

# BAKELITE *Review*

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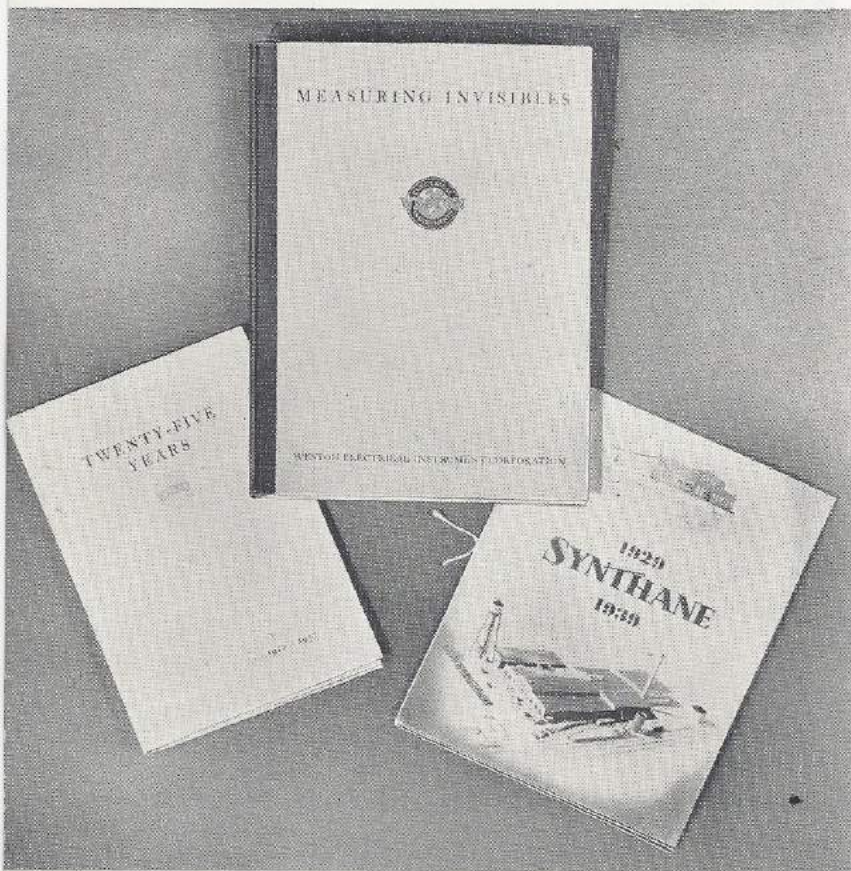
*Yesterday, Today*  
AND  
*Tomorrow*

SEE PAGE THREE

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# Happy Birthday to You . . .



Recently three friends of Bakelite Corporation have found occasion to commemorate their business anniversaries. The celebration of an anniversary is an acknowledgment and recognition that a company has been able to live through good times and bad, to survive competition and to keep abreast of the whirling eddies of time.

## WESTON ELECTRICAL INSTRUMENT CORPORATION

Founded by the late Edward Weston in 1898, the Weston Electrical Instrument Corporation is dedicated solely to the manufacture of indicating electrical measuring instruments. The first piece of commercial Bakelite molded in the electrical industry was produced by Weston in 1910 for an insulating coil support.

## THE ATLAS POWDER COMPANY


The Atlas Powder Company, founded in 1912, is widely recognized as a leader in the manufacture of explosives, chemicals and synthetic fabrics. One of its coated fabrics is Revolite, the waterproof, chemically resistant material calendered with a flexible Bakelite resinoid—a product which, among other uses, is employed for waterproof, chemical resistant and durable upholstery, sport- and beach-wear, industrial diaphragms and laundry roll coverings.

## SYNTHANE CORPORATION

Synthane, ten years old and going strong. Conceived in the history-making year of 1929 and dedicated to the manufacture of Bakelite laminated products for industrial use. With principles well founded by their respected President, Robert R. Titus, Synthane employees have worked hand in hand to build up a business from a mere nothing to a well-rated, reliable firm manned by sincere, energetic employees.

Weston, Atlas and Synthane—we salute you!

## An Invitation

 The thousands of BAKELITE REVIEW readers are hereby extended a cordial invitation to visit the Bakelite Plastics Exhibit at the New York World's Fair in the Hall of Industrial Science Building. Here, a trained staff of guides will be on duty to supply you with first-hand information on plastic materials, their characteristics, properties and applications. The animated displays contain more than a thousand different items, ranging from human brain specimens preserved with a clear resinoid to a pilot's cabin of a modern air transport.

For the public and those who are unfamiliar with plastic molding, two modern automatic presses will turn out World's Fair souvenirs. People can see for themselves exactly how Bakelite thermosetting and thermoplastic materials are molded by both compression and injection processes. For these presses we are indebted to the F. J. Stokes Machine Company and the Hydraulic Press Manufacturing Company.

Cheerio! We'll see you at the Fair, and may we at this time also invite you, while in New York, to stop in and see us at our New York offices and show-rooms.

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# Yesterday, Today and Tomorrow

## With a Few Thoughts About Americans at Work

Thumb quickly through the pages of time into the world of yesterday . . . courageous American colonists pioneering in a new world, building their log cabins, tilling the soil, blazing new trails Westward, founding a new nation abundant in natural resources. Chapters tell of the stagecoach, the covered wagon and the pony express.

Progress—And we see Americans at work making the most of the materials provided by nature and applying man's own resourceful, inventive mind to the creation of new machines, the better to live by—the steamboat, the cotton gin, the reaper and the harvester, the telegraph and the telephone, vulcanized rubber, the sewing machine, steel, the typewriter, celluloid, the talking machine, the incandescent lamp, the fountain pen, the trolley car, the motion picture machine, the gasoline automobile, the airplane, synthetic resins. All of these and many more are creations of Americans at work. The pages of American history are alive with such famous names as Franklin, Fulton,

Whitney, Morse, Goodyear, Westinghouse, Bell and Edison.

Today, we take many things for granted that only a handful of years ago did not even exist. Our children and our children's children will never know what it is to be without a telephone, an automobile, a radio or any one of thousands of modern conveniences.

Only through diligent, scientific research have these things been made possible. Man has taken the materials supplied by nature—greatest chemist of them all—and improved upon them by chemical synthesis. Thus, today, we find our modern plastic materials serving us in every walk of life.

This year, at Flushing, Long Island, there will be man's most spectacular attempt to symbolize the world of tomorrow. Bakelite Corporation will do its humble part at this New York World's Fair by revealing the thirty-year story of the creation of an entirely new industry—synthetic plastics—and its interrelationship with all industry.

*(Continued on page 4)*





A complete listing of the natural sources of the chemicals and other materials used in Bakelite plastics would take us on a surprising journey that encompasses the whole country. So, visitors to the Bakelite Plastics Exhibit in the Hall of Industrial Science will be taken on this trip through a series of colorful murals. These murals depict what plastics mean to the workers in the coal mines, quarries and natural gas fields, to the lumbermen of the North from Maine to Oregon, to the cotton plantations of the South, and to agriculture of the East and Middle West. In these murals will also be found scenes at the Bakelite factory in Bound Brook, New Jersey, where raw materials are converted into more than two thousand resinous products, which, upon further fabrication by Bakelite customers, will find their way into the homes and industries of the nation.

The exhibit proper comprises a series of animated displays, revealing the rôle that these man-made materials play in major industries—in the automobile and airplane, the telephone and telegraph, in radio and electrical appliances, in paints and varnishes, in abrasives and in numerous other fields.

"Why are these synthetic plastics used so

widely throughout industry?" the visitor will ask. And he will be told through a hundred feet of window space where six brightly colored animated displays demonstrate the amazing characteristics of modern plastics. These windows will feature the unusual resistance of laminated materials to severe impact; how plastic materials, because of their exceptional electrical insulating qualities, harness and control electrical energy for the benefit of mankind; why modern machinery runs so silently because of laminated gears and pinions; why plastics are used for wall paneling, baseboards, window sills, table and bar tops, because of their remarkable resistance to water and corrosion and their beautiful decorative effects; how resinoid bonds have made possible faster cutting abrasive wheels which can be operated safely at high speeds; and finally how engineers use transparent plastics for miniature models of bridges and large structures to study stress and strain under polarized light.

