instance. Southern strawberries now come to town in a bright, new dress of Cellophane. This "Sealed in the Field" package is produced by wrapping the berries in a sheet of the material, then placing them in a berry basket. It answers, once and for all, the housewife's questions: "Are they all the same size? Are they all ripe?" No longer need the grocer joggle the berries up and down or dump them into another basket to demonstrate the quality. One swift movement pulls the inner Cellophane package from the box, revealing the berries without a hand touching them.

In addition, Cellophane prevents pilferage and keeps the berries in luscious, prime condition for several days longer than is possible by other methods.

In the case of apples, the principle of transparent packaging has been combined with that of automatic vending by means of a specially-designed dispensing machine. This equipment is already in use in twenty-two cities, in railroad stations, large factories and stores. A nickel in the slot brings a bright, shining apple, kept fresh and clean in Cellophane.

Tomatoes, too, are now wrapped in Cellophane, instantly telling their own story of color, condition and size. The transparent wrap gives an automatic answer to the shopper's query: "Are they ripe? . . . Of good size? . . . In good condition? . . . Clean?" This eliminates a world of store abuse, the pinching and handling so common today, which injures the delicate skin and causes decay, often not detected until the vegetables reach the home.

Everybody knows the marked difference in flavor between fresh, crisp celery and a soggy, watery or dried-out product. Fortunately, alert celery growers decided to do something about this problem. One of the accompanying pictures shows the solution—carefully-selected, fully-bleached, washed celery, revealed, yet protected, in Moistureproof Cellophane.

Now let's go to a sunny lime grove in California or farther south to Mexico. Like the Florida fruit grower, the producer is far removed from his major markets, and the problem of packaging and protecting perishable fruits is a very real one. One group of lime packers, the Calavo Growers of California, selected a nested carton overwrapped with a gaily-printed sheet of Cellophane, giving promise of invigorating limeades and making a convenient household package while giving excellent protection in transit and in the store.

(Continued on page 15)

Scenic Highways of the West

If proper blasting methods are followed, roads can be built without damage to scenic surroundings . . . . .

By IVAN E. HOUK

THOUSANDS of miles of scenic highways now wind their way through the mountains of western United States. Well-built automobile roads penetrate virgin forests of fir and spruce, follow tortuous, tumbling streams along narrow mountain canyons, climb back and forth along dizzy, rugged slopes to the timber line, and cross high passes which a few decades ago could be reached only by the old-fashioned stagecoach, wagon, or pack train.

Today, more than 500,000 miles of roads traverse the eleven states west of the 102d meridian. Of this total, which includes county, state and federal highways, approximately 90,000 miles are of an improved type, surfaced with gravel or paved with some suitable material.

Practically all of these improved roads might be termed "scenic highways." This holds true whether they were built for economic use by local residents, for cross-country traffic, or for the express purpose of attracting tourist travel from other sections of the country. However, the scenery may vary from the desert, foothill, mesa, and mountain topography of New Mexico, Colorado, Wyoming, and Montana to the dense redwood forests and rocky seashore country along the Pacific Coast.

Probably the most noted of the early scenic highways constructed in the West are those in Yellowstone National Park. This system of roads, although still in the process of improvement, was originally planned by the late General H. M. Chittenden, who had charge of the park administration from 1899 to 1906.

Since that time many others have been built in developing our western national park areas. Those deserving special mention include the new tunnel highway in Zion National Park, southern Utah; the new Loop Highway in Lassen Volcanic National Park, northern Colorado; and the new Mather Memorial Parkway in Rainier National Park and Rainier National Forest, Washington.

The Mather Memorial Parkway, named in honor of the late Stephen T. Mather, director of the National Park Service from 1917 to 1929, is noteworthy as the first of its kind to be established in this country. This parkway, which is a part of the new Naches Pass Highway, is sixty miles long and a mile wide, thus providing ample recreational space for thousands of motor tourists, campers, Boy Scouts, Camp Fire Girls, and a great many other lovers of outdoor life.

Many of our main cross-country highways in the West pass through regions of unsurpassed scenic beauty. U. S. Highway 40 penetrates the snow-capped Rockies of Colorado, crossing the Continental Divide at Berthoud Pass at an altitude of 11,300 feet. The same road leads across the deserts of Utah and Nevada, through the high sierras of eastern California, past Donner Lake, where the Donner Party met its tragic fate by starvation in the winter of 1846, and finally crosses the Sierra Nevada Divide where it attains an altitude of approximately 7,100 feet.

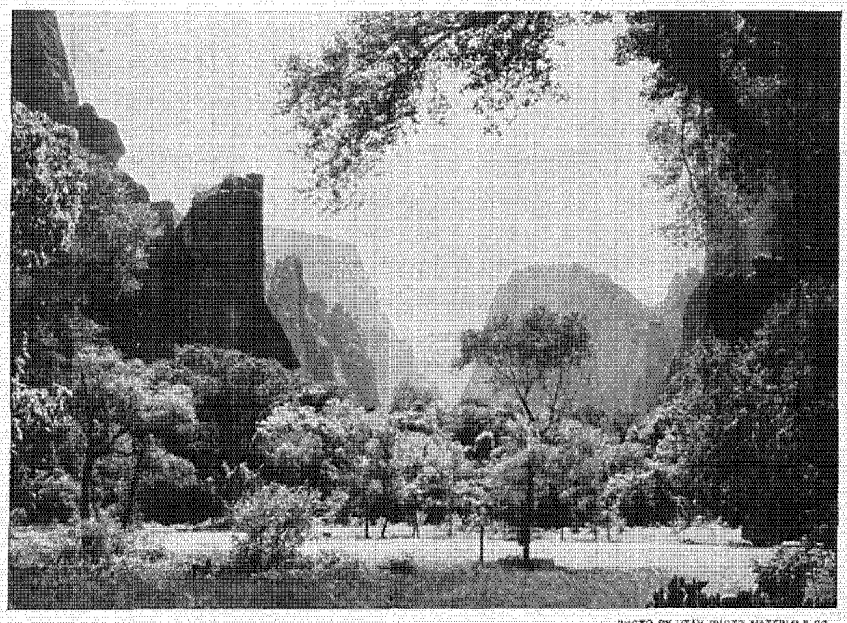


PHOTO BY UTAH PHOTO MATERIALS CO.