Yes, if the thirty-year history of modern plastics, since the time Dr. L. H. Baekeland announced his discovery of the first thermosetting plastic material, means anything, there is plenty in store for the World of Tomorrow.





# The Importance of Being Chemical Resistant



## HOW TO MILK TWO COWS AT A TIME

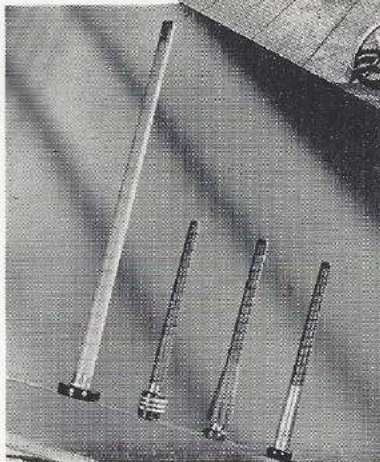
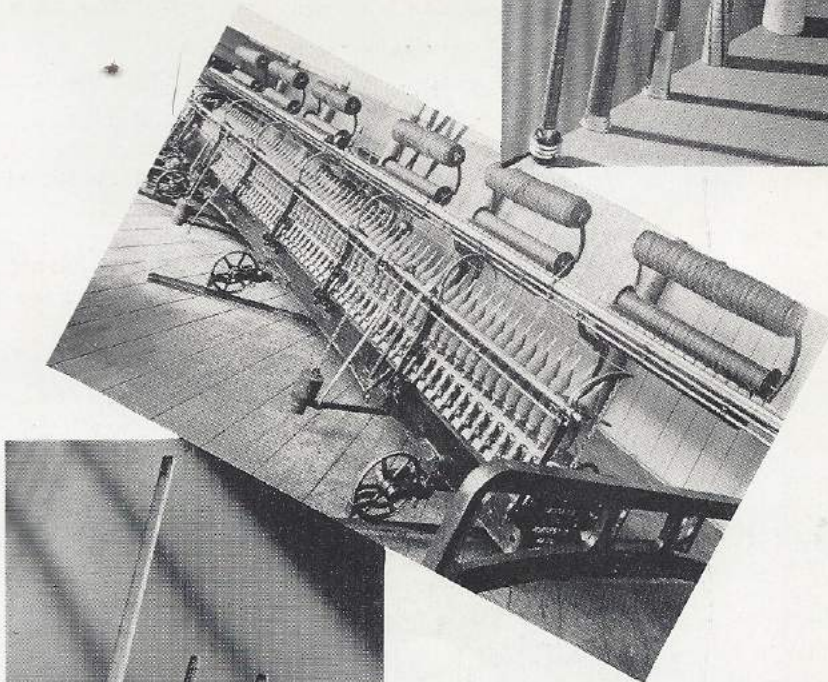
Mounted on four pneumatic tires, the Clean-Easy portable milker of the Ben H. Anderson Manufacturing Company is moved easily about the barn from one row of cows to the next. The company states that this modern milking machine will milk from twenty to twenty-five cows an hour—two cows at a time. The teat cups are made of transparent phenolic Bakelite molded. In addition to having exceptional chemical resistance the cups are highly sanitary, easily cleaned and, being transparent, enable the operator to see that each teat is milking properly.

## ACCURACY WAS PARAMOUNT

The Fink-Roselieve Company's new cut-film-pack developing tank is all-plastic. It consists of seven close-fitting parts produced from special chemical-resistant Bakelite phenolic molded. After careful checking of shrinkage and tolerances, and with the aid of a machined plastic model, production molds were built which required no changes for these seven complicated parts. The tank is adjustable for all sizes of cut film up to four-by-five inches. Credit for the execution of this intricate molding goes to the Boonton Molding Company.

## BUILDING UP RESISTANCE

Anyone familiar with the manufacturing of rayon and textiles appreciates the severe conditions which textile processing equipment must withstand—resistance to corrosive chemicals, resistance to heavy steaming and conditioning, resistance to shock and wear. For this reason, the American Paper Tube Company employs Bakelite heat-hardenable resinoid varnish to impregnate weaving, spinning and twisting bobbins. This varnish imparts rigidity and strength and a smooth, even finish with high surface resistance. The company also employs Bakelite molded on silk and rayon filling quills which must withstand considerable shock and wear in looms.





# Here and There

## "THE ROOM OF TOMORROW"

An extensive library of industrial and technical works, publications and reference files is part and parcel of a research chemist's equipment. Illustrated is a section of the modern library maintained by Bakelite Corporation in our research and development laboratories, Bloomfield, N. J. Here, in this pleasant room, scientists carry on their studies of chemical synthesis to make living five or ten years from now more comfortable. This is "The Room of Tomorrow" for Bakelite plastics.

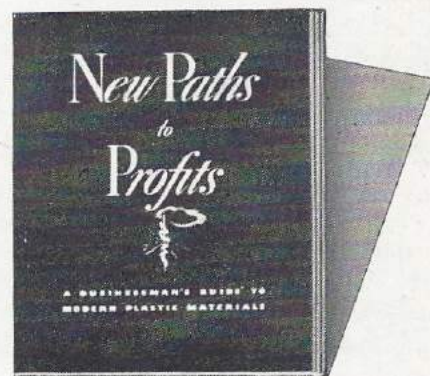


## HEINZ PICKLE

Many may remember the thousands of shellac composition novelty lapel pickles that were given away by the H. J. Heinz Company at the Chicago Exposition in 1893. A few may recall their use at the Cotton Centennial in 1884. This year, for the New York World's Fair, the Heinz lapel pickle goes modern in bright green Bakelite molded, which yields a much better color intensity and a higher finish that makes the pickles look almost wet. The Woodruff Company, molder.

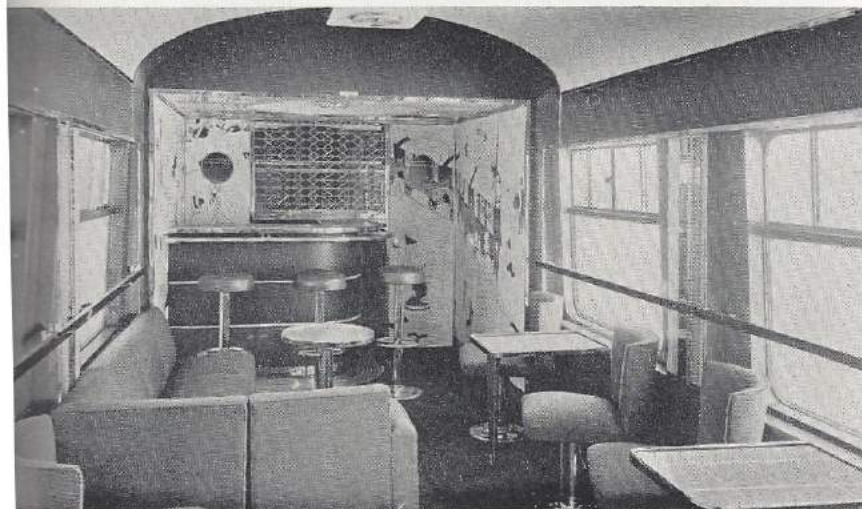
## A PRIMER OF BAKELITE PLASTICS

A new booklet on Bakelite plastic materials is now on the press. It will be a quick-reading, non-technical booklet that gives a clear picture of Bakelite materials and their benefits to industry. Twenty-four pages, profusely illustrated, the booklet is designed as a primer on plastics to explain their many types and to show how they are revolutionizing product design to increase sales and cut production costs. Readers of *BAKELITE REVIEW*, who wish a copy of this booklet when it is ready, may obtain it by writing to the editor.



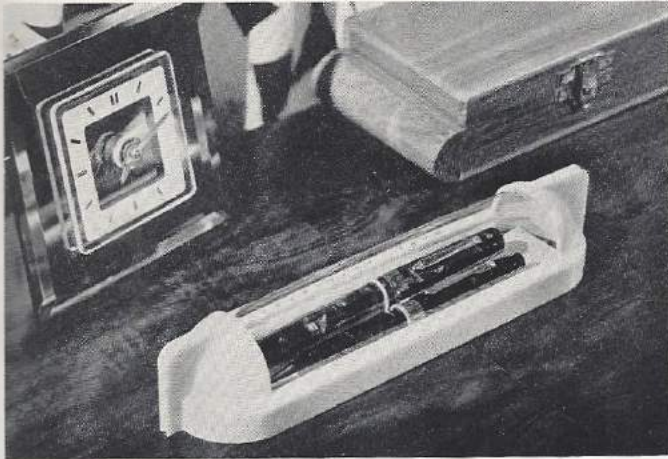
## "CORONATION SCOT" FOR THE FAIR

N. Y. World's Fair visitors will marvel at the "Coronation Scot" train which is to be exhibited for the London, Midland and Scottish Railway Company. Bakelite laminated in contrasting color effects of red, blue, onyx, cream and white is used extensively on this eight-coach train. The applications include corridor linings, ceilings, cocktail bar and table tops, doors, window sills and decorative panels. Before arriving at the Fair, the train will make an exhibition tour of thirty-eight American cities and towns.





# Packages and Dispensers



## WHEN THE PACKAGE BECOMES A DISPLAY

The 1939 Wahl Eversharp pen and pencil package sounds a new note in plastic containers. The natural luster of ivory urea Bakelite molded is given increased emphasis by the spherical design cut lengthwise by two streamlined fins. The transparent cellulose acetate window enables the package to be used as an attractive display unit, allowing the pen and pencil to be inspected from all angles without handling. Designed by Olsen Designers, and molded by Auburn Button Works.

## THINKING OF GETTING MARRIED?

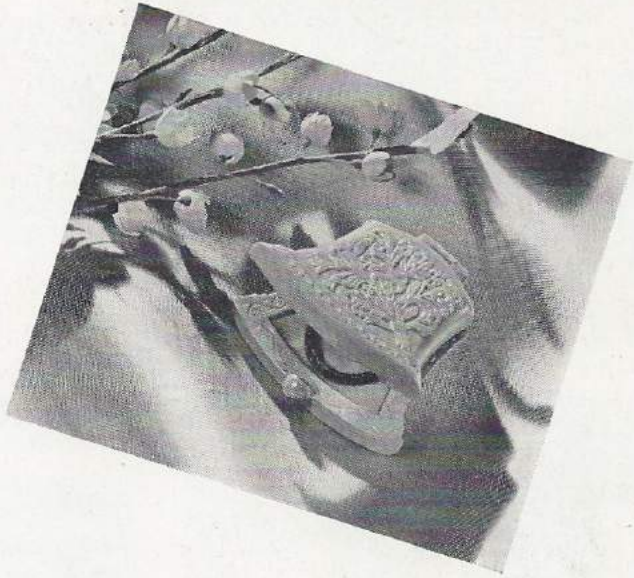
The new, beautiful, bell-shaped wedding ring boxes of Wolfsheim and Sachs, Inc., are produced in light pastel shades of Bakelite cellulose acetate. They come in ivory, white, green, lavender and peach. These attractive boxes are designed to slip conveniently into a small purse or vest pocket. Norton Laboratories, molder.

## POUR IT

The Dalynip Pourer Corporation reports that liquor pourers are becoming increasingly popular because of the variety of designs and the wide range of colors that are obtainable in Bakelite plastics. Seagram's, for instance, use a trade-mark design molded in red phenolic; Schenley a combination of red and black phenolic; while Martell and Carstairs employ polystyrene in blue and white, respectively. Molder, Universal Plastics Corporation.

## SOMETHING NEW IN TOWEL CABINETS

The Scott Paper Company has adopted a modern all-molded towel dispenser. Bakelite molded was chosen because of its lightness in weight, high surface luster and resistance to soap and water. In going to plastics it was possible to create a rich-looking cabinet of modern design. Boonton Molding Co., molder.





# Premiums for Ever

The appeal of the premium is universal, for it caters to the fundamental trait of acquisitiveness. In other words, we like to get something for nothing; we like to get a bargain; and we like to get something extra for the money we spent. As Elbert Hubbard once remarked, "The premium method of merchandising will live as long as trade, because it moves with the tide of the human heart."

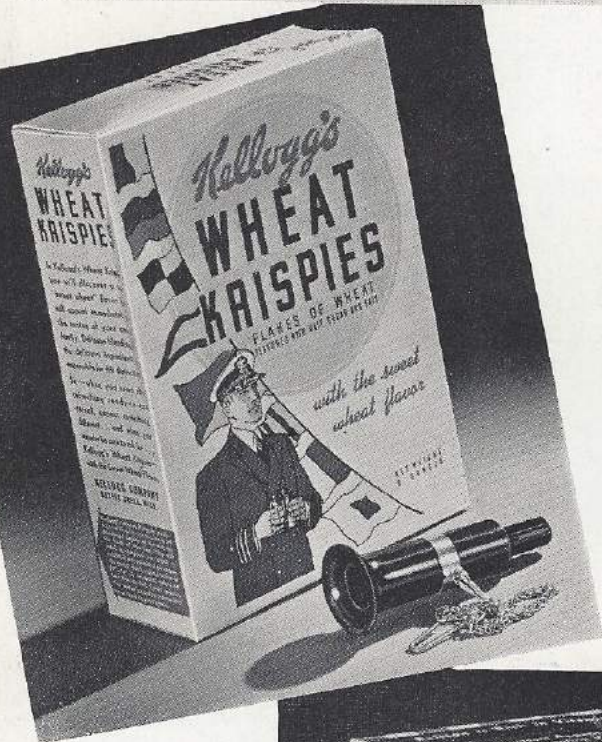
There is hardly any limit to the varieties of premiums that can be produced in plastics. Premium users can find in plastics up-to-the-minute merchandise in a wide range of prices from a few cents to several dollars, and in employing premiums fabricated from modern plastic materials, the difference in cost becomes negligible, yet the effectiveness far greater.

All of the humorous pomposity of a strutting penguin has been captured in the colorful molded cigarette lighter which has been created to promote Brown & Williamson's Kool cigarettes. The complete body is molded of an acetate material, while the top hat, containing the electric heating element, is made of a special heat-resistant Bakelite molded. Yellow feet and beak add still further to the color of this interesting bird, which is expected to serve not only as a trade character but as a premium.

The Kellogg Company is using a Bakelite molded siren whistle to induce boys to eat more Wheat Krispies. They call it the Don Winslow of the Navy super siren whistle, and it certainly is, compared to the old-fashioned tin whistle. It has that extra something to make kids eat more Wheat Krispies, so that they can have a whistle just like the one Don Winslow, comic strip and radio character, uses to "pipe all hands on deck." Here, the company has been able to achieve a good tie-up. Boys know about Don Winslow and know that he would not use or do anything that is shoddy, hence the quality premium.

Another cereal manufacturer, the Ralston Purina Company, has a modern flashlight to get children to eat Ralston cereal. It's a flashlight just like the one Tom Mix uses in the comics to pick up the trail and foil the villainous cattle rustlers and horse thieves. The Micro-Lite's head is gleaming black Bakelite molded to add to its sturdiness and durability. Tom Mix's initials and the Ralston name serve as a decoration on the body of the light.

On the opposite page we have illustrated a few modern products available to the premium user. There are many more. Anyone interested in receiving a suggestion list of premiums made from Bakelite plastics may do so by writing the editor of **BAKELITE REVIEW**.





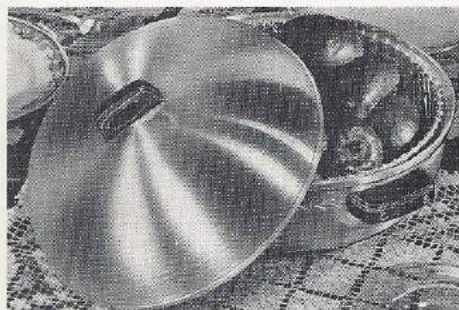
# Purse and Purpose



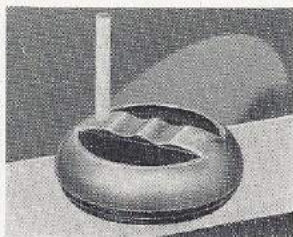
"A revolutionary marriage" says Revere Copper and Brass, Inc., in referring to the stainless steel bodies with copper-clad bottoms of the new Revere Ware cooking utensils. Skillets, saucepans and boilers are equipped with a newly designed Bakelite molded grip, which cannot slip or twist in the hand. These handles and the knobs are molded by the Auburn Button Works from a heat-resistant Bakelite phenolic. Kitchenware has long been popular with premium users, particularly for coupon-redemption systems.