Highway construction has made accessible this beauty spot, called the Temple of Sinawava, at the end of Zion Road, Zion National Park, in Utah

Explosives Have Helped to Make Many Sc

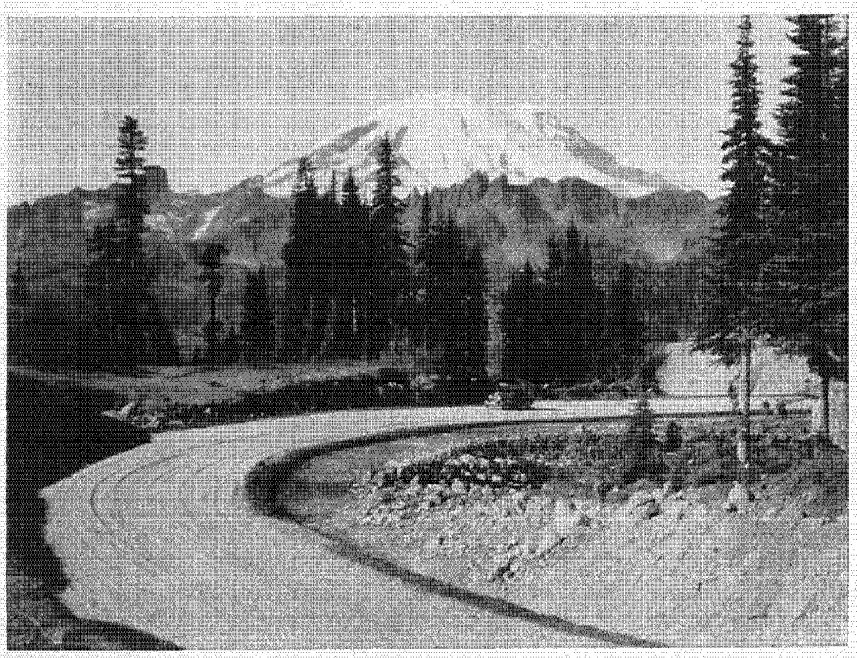
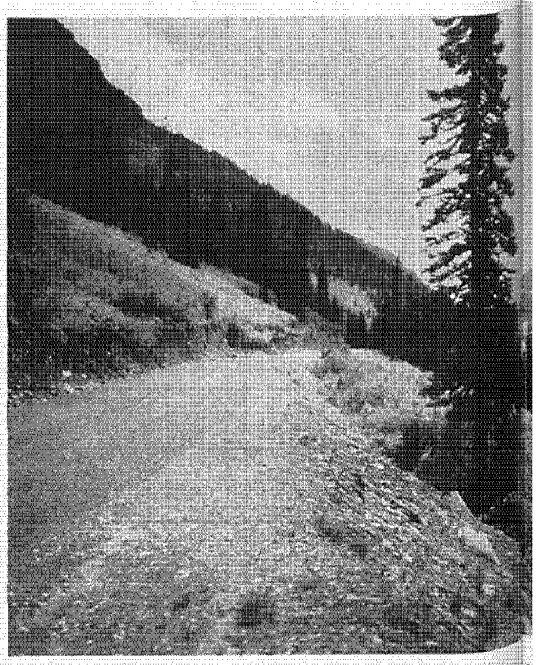


PHOTO BY ISABEL CURTIS

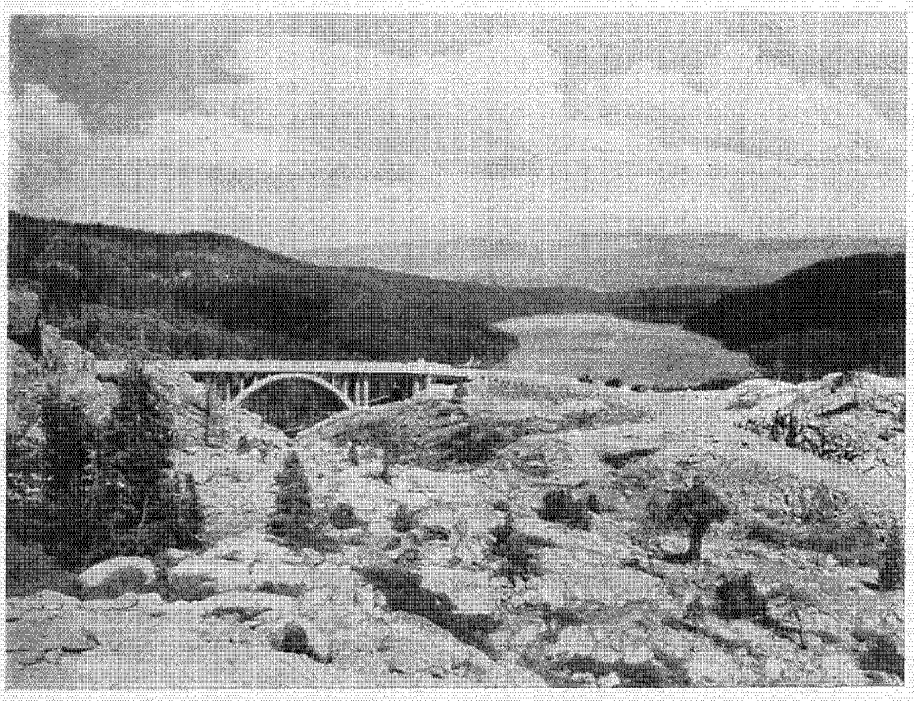
Many beautiful views of Mount Rainier can be had from the highways in the State of Washington. This famous, snow-capped peak was probably 16,000 feet high at one time. Indian legends tell of a great eruption that blew the top off, but it is still of majestic proportions and the outstanding attraction in the park that bears its name



COURTESY, MONTANA PUBLICITY DIVISION

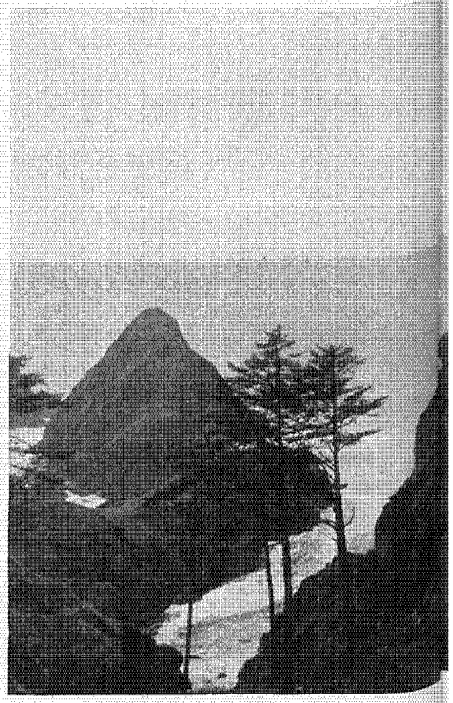
Above—Looking toward Logan Pass on the Trans... in Glacier National Park. This ne... entirety—Bolton to St.

Below—Along the Oregon Coast Highway are m... down hundreds of feet and watch the



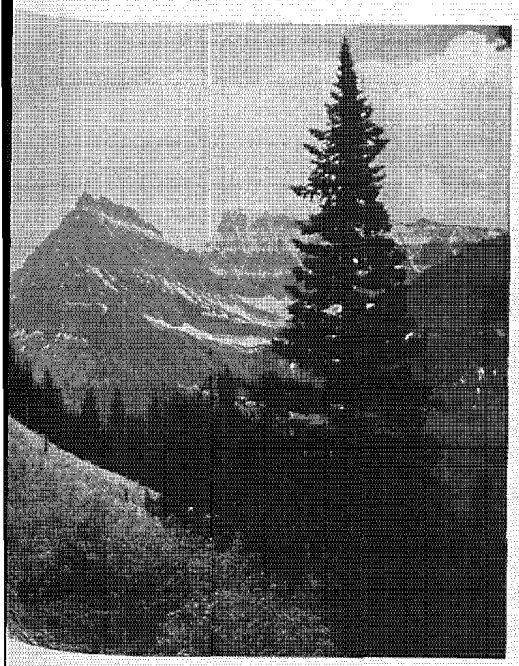
COURTESY, CALIFORNIA, INC.