The "sweet potato," or Ocarina, is now produced entirely of Bakelite molded by the Waterbury Button Co. Having more strength and more uniformity in notes, this modern musical instrument offers many advantages not found in the traditional clay "sweet potatoes." This type of item is highly suitable for premium use, as it appeals to the musical ambitions of every youngster.



Equally at home on stove or table is the West Bend Aluminum Co.'s muffin serving oven. In it hot breads can be heated on top of the stove instead of in the range oven and are brought hot to the table. The satin ray aluminum finish is found enhanced by the trim black heat-resistant Bakelite molded handle. Barber-Colman Co., molder.



The latest in ash trays is the Ciggie-Saver for those who like to snuff their cigarettes to smoke them later. Tops are produced in chrome, silver or gold die-castings with black or red Bakelite molded bases. The Ciggie-Saver is marketed by Distinctive Creations. Bases are molded by Peerless Molded Plastics.



The Imperial Metal Mfg. Co. is producing Pepsal, the combination salt and pepper cellar, in New York World's Fair colors of bright blue or orange from Bakelite cellulose acetate. This is the type of product which might serve very well as a premium for food products. Molded by the Athol Comb Co.



Constructed in the shape of a conventional lipstick holder, Powderette is a new face powder container which dispenses powder when one end is pressed against a puff or handkerchief. It is produced in a variety of molded plastic colors by T. F. Butterfield, Inc., for Aetna Motor Products Co.



Find that keyhole! This tidy all-Bakelite molded one-cell flashlight is designed to retail at 15 cents complete with battery and bulb. The housing, in black or brown, is molded by Universal Plastics Corp. for the N. Y. Merchandise Co.



The old-fashioned washboard goes modern. Noiseless and highly sanitary, the Molly-O has a ribbed surface and is designed to fit into the smallest wash basins. It is produced entirely from Bakelite molded in a variety of colors by the American Molding Co. for Maude L. Irwin.

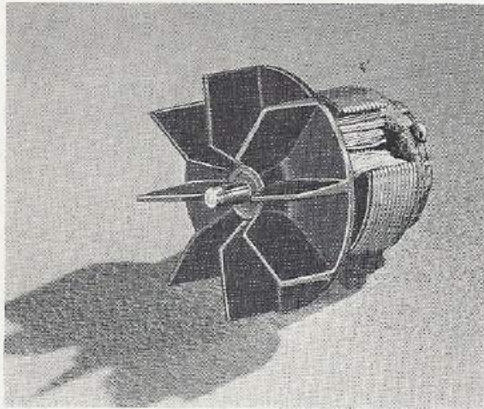


Non-drip coaster cups with flexible, expanding rims in a variety of bright cellulose acetate molded colors will fit the usual sizes of tall glasses. Their absorbent liners eliminate dripping of moisture. Molded by Boonton Molding Co. for Coaster Cup Co.

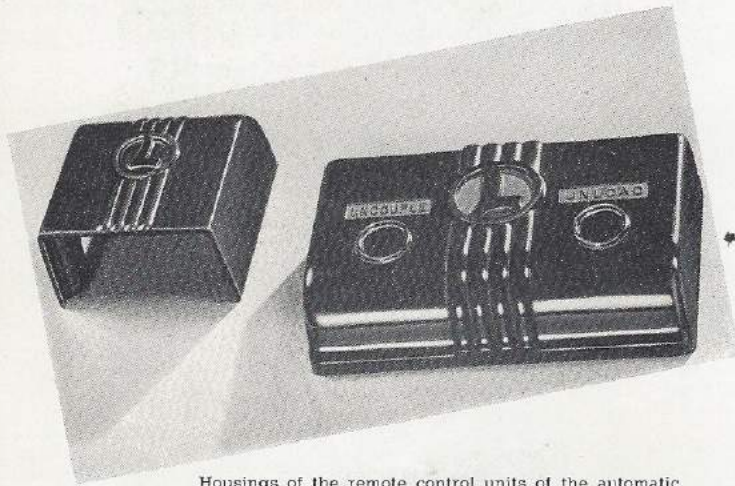


# Why Lionel Has Turned to Plastics

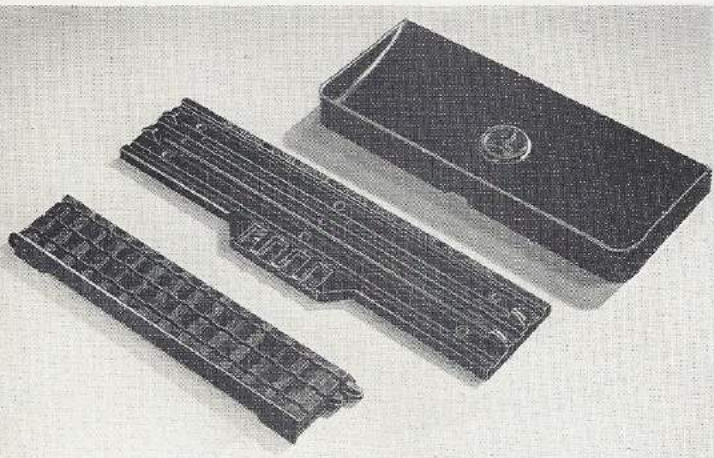
By J. L. Bonanno, The Lionel Corporation



Molded plastics prove more highly satisfactory for whistle impeller than diecastings.



Housings of the remote control units of the automatic uncoupling-uncoupling system are produced in lustrous black Bakelite molded.



Sharp edges are eliminated by the even contours of molded plastics in cover plates and track parts. Spikes and ties are easily simulated in track sections.

It takes just as much engineering knowledge and experience to manufacture mechanical toys as it does to make some of industry's most complicated machinery. The mechanical toy business is built on scientific engineering principles, and meticulous care must be exercised in the selection and use of raw materials. Plastics have definitely found their place in the toy industry.

Lionel made toy train history in 1935 by bringing out a realistic remote-control train whistle. The whistle unit, which is installed in the tender, or power car of streamlined trains, consists of a motor-driven centrifugal blower attached to a pair of tuned pipes. To obtain a satisfactory volume of sound in the small space available, the impeller must rotate at speeds as high as 7,000 r.p.m. At first, a small sheet metal impeller pressed and soldered to the motor shaft was used, but due to difficulties encountered in production, this construction was dropped in favor of a diecast impeller. While somewhat more expensive than the stamped element, it overcame some of the difficulties, principally that of anchoring it securely to the shaft. Among the disadvantages still apparent were the lack of dynamic balance, high moment of inertia preventing the sounding of short blasts in rapid succession, and bending and breakage of the impeller arms in handling.

It appeared that a molded plastic impeller would overcome these objections and, therefore, we built a single-cavity experimental mold. Satisfactory samples of these impellers were molded. They proved to weigh less than half as much as the diecast piece and yet they had the necessary rigidity for handling. This part is molded today in a Stokes automatic compression molding press at a fraction of the cost of a diecast piece. Breakage in assembly and bent pieces resulting in excessive vibration have been eliminated. Furthermore, without any increase in power consumption the molded impeller produces a louder whistle.

Some four years ago we introduced automatic couplers which enabled the model railroad enthusiast to couple his cars at any point along the track. Last year, in compliance with the insistent demand for automatic uncoupling, a system was devised in which small electromagnets carried by the trucks release the coupler catches when energized by remote control. For this purpose a special section of track having five rails was developed. These consist of: two running rails, the third rail and two auxiliary rails. Each coupler magnet has a collector shoe which takes current from one of the auxiliary rails. Uncoupling takes place when the third rail potential is supplied to both auxiliary rails by pressing a button in the controller box.



For producing the rail base and controller the choice of materials quickly narrowed down to plastics. In the track, the closely spaced rails must be insulated from each other and at the same time held securely. Electrical connections must be provided for each of the rails, and the spacing and height of rail held to close limits. Well-rounded ramps are required at each end of the auxiliary rails to prevent catching the collector shoes. All of these requirements are easily met by a molded phenolic base.

The controller was also produced in phenolic Bakelite molded after careful consideration of all materials available, for, besides mechanical, electrical, and economic requirements it was desired to style the case in the modern manner. In a single molded piece, without the necessity of drilling holes or finishing operations, it has been possible to assemble the equivalent of a triple-pole single-throw switch and double-pole single-throw switch—all component parts being held together by a single self-threading screw. Even the strain relief for the four-lead cable has been provided in the form of a molded recess into which the cable is pushed by an embossing on the steel cover plate. Four self-threading screws to hold the cover plate complete the assembly.

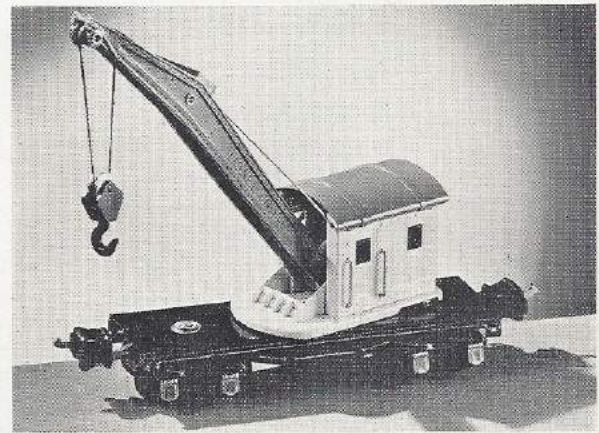
Besides the uncoupling button another for the control of the hopper car has been incorporated in the controller case. When positioned over the special section of track previously described, a magnetically operated hopper car is made to tilt and dump its load by pressing the unload button. To receive the load of coal a plastic bin is provided. Bakelite molded was chosen for this part in preference to metals for a number of reasons, principally because it affords a possibility of styling an otherwise drab article. Other reasons are relatively low tool cost as compared to stampings and complete safety from short circuits, an important quality when dealing with toy railroads. The smooth well-rounded corners are also a decided asset in toys. Entirely too many toys on the market are actually dangerous because of sharp metallic edges.

In building an accurate scale model of the famous Hudson type locomotive, we were faced with the problem of simulating real coal in the tender. Heretofore, embossed and enameled sheet metal had served the purpose, but in this instance, the resulting effect was not in keeping with the accuracy of detail that had been preserved in the rest of the locomotive and tender. Another alternative was to cement small pieces of real coal to a suitably shaped backing. While this method is effective as far as appearance, it does not lend itself to requirements of mass production.

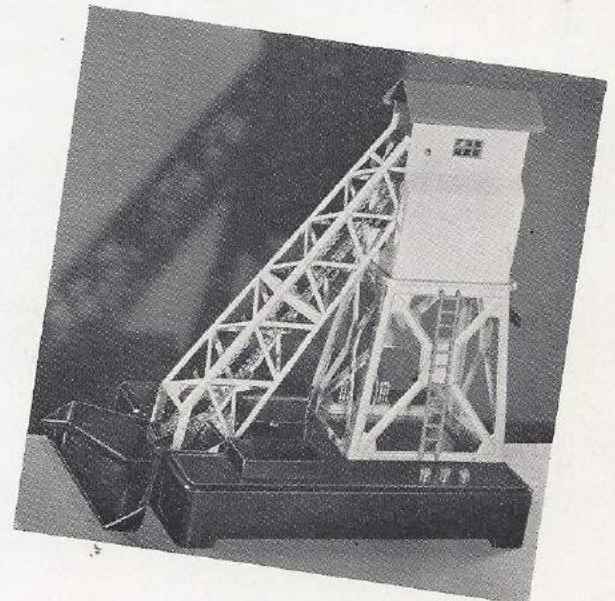
Bakelite molded not only avoided the objections of the other methods of construction, but at the same time offered advantages in low cost, permanence of finish and light weight. Due to its inherently rigid form the coal pile, while only three-thirty-seconds of an inch thick, is surprisingly strong and has stood up well in service, despite the fact that many of these scale models are in the hands of children.

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The flagman's body is molded from blue phenolic material while his right arm is produced in acetate.

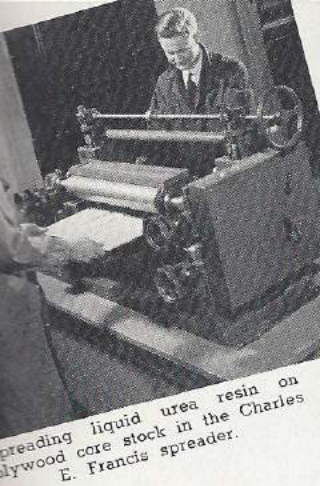


The scale model Lionel crane employs green Bakelite molded for the crane boom.

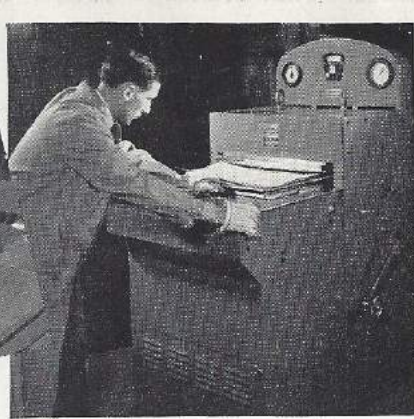


The scoop and entire base of the Lionel coal elevator are molded in lustrous black Bakelite molded with smooth, well-rounded corners.





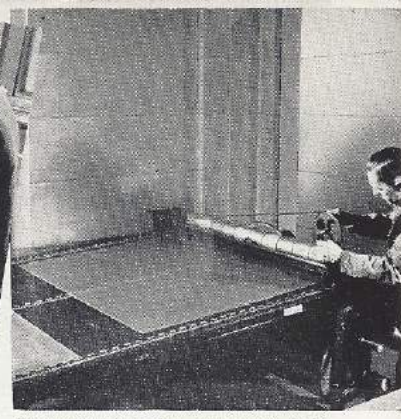
Spreading liquid urea resin on plywood core stock in the Charles E. Francis spreader.



Bonding urea resin plywood in the H. H. Heinrich hydroelectric pneumatic press.



O. R. Owens, inventor of the Handy bending machine, demonstrates the bending of resin-bonded plywood.



Demonstrating the cutting of Bakelite plybond film on the E. M. Cummings film cutter.

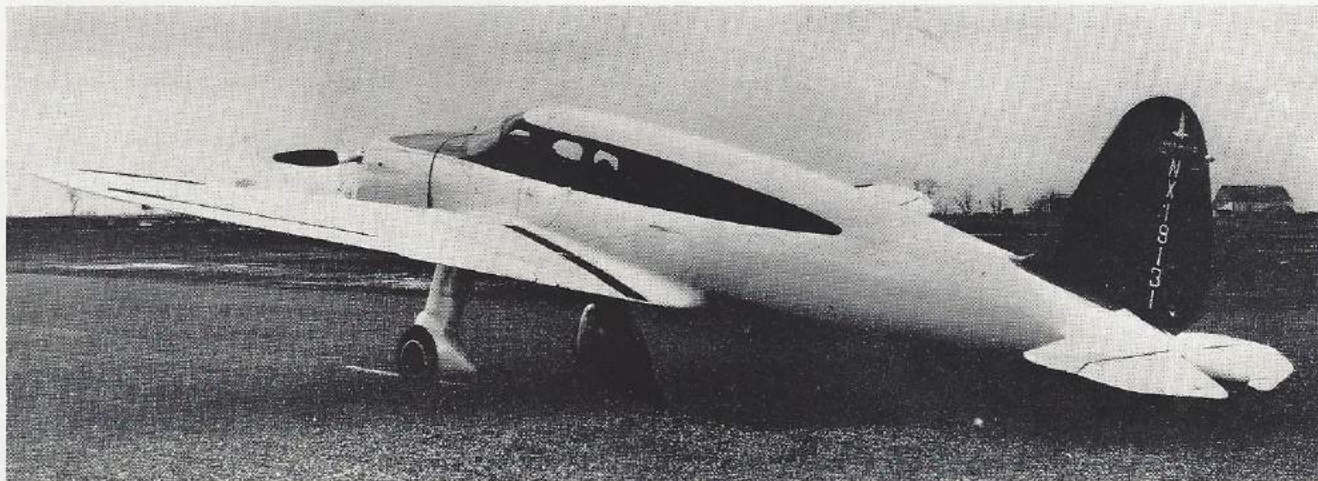
## Plybonds for Plywoods

On January 10 the final meeting of a series on the contribution of modern plastics to industry was held in The Franklin Institute, Philadelphia. Executives of plywood manufacturers, woodworking and veneering concerns, and industrial consumers of plywoods, attended from eleven states of the Union, as far west as Chicago—as far south as Louisville, Kentucky. They heard and participated in discussions of what science has contributed to better bonding of plywoods through the use of synthetic resinous adhesives. Paul H. Bilhuber, of Steinway and Sons, presiding as chairman, first introduced Dr. Don Brouse who discussed the results of extensive tests conducted by the Forest Products Laboratory on the relative values of plywoods bonded with various types

of animal, vegetable and synthetic resinous adhesives. Nils Anderson, Jr., of Bakelite Corporation, presented a paper describing the characteristics and properties of Bakelite phenolic and urea plybond adhesives. Mr. Anderson also laid particular stress upon the many new fields that synthetic bonds have opened up to the plywood industry.