Historic Donner Lake in the high sierras of California is reached by U. S. Highway 40. The beautiful bridge, left center, gives a hint of the travel facilities now opened for tourists in contrast with the conditions which prevailed in 1846 when the Donner Party came to its tragic end while crossing this mountainous region



COURTESY, PORTLAND CHAMBER OF COMMERCE

enic Places Like These Accessible to Tourists



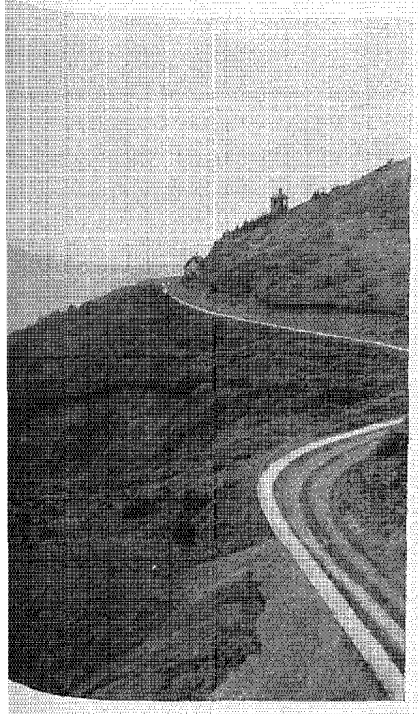
n Highway which crosses the Continental Divide
way will be open to traffic in its
for the 1933 season

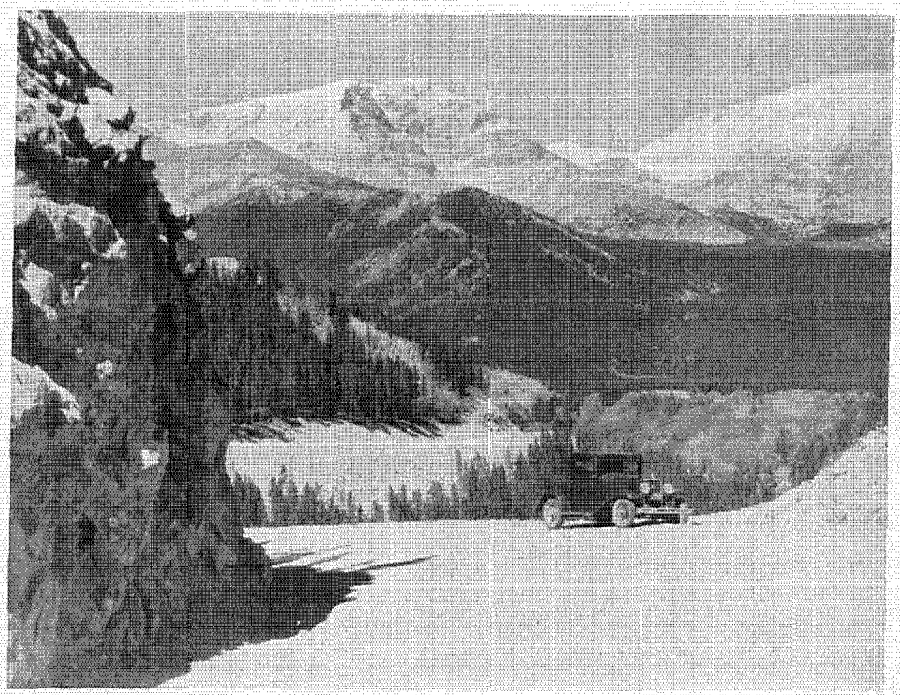


COURTESY REDWOOD EMPIRE ASSOCIATION

A beautiful highway winds through the redwood forests of Humboldt County, California. With the sunlight filtering down through the huge trees as shown in this picture, the tourist is entranced by wonderful views of Nature's handiwork through the ages. The construction of modern highways enables him to enjoy them from his motor-car

ntage points like this where the tourist can look
waves crash against the rocky shore





COURTESY, THE COLORADO ASSOCIATION

A view of the Mummy Range from the new Trail Ridge Road, Rocky Mountain National Park. The scenic attractions of this rugged district, with its lofty crags and peaks and glaciers, are certain to draw thousands of tourists who can drive their cars over this broad, smooth road with a degree of comfort not enjoyed in earlier days

U. S. Highway 101, running northwest along the Pacific Coast from San Diego, California, to Astoria, Oregon, takes the tourist past many interesting seashore scenes. North of San Francisco the route passes through the heart of the Redwood Empire, where ninety-seven per cent of the world's giant redwood trees are located. U. S. Highway 30, known as the Columbia River Highway, follows the valley of the Columbia east from Astoria. After leaving Portland it passes Crown Point, Multnomah Falls, the Dalles, and other points of scenic interest, finally connecting with the "Old Oregon Trail" across Idaho and Wyoming.

U. S. Highway 2, running east from Seattle, traverses many scenic sections of Washington, Idaho, and Montana. It crosses the Cascade Range, penetrates the apple orchards of Wenatchee, winds through the Coeur d'Alene Mountains of Northern Idaho, and crosses the Continental Divide along the south side of Glacier National Park into the plains of northern Montana.

Different but equally interesting scenes greet the motorist who follows U. S. Highway 66 across the southern section of western United States. Leaving Los Angeles and San Bernardino this route crosses the Mojave Desert of southern California, passes the San Francisco Peaks, Petrified Forest, and Painted Desert of Arizona, traverses the picturesque Indian reservations of New Mexico, and crosses the desert mesa land from the valley of the Rio Grande to historic Sante Fe.

It is manifestly impossible to mention all the important scenic highways of the West in this brief article. Additional cross-country thoroughfares of corresponding interest and equal scenic grandeur might be cited. Moreover, there are thousands of miles of comparatively short state and county roads, which provide access to scenic regions.

Typical examples of shorter roads, recently completed or now under construction, include the Maricopa Ventura Highway in southern California; the Kings River Canyon Road near General Grant National Park, California; the new road from Las Vegas, Nevada, to the Black Canyon of Colorado River at Hoover Dam, and the new Loveland Pass Highway which terminates about seventy miles west of Denver.

Many noteworthy developments in the science of designing and constructing roads have been made during recent years. Naturally, the most important, from the standpoint of public welfare, is the ever-growing tendency to build better and safer highways. Aside from safety considerations, the most important recent development in the construction of scenic highways is the planning and execution of the work so as not to impair the natural scenery. Probably nothing is more distasteful to the nature lover than to see huge scars along the mountain sides, the ruthless dumping of excess material on the mountain slopes, and the reckless, unnecessary destruction of trees, rocks, cliffs, and other scenic formations along the right of way.