The meeting was followed by a series of demonstrations on cutting resin film, spreading liquid resin on core stock, actual pressing of plywoods, and plywood bending.

A limited number of copies of the papers by Dr. Brouse and Mr. Anderson are available for readers of *BAKELITE REVIEW* who may be interested.



## Plastic Plane

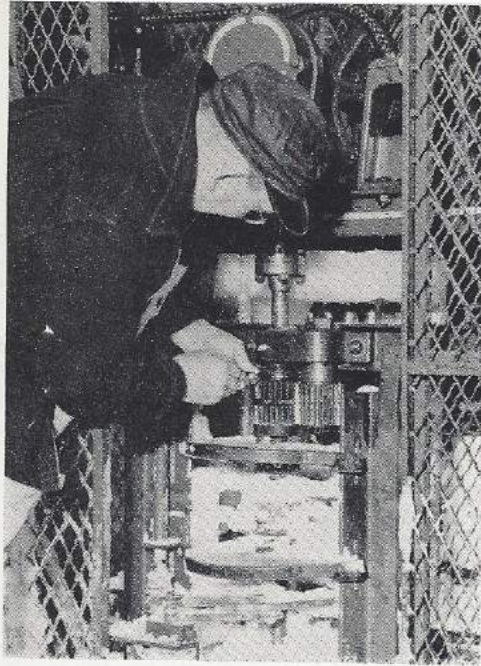
Headlines of newspapers throughout the country last January carried the announcement of a new type of plane construction relying upon laminated wood bonded with Bakelite plybond adhesive, and molded into sections for plane fuselages. What was

referred to is the development by the Clark Aircraft Corporation, in co-operation with the Haskelite Manufacturing Corporation and Bakelite Corporation, of a new type of plane construction. This has made possible the Clark F-46A experimental plane with a fuselage molded in two sections out of thin sheets of hardwood veneer bonded together with phenolic resinoid in a huge press. In addition to molding the

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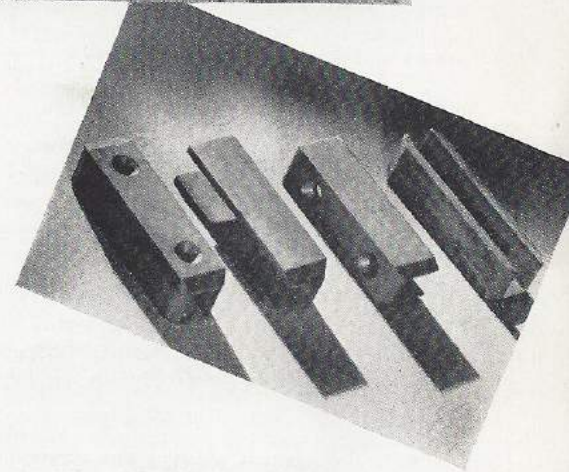


# Mechanically Speaking



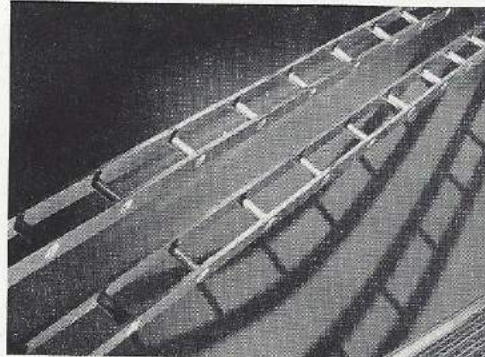
## MOUNTAINS OF ICE IN NEW JERSEY

In the plants of the Mountain Ice Company at Newark, N. J., each of twelve ice-cutting machines scores 750 pounds of ice a minute. To obtain the correct direction of the saw blades a Bakelite laminated pinion gear is employed to drive a metal coupling gear. A second Bakelite laminated gear, connected to the saw shaft, is meshed by clutch action to the coupling gear. The laminated gears are used for two reasons: they reduce noise and save considerable wear on the metal coupling gear. Also, the shock occasioned by engaging and disengaging the clutch is greatly reduced.



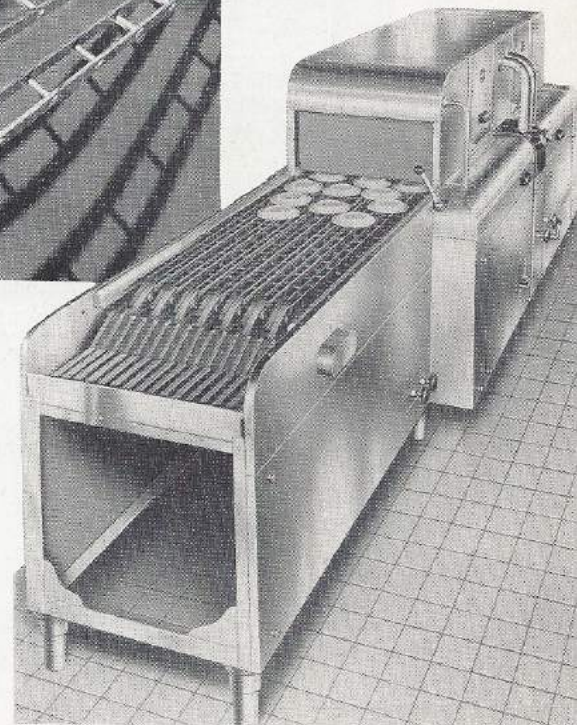
## A SLICE IN TIME

The American Machine & Foundry Co.'s bread-slicing machines are designed to feed bread loaves faster into the cutting knives and discharge them faster, yet each loaf temporarily travels slower during the actual slicing process. Thus, there is less crushing of the bread during the cutting operation. Through a special timing arrangement, loaves of varying widths will feed with a maximum of efficiency. They travel through specially designed frames which are held snugly on both sides by tough, fabric base Synthane (Bakelite laminated) guides which seldom require oiling.



## DISHES ON THE MARCH

Without the benefit of human hands, plates and dishes march mechanically out of Hobart Manufacturing Company's dishwasher on conveyor "ladders" of Bakelite laminated. Bakelite laminated was selected for this construction because of its ability to withstand hard usage and because it does not have any tendency to chip chinaware nor stain the edges of dishes. In addition, this material resists the effects of continuous contact with hot water, steam and alkali solutions.





## EMPLOYMENT WANTED

### Package and Display Development

A man with 12 years' experience in creating window and mechanical counter displays is desirous of obtaining a position with a molder as creative sales representative. Refer to Case No. 187.

### Experimental Engineer

Technical graduate of University of Michigan is seeking a position with a molder as an experimental engineer. He has had four years' experience in a similar capacity. Refer to Case No. 188.

### Sales Representative

With ten years' experience of Bakelite laminated and fibre sales work in Chicago territory, a man is seeking a position as representative for similar products. Refer to Case No. 189.

### Lacquering

An experienced worker writes that he is desirous of obtaining a position as lacquerer with a shop that employs the spray method. Refer to Case No. 190.

### Plywood Sales and Production Manager

A man with 20 years' executive experience in sales and production of both hard and soft woods in the plywood industry is seeking a new connection. Refer to Case No. 191.

## EQUIPMENT

### Spraying Machine

The Willard C. Beach Air Brush Co., Harrison, N. J., have recently announced the improved Beach automatic Spracoater. The company reports that this machine provides a continuous method of applying various types of materials. It may be employed for coating plywood panels, wall-board panels, papers, and many smaller objects. More details may be obtained from the company.

### Equipment for the Plastics Industry

The Plastic Machinery Exchange, 426 Essex Avenue, Boonton, N. J., inform us that they specialize in equipment for the plastic industry, particularly equipment which may not be obtained readily from regular sources.

### Precision Shapes

Precision Shapes, Inc., 307 Stormfelz-Loveley Bldg., Detroit, Mich., manufacture a wide variety of brass and aluminum shapes. Many of them are intricately designed. These shapes may be employed for decorative trim and reinforcing agents in Bakelite molding materials. As an example, a small "I" beam might be employed as an insert at the time of molding to prevent warpage. Full details on these shapes which include "L" beams, rails, tubes, slotted rectangles, and posts may be obtained from the company.

### Plastic Sheeting Mill

L. Albert & Son, Whitehead Road, Trenton, N. J., have recently announced the Albert Laboratory Mixing Mill for the plastics industry. This mill is described in bulletin L 200 which may be obtained from the company upon request.

## DESIGNERS

Hoopes, Cunningham and McKinney, industrial design consultants, report that they have recently moved to larger offices at 12 South 12th St., Phila. Their staff has also been augmented.

## Why Lionel Has Turned to Plastics

(Continued from page 11)

One of the reasons for molding this part may be found in the ease with which molds for irregularly shaped bodies may be cast from beryllium copper. An accurate pattern (actually a plaster impression from a real coal pile) constituted the main tooling requirement.

The application of Bakelite molded has proved so successful that a second coal pile for a somewhat smaller tender has been produced and a third mold for a still smaller unit is now in the process of construction.

One of the most important components of a model railroad is the track switch. Whether manually or remotely controlled it must be a rigid, accurate structure over which trains may glide without derailing. A toy train switch, even though simplified, is made up of seventy-five different parts which must be assembled without fitting. In most cases these parts are held to tolerances of only a few thousandths of an inch.

In departing from our usual practice of designing the switch about a base of punched steel or diecast metal, we undertook an expensive experiment

## BUSINESS OPPORTUNITY

### Partner Wanted

Inventor of a Bakelite molded product suitable for use as a premium, chain store item, or re-use tablet container, seeks an associate to arrange for manufacture and sale of the item. Refer to Case No. 192.

in molding, the results of which have exceeded our fondest expectation.

While the cost of the base itself may exceed that of a stamped steel base, the fact that over thirty separate parts are eliminated by the one-piece structure throws the economic balance in favor of molding. The appearance of the switch has been greatly improved over previous models. Besides the permanent lustrous finish, there have been added such details as ties, tie plates, spikes and extra guard rails which had not been simulated in previous designs owing to the cost and difficulties which would be experienced with the tools. The insulation of current-carrying rails, always a source of trouble, is no longer a problem.

In this intricate molding lies the foundation of the best switch yet produced by Lionel. From every standpoint it has effected marked economies in production and contributed much toward achieving a foolproof product—the aim of all manufacturers. From the viewpoint of the consumer, he will receive a better-looking, better-running and longer-lasting switch than he has been able to buy heretofore at any price.

• • •

## Plastic Plane

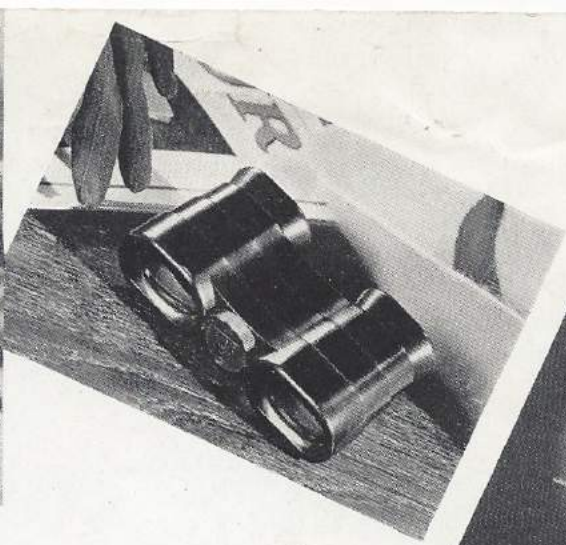
(Continued from page 12)

fuselage, it will also be possible in the future to mold entire wing sections. The absence of rivets and consequent reduction of "skin friction" should add many miles per hour to the speed of planes using these new materials. Furthermore, this is of special interest because it should mean the manufacture of airplanes on a mass production basis.

Bakelite plastics are not new to the

aviation industry, having been employed for years for many mechanical and electrical insulating applications. Planes which made aviation history in flights by Kingsford-Smith to Australia, and Lieutenants Maitland and Hagenberger to Hawaii, and the planes powered during the World War by Liberty motors winged their way through space equipped with Bakelite laminated propellers.





## ON LAND, OR SEA, OR AIR . . .

Bausch & Lomb Optical Co.'s Balar field glasses have a full 3-power magnification and yet are so compactly shaped that they will fit neatly into a vest pocket or lady's purse. The use of flat lenses and a body of glistening black Bakelite molded make possible this modern compactness and usefulness. Molder, Auburn Button Works. Sportswear, Courtesy of Saks—Fifth Avenue.

## BATTER UP!

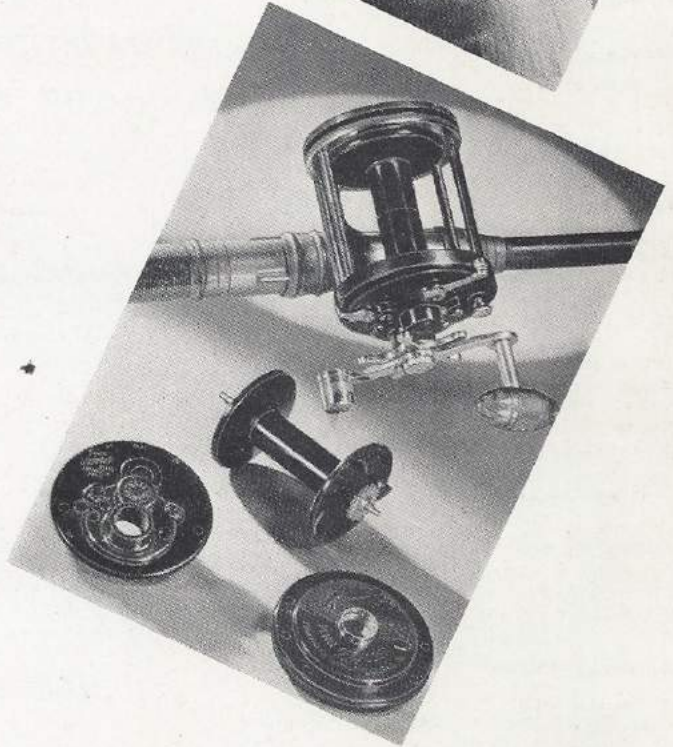
Spring is in the air and millions of enthusiastic fans are turning their thoughts toward America's national sport—baseball. Major league, minor league and back-lot teams are warming up. For those players who are safety-minded, the Mine Safety Appliance Co. has devised the Skull-gard, a light-weight hat, fabricated entirely from tough, shock-resistant Bakelite laminated. The hat is an effective buffer against the impact of heavy blows from bats or baseballs.

## THE PENN SQUIDDER

For many years, the Penn Fishing Tackle Mfg. Co. has employed Bakelite molded for the end plates of its entire line of salt-water fishing reels, chiefly because of its durability, light weight and ability to withstand the corrosive action of salt water. This year the company has advanced a step further, employing Bakelite molded for spools as well on the Penn Squidder.

## EACH TO HIS OWN LIKING

The Western States Cutlery Mfg. Co. has designed a line of stainless steel bladed hunting knives to satisfy each hunter's likes. The shanks of the blades are firmly embedded in tough, colorful Bakelite molded handles. These smooth handles will endure for years. As they are integrally molded around the shanks, there are no pins or rivets to come loose.







## BAKELITE

The registered trademarks shown above distinguish materials manufactured by Bakelite Corporation. Under the capital "B" is the numerical sign for infinity, or unlimited quantity. It symbolizes the infinite number of present and future uses of Bakelite Corporation's products.