The policy of protecting natural scenery was initiated by the National Park Service and Bureau of Roads, in building national park highways. Fortunately, it is finding favor among state and county officials. Probably, some day it will receive proper consideration in all highway work.

The preservation of natural scenery is accomplished, primarily, by careful location of the highway, proper supervision of excavation, use of hidden gullies in disposal of excess earth, and proper construction of culverts, bridges, retaining walls, and other appurtenant works. Full bench sections, or tunnel sections, with occasional open galleries to serve as viewpoints, have been utilized in building roads around steep mountain slopes or along rock cliffs.

In some cases embankments have been laid by hand in order to prevent undesirable scattering of dumped material. Retaining walls have been built of rubble masonry to harmonize with the appearance of the rocky slopes above. Heavy, woven-wire fencing has been used to catch excavated rocks rolling down the mountain side. Concrete supports have been built under large boulders to keep them in their natural positions. Half-round, metal culvert sections have been used to protect tree trunks during blasting.

Probably the most important matter in the preservation of natural landscapes during road construction work is proper planning and adequate supervision of blasting operations.

(Continued on page 14)

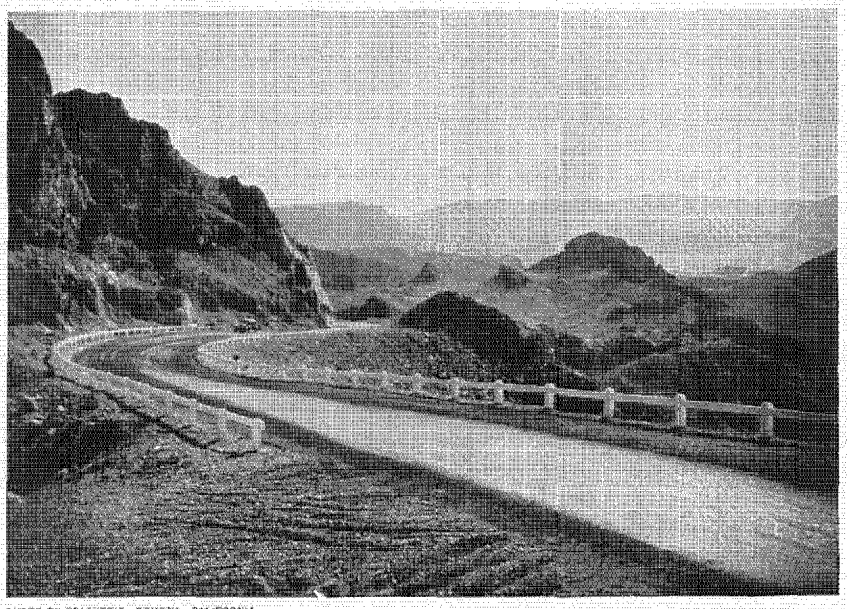
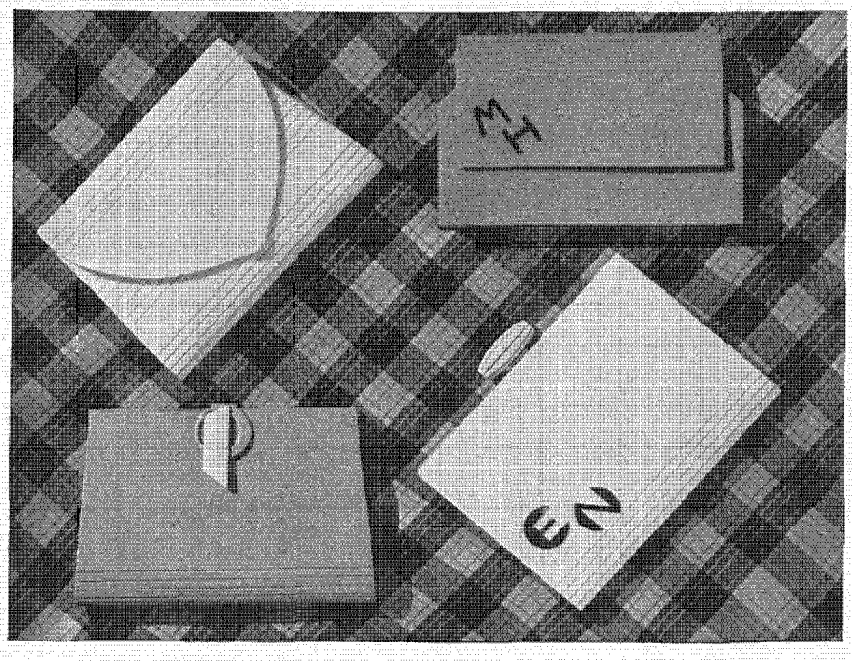


PHOTO BY FRASHER'S, POMONA, CALIFORNIA

A view of the new highway between Boulder City and Hoover Dam, near Las Vegas, Nevada. Thousands of tourists will use it in the days to come when the dam is finished



Just a few Pyralin bags of the Zyloware line. They are produced in ten different styles and shapes, in a variety of colors, and are reported to be in strong demand

Bags Now Made of "Pyralin"

While this plastic has long served the industry, it appears here in a new rôle

By R. T. ELLIS

In these days when someone asks, "How do you find business?" the usual reply is tritely expressed in a single word, sometimes qualified with a not-too-polite adjective. This query is deemed conventional, but the man who interpreted and answered it literally with the statement, "I find business by going after it," said a mouthful. He phrased a sound doctrine that many people might follow with profit. Persistence is usually rewarded in some degree, but those who go after trade creatively and with intelligence are most likely to win success. Business goes where it is invited.

Du Pont Pyralin has been invited, so to speak, into the household of the pocketbook and handbag industry. It is not the first time either, for this product has from time to time been used quite extensively for making frames for bags, pocketbooks and ornaments. It has, however, had a rôle of an accessory. The news to be reported here is that this plastic has stepped out of the background into the limelight, from a secondary position to the leading part. Actually, a fabricator of Pyralin is making handbags of this material. If that sounds hard to believe, wait until we tell you how it is done.

Of course, the design of the bag is first selected, its outline, shape and contour decided upon, then the pattern is placed on a sheet of the du Pont plastic and blanked out to the correct size. Wherever any crease or fold or flexibility is required in the finished article, the sheet is slotted or cut almost through to the other side, whereupon the entire piece is backed with cloth to give it permanence. In this form it goes to the bag maker. The slotted effect, and how it looks on the finished article, may readily be seen in the accompanying illustration.

Parisian couturiers consider the pocketbook one of the most important accessories in the fashionable woman's wardrobe. It must be smart, beautiful and practicable. Bags are made today to be useful as well as to meet Fashion's exacting requirements. So they are designed in many colors, sizes and shapes, which makes it possible for the well-dressed woman to add another final touch of individuality to her ensemble.

Another important feature of these new creations is their durability. It is practically impossible to wear out a bag made of this material. Moreover, it is washable. In ordinary daily use an article of this sort is bound to become soiled, but women who own Pyralin bags need not worry about that, for, with a little soap and water, they can remove spots or dirt of any kind that has accumulated. These advantages alone have helped to sell hundreds of these new bags to discriminating shoppers.

Pyralin bags are being manufactured in ten different styles and shapes and in a variety of colors, so that women may find colors to match their dresses, hats or shoes. Initials made of the same material appear on a few bags, but not on many of them.

The manufacturer reports that since these bags were introduced to the trade, he has been unable to fill orders fast enough to meet the demand. He has developed business by creating an entirely new product and by merchandising it successfully. In New York City these bags are being shown by Best & Company, and Lord & Taylor. Readers who desire further information, including prices, are requested to write to the Zyloware Corporation, 181 Eighth Street, Long Island City, New York.

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VOL. XXVII APRIL, 1933 No. 4

An Essential Product

ALCOHOL, sulphuric acid and water constitute three of the most important chemical compounds in present-day use, but for the present purpose only the first one invites attention here.

The cover illustration this month shows a worm's-eye view of the rectifying column of one of the modern continuous stills in the du Pont industrial alcohol plant at Deepwater Point, New Jersey. This plant uses sugar-cane molasses as its essential raw material. The initial step in the process is to dilute the molasses with water and to destroy undesirable organisms by pasteurization. It is then delivered to large sterile tanks, where yeast of a carefully selected strain is added to induce fermentation. After the yeast has ceased to be active, the resultant liquor is delivered to the distillation equipment in another part of the plant for rectification and the recovery of chemically-pure ethyl alcohol.

During the fermentation process there are liberated large quantities of carbon dioxide gas, which may be purified and converted to the solid form popularly known as "dry ice."

Ethyl alcohol, denatured and made available under strict Government supervision, finds its way into many products of every-day use. Its manufacture is essential to national security, and hundreds of industries are dependent upon it for their very existence. Millions of gallons of industrial alcohol are required each year by the du Pont Company alone in its various manufacturing operations. As a chemical solvent it is indispensable.

Confidence

THE world has lately witnessed a confirmation of the fact that only as confidence is maintained can governments endure. When that foundation is shaken by untoward events, fears kindle quickly and spread like wildfire with disastrous results. The recent financial crisis grew out of widespread fears. Prompt action by our Government successfully averted the perils of a situation more serious than any that has confronted our nation since the World War.

The stability of the American dollar is obviously of vital importance, for it supports the credit structure. There must be confidence in standards of value, and that is as true of merchandise as it is of money. Noticeably during the past three years there has been a more or less general departure from old-time quality standards as they apply to manufactured goods. Prices have been forced to low levels. Shoddy merchandise has been offered to the public so insistently under the lure of bargain appeals that only those who know values can distinguish the really good from the inferior. Under such conditions one can well understand why many people are disinclined to exchange good money for products of questionable merit.

A vigorous campaign is now under way to restore confidence in quality products, with the active support of reputable merchants and manufacturers from coast to coast. It is stressing the point that only standard merchandise, fairly priced, is likely to give satisfaction and service; that cheap and shoddy things are rarely good values at any price. Happily there are evidences that quality goods are in stronger demand in many parts of the country, and it is hoped that this trend will continue, for it will help to bring about better business conditions with benefits to all concerned.

Faith has been restored in the stability of the American dollar. The public will now do well to make its purchasing power effective by intelligent buying from reputable concerns who refuse to lower prices at the expense of quality.



Author Raynolds

ROBERT RAYNOLDS, author of *Brothers in the West*, has again scored with a new novel, *Saunders Oak*, recently published by Harper & Bros., New York City. We note that it is prominently displayed at bookstores and that it is bound in Fabrikoid PX Cloth, which was described in the February number.

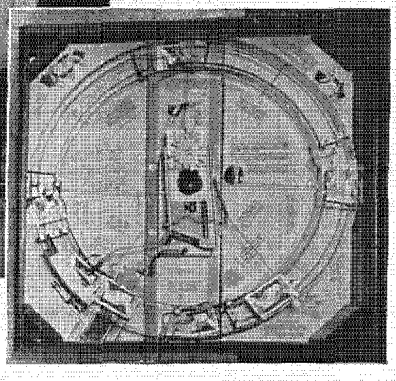
Because book-lovers are interested in authors as well as their works, we may render a service, perhaps, by outlining briefly Mr. Raynolds' career.

He was born in Santa Fe, Mexico, 1902, in the Governor's Palace—an old Spanish building—and in the room where General Lew Wallace is supposed to have done much of his work on *Ben Hur*. Seven years later his family moved to Omaha, Nebraska, where he remained until he entered Princeton University with the class of 1923. After two years, he returned to Colorado for a year, working at a coal mine. Then he came East and entered Lafayette College, attending college one term and working in a cement mill the next, alternately, until he completed his course in 1925.

After his graduation, he traveled in Mexico, crossing the country from Vera Cruz to Manzanillo and later worked in a silver mine in the state of Durango. Returning to the United States, he edited a monthly magazine for the Standard Oil Company of New Jersey until the end of 1929, when he left to devote all his time to writing. He is married, has three children, and now lives at Newtown, Connecticut. He is a member of the Princeton Terrace Club and the Delta Kappa Epsilon Fraternity at Lafayette College.



Left—The Fabrikoid-covered table that shuffles and deals the cards is manufactured by the Hammond Electric Clock Co., Chicago, Illinois



Inset—This view underneath the top shows what makes the wheels go around

"Fabrikoid" Coverings

- They are practical for many purposes, such as bridge table tops, desk pads and dining-room tables . . . .

PAGE the man or woman who does not work or play over a Fabrikoid surface or make some contact with one every twenty-four hours. Almost all American-made bridge tables have Fabrikoid covers. In business offices salesmen's portfolios are bound with it. Telephone directories are made more ornamental through its use. But why continue? The list is long.

Probably you have seen—or will soon see—the articles illustrated here.

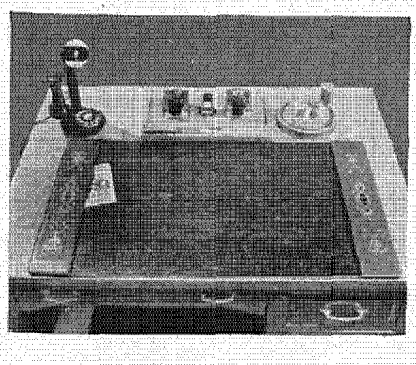
First, there is the Hammond Electric Bridge Table that is creating as much interest among bridge players as Hal Sims' book, *Money Contract*. Both are covered in Fabrikoid. This table shuffles and deals the cards. One places a deck in the sliding drawer, closes it, and the machine starts. After distributing thirteen cards to the four positions, it stops and the drawer unlocks, ready to receive another deck.

Playing on this table at first is a bit weird; you almost expect a genie to pop out and say softly, "Tsst, tsst, lead your nine of diamonds." The table top is covered with du Pont waterproof Fabrikoid.