### PLASTICS HEADQUARTERS

MOLDING MATERIALS

RESINOID VARNISHES FOR  
THE PRODUCTION OF  
LAMINATED SHEETS,  
TUBES AND RODS

CEMENTS,  
LACQUERS, VARNISHES,  
ENAMELS (HEAT-HARDENING)

CAST RESINOIDS

CALENDERING AND COATING  
MATERIALS

WOOD BONDING MATERIALS

SYNTHETIC RESINS FOR  
PAINTS AND VARNISHES

RESINOIDS AND RESINOID  
SOLUTIONS FOR ABRASIVE  
WHEELS, BRAKE LINING, AND  
OTHER SPECIAL APPLICATIONS

# BAKELITE CORPORATION

IS THE SOLE SOURCE OF BAKELITE MATERIALS

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GENERAL OFFICES:

247 PARK AVENUE · NEW YORK, N. Y.

BRANCH OFFICES: CHICAGO, CLEVELAND, HARTFORD, DETROIT  
PLANTS AT BOUND BROOK AND BLOOMFIELD, N. J.

## BAKELITE CORPORATION OF CANADA, LTD.

163 DUFFERIN ST., TORONTO, ONTARIO, CANADA

### SUBSIDIARIES AND ASSOCIATED COMPANIES

BAKELITE BUILDING PRODUCTS CO., INC.

*Licensors for manufacture of cementop shingles and siding*

BAKELITE DENTAL PRODUCTS, INC.

*Luxene resinoid denture materials*

BAKELITE-ROGERS COMPANY, INC.

*Laminating Filler Stock*

TEXTILE SURFACING, INC.

*Licensors for manufacture of  
waterproof coated fabrics*

HALOWAX CORPORATION

*Chloro-naphthalene oils and waxes*

AUTOPOINT COMPANY

*Mechanical pencils, advertising specialties*





# BAKELITE

TRADE MARK REG. U. S. PAT. OFF.

The registered trade-marks shown above distinguish materials manufactured by Bakelite Corporation. Under the capital "B" is the numerical sign for infinity, or unlimited quantity. It symbolizes the infinite number of present and future uses of Bakelite Corporation's products.

Bakelite plastics may be classified generally in the following groups:

- |                            |  |
|----------------------------|--|
| 1. Molding Materials.      | 6. Synthetic Resins for Air-Drying Finishes.                     |
| 2. Coating Materials.      | 7. Cast Resinoids.   |
| 3. Impregnating Materials. | 8. Resinoid Varnishes for the Production of Laminated Materials. |
| 4. Cements.                |  |
| 5. Bonding Resins.         |  |

## BAKELITE MOLDING MATERIALS

*Thermosetting* phenolic and urea—and *thermoplastic* acetate and polystyrene. These materials are furnished in powder, flake, granular, board and blank form. For compression molding in hardened steel molds under pressure varying from 2,000 to 8,000 lbs. per square inch at temperatures ranging from 270° F. to 350° F., cooling used depending upon type of material. *Thermoplastic* types are also injection molded hot at temperatures ranging from 325° F. to 425° F.—mold temperatures ranging from room temperature to 200° F., depending upon type and material used. Used for electrical insulation, mechanical parts, radio parts, hardware, packages, closures, displays, toys, and novelties. There are many varieties of Bakelite molding materials which have been developed for special conditions of use such as for molded parts which require an unusually high degree of heat, water, or shock resistance, elasticity or brilliant finish and color.

## BAKELITE COATING MATERIALS

### Bakelite Varnishes and Enamels—Baking

These are heat-reactive coating materials for electrical coils, windings, armatures and insulation. They are non-hygroscopic, unaffected by extremes of climate, impervious to oils, water, solvents and most chemicals. Effective as insulating coatings because of their dielectric strength, hardness and resistance to heat. Also effective as chemical protective coatings for tanks, machinery or any other equipment that may be subjected to erosion or chemical corrosion. Hardened by baking at temperatures from 170° F. to 300° F. for from several minutes to several hours, depending upon the nature and size of the part being coated.

### Bakelite Lacquers—Baking

These lacquers provide hard, transparent coatings for highly finished metal. They are resistant to solvents, gases, water and perspiration. Baked, after application, at 275° F. for twenty minutes. Used for coating metal hardware, precision instruments, vanity cases, belt buckles, mechanical pencils and ornaments.

### Bakelite Calendering Materials

These are special flexible resinoids for coating fabrics or similar materials which are rendered chemical, heat and weather resistant.

## BAKELITE IMPREGNATING MATERIALS

Liquid resinoid products for impregnation of coils, fabrics or other products to improve their dielectric qualities, chemical resistance, durability and heat resistance. Used for such purposes as brake lining, armatures, insulating cambric and cable coverings.

## BAKELITE CEMENTS

### Air Drying

Cements and adhesives for bonding plywoods and veneers. Flexible to rigid in range. These adhesives have high bonding strength.

### Heat Hardenable

These cements provide an extremely hard and tenacious bond which is exceptionally resistant to heat, solvents, and most chemicals. They are employed extensively for cementing together the bulbs and bases of electric lamps and electronic tubes and for bonding wood, porcelain, glass, metal and Bakelite materials. They require baking at 250° F. for several hours.

## BAKELITE BONDING RESINS

These materials include a variety of resins for either the cold molding or hot molding process. They are used as bonds for abrasive wheels, carbon brushes, phenolic cold molded pieces, resistors, etc. The bonds have good mechanical strength, and are heat resistant and chemical resistant.

## BAKELITE RESINS USED FOR THE MANUFACTURE OF PAINTS, VARNISHES AND LACQUERS

### Oil Soluble Resins

A full line of products available to varnish manufacturers for production of oleoresinous varnishes, paints and enamels of either air-drying or baking types. Such finishes are highly durable on exposure to weather, rapid drying and resistant to moisture, dilute acids, weak alkalies and many solvents and corrosive chemicals.

### Lacquer Resins

These are compatible with nitrocellulose, ethyl cellulose, cellulose acetate, etc., and are used for the production of lacquers requiring high durability and moisture resistance, excellent gloss and chemical resistance. Special products in the form of solutions or liquid or semiliquid resins are also available for many unusual or difficult applications.

## BAKELITE CAST RESINOIDS

### General Purpose

Jewel-like materials obtainable in a variety of brilliant transparent, translucent, mottled and opaque colors. Various textures—high lustre—durable finish—can be readily machined, engraved and polished. Used for costume jewelry, pencils, paper weights, buttons, buckles and a host of other decorative and industrial applications.

### Chemical Resistant—Dielectric

This is a hard lustrous material, readily machinable. It is resistant even to the destructive effects of hydrofluoric acid. It is used for laboratory equipment such as beakers, graduates and bottles and, also, for electrical insulation. The material is highly non-hygroscopic and has low power-loss characteristics.

### Permanent Color

These materials are tough and have a high lustre. They are available in transparent, translucent, mottled and opaque effects. Used for watch crystals, stress-study specimens and ornamental purposes where absolute light proofness is essential.

## RESINOID VARNISHES FOR THE PRODUCTION OF BAKELITE LAMINATED MATERIALS

Laminated products are fabricated by laminators from superimposed layers of paper, canvas, cotton duck, or asbestos fabric impregnated with Bakelite resinoid varnishes and hardened by heat and pressure into a solid, homogeneous state. They are characterized by unusual strength, resiliency and toughness. Bakelite laminated possesses high dielectric strength; is exceptionally resistant to heat, water, oil and most chemicals. It will not warp nor deteriorate with age. It can be machined, punched and polished.

Bakelite laminated is produced in a variety of sheets, tubes and rods, which are obtainable in special dimensions and sizes. Sheet stock is produced in many solid colors, light shades and the wood-grain and marble simulations.

Bakelite laminated is employed extensively for radio and electrical insulation, wall paneling, wainscoting, baseboard trim, table and desk tops, instrument panels, refrigerator breaker strips, silent automotive timing gears, industrial gears and pinions, and roll neck bearings in steel mills.

## BOOKLETS AVAILABLE ON REQUEST

- Bakelite Molded.
- Bakelite Laminated.
- Bakelite Cast Resinoids.
- Bakelite Varnish, Enamel, Lacquer, Cement—Heat Hardenable.
- Bakelite Synthetic Resins for Paints and Varnishes.
- High Speed Abrasive Wheels.