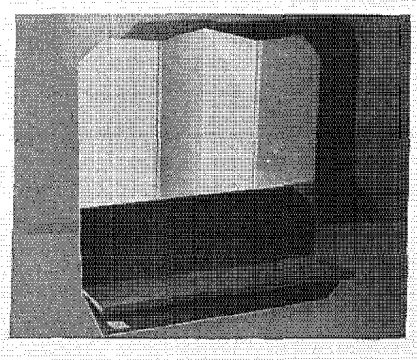
Next, note the business desk pad with a holder of Fabrikoid that resembles beautifully hand-tooled leather and forms pockets at each side for memoranda or other papers. The writing surface is waterproof, ink-proof and fireproof.

The third exhibit is a Protecta Heat-Proof and Liquid-Proof Table Pad, made of du Pont Fabrikoid, heavy asbestos and felt, for use on the dining-room table. Advantages: It protects the finish, looks well and is thoroughly sanitary, because spilled liquids and foods can be wiped off easily with a cloth, and the pad remains unblemished and serviceable for years.

For further information about these articles and their Fabrikoid coverings, drop a line to the manufacturers.



Left—The desk pad with Fabrikoid pockets at the side. Manufactured by National India Rubber Co., 335 Valley Street, Providence, Rhode Island



Right—The table pad referred to, it is manufactured by A. & W. Products & Table Mat Co., 2156 E. 4th Street, Cleveland, Ohio

Scenic Highways of the West

(Continued from page 10)

Necessary interference with natural scenery can be minimized if the powder holes are spaced close enough together, drilled to the right depths, loaded with the right kind of explosives, in the correct quantities, and shot properly.

Sometimes a strip of thick timber is left along the lower side of the highway during the clearing work to provide a screen while the heavy shooting is under way. Sometimes an initial cut is made along the upper edge of the roadway to permit further shooting without undesirable scattering of material. Sometimes narrow fills are built along the lower sides of the roadway sections to provide space for holding large-size rock, shot from the cliff above.

Many trainloads of explosives are used in road-construction work each year. In some cases explosives are used in removing large tree stumps from the right of way, as well as in rock excavation. This is particularly true in building highways through the redwood forests of northwest California.

The quantity of explosives required per cubic yard of rock excavation varies widely on different road-construction jobs. This is due, principally, to differences in the character of the rock. About two pounds of explosives per cubic yard were required to break up the granite cliffs along the new Ute Highway from Colorado Springs to Cascade, Colorado.

Only half that quantity, or approximately one pound per cubic yard, was required to shoot the limestone formations along the Transmountain Highway in Glacier National Park. Careful studies recently made by the Bureau of Roads show that the quantity of explosives required usually varies between a half a pound and two pounds per cubic yard of rock.

Yesterday, It Had an "X" Number

Today, it has a name. "Pyralux" is a new enamel for product finishing

While a new du Pont finishing material is being pre-tested in the laboratory and in the field, it carries a number preceded by an "X" that designates it as an experimental formulation. When the finish has been found worthy of du Pont approval, it is given a line number and a name.

A new pyroxylin enamel that carried only an "X" number for many months is now called Pyralux.

This latest product of the du Pont laboratories combines excellent adhesion and flexibility with its fast-drying characteristics. It gives a durable, lovely finish—economical, because the priming coat can be eliminated. One coat can be built up to greater thickness than with other pyroxylin enamels.

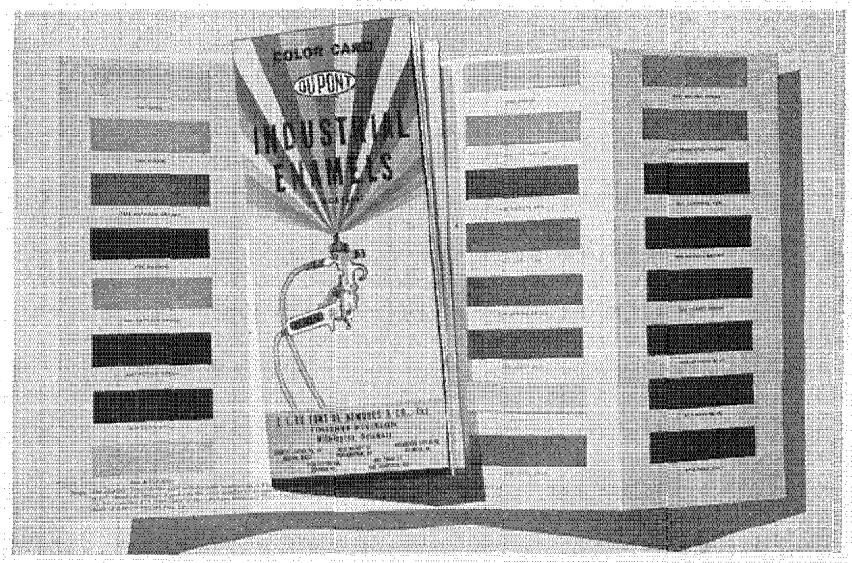
Now, a few facts about this finish:

Pyralux dries dust-free in fifteen minutes and is dry to handle in one hour. In seven hours it is ready to pack and can be re-coated in one hour. Forced drying, one to two hours at 150° F., greatly accelerates hardening of the film and allows handling and packing in even a shorter time.

Pyralux gives a durable, high-gloss finish to any bare metal surface. It has excellent adhesive properties and is vastly superior in initial and retained flexibility. It ranks very high in hardness and print-resistance tests. The film also has good resistance to alcohol, gasoline and water.

A good, heavy coat of Pyralux can be piled up. The viscosity permits it to be sprayed at a 50-50 reduction. At such a reduction one can build up a required film thickness in one application without sacrificing that important quality, chip-resistance. Although Pyralux has a natural high gloss, buffing and polishing will make it remarkably smooth and lustrous.

The fact that a primer can be eliminated makes possible new low costs per unit in product finishing. The new color card illustrated here shows the thirty-six standard colors available in Pyralux. It also describes three other standard lines of du Pont enamels. A letter addressed to the Finishes Division at Wilmington, Delaware, will bring a copy to you.

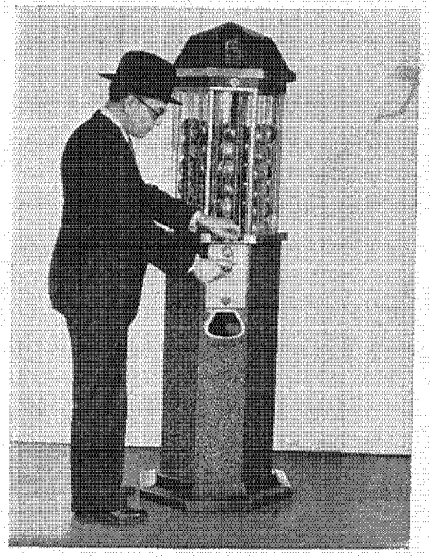


"Cellophane" Goes to the Country

(Continued from page 6)

Today, few people think of dates as a fresh fruit, yet American ingenuity has added a brand new, fresh fruit to our winter diet, the Arabian date. Eight or nine years ago, a group of business men saw possibilities in the date palm and brought thousands of the young trees into the country. The Coachella Valley in California was selected as the plantation site because of its peculiar climate, hard on humans, ideal for dates. During the summer time, the temperature climbs to 120 degrees Fahrenheit, and stays there day and night during the all-important ripening period.

This palm plantation is now bearing on a commercial basis and the fresh fruit is coming on the market. The growing problem solved, the California Date Growers' Association next took up the important matter of packaging. Never having been sold in this form before, it was necessary



Had your apple today?

that the dates should be clearly visible. Moreover, they needed protection from dirt and buzzing flies, and safety from curious fingers. The final decision, after studying the packaging problem, was an attractive green carton wrapped in Cellophane. A picture of it is shown on page six.

Today, this delicacy is being enjoyed in many communities; it is served with cream and eaten like any other fresh fruit or used in cooking.

The packaging problems involved in these new uses for Cellophane were only overcome by research, by painstaking tests conducted in fields and stores as well as in laboratories. In many cases, trips to the farms were needed to gather full information about present methods; to arrange for test shipments using various types of Cellophane, and to outline clearly the necessity of highest quality for any produce in Cellophane. Shipping-test results were carefully followed and checked by laboratory experiments reproducing all the conditions present from the farm to the table. A study of the facts indicated the right type of Cellophane to use, the best method of applying it and the proper temperature limits, a concrete example of the methods used and results secured by the Farm Products Development Section of the Du Pont Cellophane Company, Inc.

The Camphor of Commerce

(Continued from page 3)

forced European chemical concerns to look into the possibility of manufacturing camphor. Since there was little prospect of growing the trees profitably, at least for a number of years, perhaps they could learn how to make the product from raw materials not under Japanese control.

The research workers did not have to start from "scratch." A beginning had been made more than a century before. In 1803, an apothecary by the name of Kindt introduced hydrochloric acid into oil of turpentine and obtained a crystalline product that resembled natural camphor, but in reality was merely bornyl chloride. His discovery was important, however, because it pointed the way to further research.

The French chemist, Bertholet, is said to have been the first to produce a chemically-made camphor in 1858. Schering, Ulman, Meyer, Stephan and others made contributions. Several processes were worked out. Commercial production of synthetic camphor, however, caused little uneasiness in Japan until late in the first decade of this century, when it appeared that the Oriental monopoly might have to face European competition, and Germany in particular.

World War prices encouraged more determined efforts to break the camphor monopoly. In fact, producers of the synthetic material, despite the efforts of the Japanese interests to throttle competition, succeeded in forcing prices down to more nearly reasonable levels. In this connection the tabulation on page three, showing imports of camphor, crude, refined and synthetic, from 1923 to 1932, will be interesting.

To speak of chemically-made camphor as "synthetic" needs a word of explanation. The trade knows it by that name, but it is a misnomer, for the product is not built up or synthesized from simple elements, but rather starts with a complex organic substance, the structure of which is rearranged and changed to form this camphor of commerce.

It is a strange coincidence, however, that natural camphor is obtained from one tree and that the basic raw material used in making the "synthetic" product comes from an entirely different one—the Southern pine. Both are stalwart forest specimens and they have furnished the background for the gladiatorial combat between the Japanese and the German interests.

It should not be inferred that while Germany was developing its synthetic camphor industry, American chemical concerns were either disinterested or inactive. As early as 1900 one concern started production at Niagara Falls,

New York. Three years later another company was organized and its plant reached an operating status, but after a time it dropped by the wayside. Doubtless other attempts were made by still other concerns of which we have no knowledge, but in 1918, the du Pont Company built a plant at Deepwater Point, New Jersey, and produced considerable quantities of camphor from turpentine, when it was advantageous to do so because of the existing shortage of natural camphor and its high price. This plant was shut down when prices came down to earth again, but the equipment was maintained for several years after the War. The Japanese might elect to raise prices again to the high altitudes. Meanwhile, it was best not to be caught unawares.

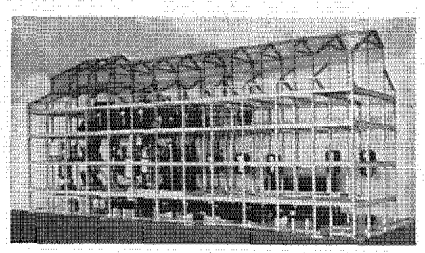
In 1922, a mid-Western concern built a synthetic camphor plant, having contracted with a successful German manufacturer for the right to use his process. This venture, however, was abandoned for the reason that it did not provide sufficient returns. More recently another attempt was made by a New Jersey concern, apparently without success, according to our present knowledge. We shall not attempt here to catalog all the efforts which have been made to produce synthetic camphor in this country. Millions of dollars have been invested in research and in plants, yet in September last year a writer in *Chemical Markets* pithily presented the situation as follows:

"Not one pound of synthetic (camphor) is produced in this country. Our present dependence upon foreign sources for both synthetic and natural is as great as our former dependence upon Germany for dyes and Chile for nitrate."

That situation no longer prevails, for we have some good news to report. Synthetic camphor is being manufactured by a new du Pont process in a new plant built last year at Deepwater Point, New Jersey, and it has been in production for more than a month. The process is the outgrowth of a great deal of research and development work conducted in recent years by the du Pont Company and The Newport Company of Carrollville, Wisconsin. The plant is said to be large enough to take care of a considerable part of this country's normal requirements for synthetic camphor.

The American naval stores industry will be a beneficiary of this new development which opens up a home market for Southern turpentine, the basic raw material. Domestic producers of synthetic camphor will almost certainly use domestic turpentine exclusively, while European producers will probably use to a greater or less extent turpentine procured from Greece and France.

Du Pont manufacturing activities have opened up outlets for many products of the South. In a recent



Model of the du Pont Company's new synthetic camphor plant at Deepwater Point, New Jersey

number of this publication, extended reference was made to the raw material, cotton, and its many uses in du Pont industries. Only a few rods distant from the new camphor plant at Deepwater Point is the company's alcohol plant where millions of gallons of blackstrap molasses are converted into industrial alcohol. And the great du Pont Dye Works is located in the immediate vicinity, producing colors that once were made exclusively in German chemical factories.

Perhaps it is not too much to hope that American-made synthetic camphor will find equal favor with the consuming industries; that this country will be freed from the domination of foreign monopolies with respect to that commodity.

Du Pont chemical research has been thorough and painstaking in the development of the process, from the laboratory to the commercial plant stage. In some respects it is an original process, developed with full knowledge that price competition may be expected from synthetic camphor manufacturers across the Atlantic as well as from the producers of natural camphor across the Pacific.

Engineering research has been equally thorough. Even before the new plant was built, a model of it was carefully made to scale and miniature pieces of equipment set up in position, so that chemical engineers and the operating staff might visualize their work and make any changes in design or construction before the building operations began.

While the new plant has not yet been in operation long enough to determine what the yield will be under full operating conditions—and the writer would be indiscreet to say much about that anyway—there is reason to believe that the camphor produced will be of a quality as good or better than that obtained abroad.

So far as we know this plant is the only one now operating in this country. Whether it is destined to play a major rôle in the drama that centers around the camphor trade, no one can say. It is manifestly a new adventure by a concern that has many times advanced boldly into new territory. One thing is certain: this new industry has been started under circumstances that will keep the company "on its toes," for the price of camphor, like that of almost all other commodities, is low. Moreover, the tariff law of 1930 gives synthetic camphor manufacturers a measure of protection which is conditional upon their success in earning it.

The duty on natural crude camphor is one cent a pound; on natural refined camphor, and synthetic camphor, five cents. But the maintenance of these rates depends wholly upon the domestic manufacturer who must produce in quantity twenty-five per cent of the domestic consumption of synthetic camphor in 1933; thirty per cent in 1934, and fifty per cent in 1935—and if he does not meet that production schedule, the tariff on synthetic camphor shall be reduced to one cent a pound. Because this is a new tariff principle, its operation will be watched closely not only by those directly concerned but also by the public at large.

Meanwhile du Pont plant operators are working purposefully to the end that American-made camphor of high quality shall be produced in abundance to supply the domestic needs.



CROSS TUCK is the Freshest Trick in Town

Cross Tuck is a wool-like sheer, which isn't wool at all, but Du Pont Rayon, which is a snooty thing to make fabric of. And, to make you all the more fresh and alluring, Cross Tuck is dull — hangs slim.

DUPONT RAYON
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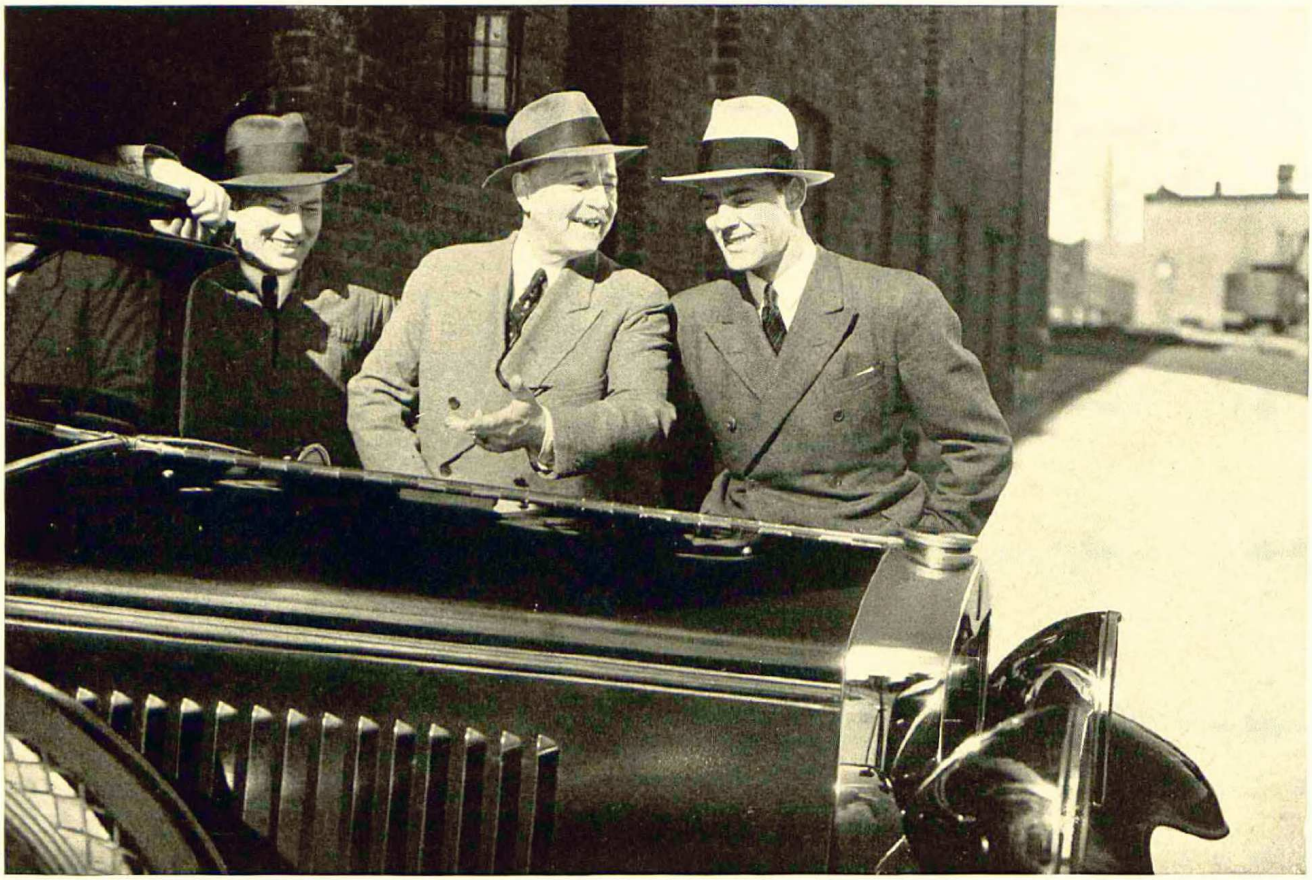
SAKS-FIFTH AVENUE gives young Manhatters shoulder shirring and an ascot tie —quite ingenue but not naïve. Sizes 11 to 17 in beige, grey, or light blue. $19.75

BEST & CO. tucks Cross Tuck into an interesting sleeve and gives an uppish bosom line with stitched-in sections. Sizes 12 to 20 in beige, chalk blue, gold or grey. $19.75

LORD & TAYLOR have had all the fashion editors on car about this zig-zag yoke and chin bow. It's a slim thing. Sizes 14 to 20 in cloud grey, beige, gold or blue. $19.75

DU PONT RAYON COMPANY, EMPIRE STATE BUILDING, NEW YORK, NEW YORK



"Looks like new, doesn't it?"

Of course, it looks like new. It has been refinished in Duco

LAST week this man said to himself, "When my house needs repainting, I don't trade it in for a new house, do I? Then why should I trade in this car that has miles and miles of service in it just because it needs a new paint job?"

Today this man is swelling with pride because his car looks like new. He went to see an Authorized Duco Refinisher who told him how little it would cost to give his car a new coat of beauty.



Wherever you see this sign you can have your car refinished in genuine Duco.

If your car runs well but is a little shy on good looks, we suggest that you ask an Authorized Duco Refinisher to give you an estimate on a genuine Duco recoloring, or touch-up job. You'll find the cost extremely moderate. And you can depend upon the materials because Authorized Duco Refinishers use the same materials that the leading new car factories use.

Most Authorized Duco Refinishers are equipped to give all types of body service to your car. That service includes complete refinishing or recoloring, touch-up work, or repairs to fenders, top or trim. They can serve you well. Ask the nearest Authorized Station for an estimate on the cost of giving your present car a new car look. There will be no obligation to you.

If you don't know the address of the Authorized Duco Refinishing Station nearest your home, we will be glad to send it to you.

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