

What Aluminum is
and How
MIRRO Aluminum
Cooking Utensils are Made

Use This Broadside as a Hanger to Create New Business

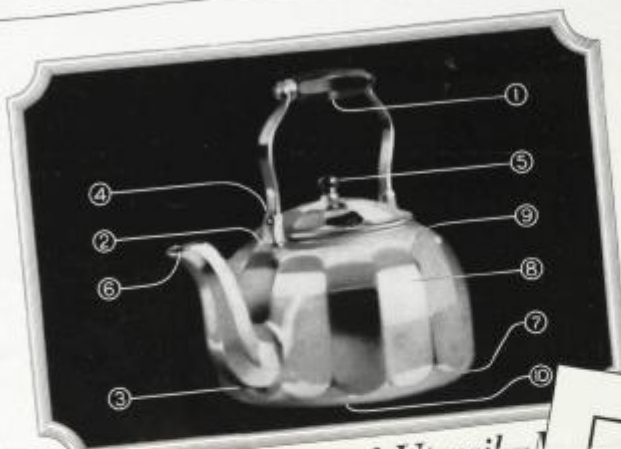
This broadside is valuable to you from a sales standpoint.

The more the retailer knows concerning the products he is selling, the more interesting he can make those products to his customers.

This broadside gives you some unusual information about Aluminum, and particularly about MIRRO. Hang it up where your customers can see it, then call their attention to it. You will find that very few people who come into your store have a definite idea of what aluminum is and how Mirro is made. The big display on the inside pages of this sheet will serve to educate your trade and will create new sales for you.

Make sure that your sales people read this story and use the main points of it in their selling. The result will be more interest and bigger sales.

MIRRO Advertising for October



For Your Most Used Utensil—

Of all kitchen utensils, the tea kettle is the most used. Not a rural parson but the tea kettle performs its useful service. Look well, then, to its durability, its convenience, its ability to heat water quickly.

It is for your privilege to have a Mirro Kettle—a kitchen of bright, durable utensils of Mirro Aluminum—*you* may not reward the Mirro Aluminum Tea Kettle with perfect tea dependability.

The Mirro Aluminum Colonial Tea Kettle, with its top quality features ground down and finished by hand, is made for a long life of usefulness.

- 1. Heat grip, essential, durable, handily, keeps handles comfortable handling and easy pouring.
- 2. Handle ends are welded on and operate on all levels.
- 3. Spout also welded on and operating on all working parts.

- 4. Mirro's patented handle is built to last, without contact with handle.
- 5. Smooth, no-fault, smooth handle.
- 6. Easy lifting, easy pouring spout.
- 7. Beautifully wide base—equal heating and full cooking. Also prevents "burnt" food sticking to bottom.

Aluminum Goods Manufacturing Company
General Offices—Baltimore, Md. 1, U. S. A.
Wholes of Shipping to all States



MIRRO

Built into this attractive, useful, Mirro product, is pure aluminum, ridged again, in Mirro style, to give the bowl quality, designed by Mirro craftsmen, patent Mirro workers.

And look at every Mirro Aluminum guarantee of the world's best-known aluminum, worn, with a successful testing over nearly thirty years.

Mirro is modernity good, at the whole. Good for the signature.

- 8. Patented Mirro handle, glass round eye.
- 9. Beautiful Colonial glass round eye.
- 10. Mirro's wide base, one of many of quality Mirro.



This Mirro Aluminum Colonial Tea Kettle Now at the New Low Price

Of all kitchen utensils, the tea kettle is the most used. It should be durable, economical, and easy to handle.

The Mirro Aluminum Colonial Tea Kettle, with its top quality features, gives you all these qualities at a lower cost per year of service. And its beauty of design makes it a delight to possess.

Like all Mirro utensils, this Colonial Tea Kettle is made from pure aluminum, rolled correctly under heavy pressure in Mirro mills to give it the most durable service.

Notice these famous features of convenience, pictured above:

- | | |
|---|--|
| 1. Mirro's patented, wide, easy lifting, easy pouring handle. | 4. Easy lifting, easy pouring handle. |
| 2. Handle ends are welded on and operate on all levels. | 5. Beautiful Colonial glass round eye. |
| 3. Spout also welded on and operating on all working parts. | 6. Easy lifting, easy pouring spout. |
| 7. Beautifully wide base—equal heating and full cooking. Also prevents "burnt" food sticking to bottom. | 8. Patented Mirro handle, glass round eye. |
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Mirro Aluminum products have been successfully marketed for over thirty years and are known for their quality and durability.

(Your Own Business Name and Address to Be Inserted Here)

MIRRO ADVERTISING FOR OCTOBER

The above full-page MIRRO advertisement will appear in the October Woman's Home Companion. This National Magazine, going into 1,500,000 homes, will suggest the purchase of MIRRO utensils in general, and the MIRRO Colonial Tea Kettle in particular. To make this advertising bear fruit for your store, use the advertisement shown on the right, in your local newspaper. To further stimulate sales during October, hang up this broadside where your customers will see it.

From Clay to Cooking Utensil

The Story of MIRRO Aluminum



1 **BAUXITE**—the clay which is the basis of all aluminum.



2 **Aluminum Powder**, chemically extracted from Bauxite.



3 **Virgin ingot of pure aluminum.**



4 **Heating furnace** in which ingots are melted and all dross skimmed off. Only the pure metal is used in making Mirro.



5 **After leaving the heating furnace**, the pure aluminum is cast into fifty pound slabs.



6 **Slabs are then heated to high temperature** preparatory to breaking down into plates.



7 **Slabs are rolled and cross-rolled under eight tons pressure** reducing them to plates one-quarter inch thick.



8 **Plates are then cold-rolled into sheets.** The farthest machine gives each sheet its hard, smooth Mirro surface.

WHEN you examine a Mirro Colonial Tea Kettle and observe its light weight, its wonderful finish, and its durability and strength, it is difficult to believe that this unusual product is made of clay.

Yet such is the case. It is of the same family as the old earthenware crock that you formerly saw in the kitchen, with this difference:—

The crock represents the primitive way of fashioning vessels out of common clay and hardening those vessels through firing,—a practice as old as civilization. The Mirro utensil represents modern, scientific manufacture, the brains of the chemist and the inventor applied to practically the same raw material.

Bauxite

For thousands of years clay was considered simply clay.

Scientists, however, conceived the idea that clay and all other minerals similarly formed had a common metal base. This base they called Alumina.

They also discovered that one form of clay contained more alumina than any other. This particular kind was **BAUXITE**, a mineral form found scattered throughout Southern France, Northern Ireland, Georgia, and Arkansas. (See Figure 1.)

With most metal ores, it is easy to separate the true ore from the dross. This is readily done by mechanical or chemical means.

But it is different with Bauxite. From this mineral we do not at first get **metallic aluminum** as we know it. Bauxite is first crushed and disintegrated by physical and chemical means, and from it we get **aluminum oxide**. Second, this aluminum oxide (see Figure 2) is further reduced by the process of electrolysis (a chemical bath to which electricity is applied). The result of this second reduction is pure **metallic aluminum**, from which aluminum products are made.

Scientists succeeded at an early stage of experiment in producing a small quantity of metallic aluminum from Bauxite, but only through a very costly chemical process.

In 1886, an American, Charles M. Hall, solved this problem of producing metallic aluminum from aluminum oxide in a practical way.

Hall conceived the idea of applying the process of electrolysis, i. e., separating the respective mineral elements by means of a chemical bath and electricity. He used a specially constructed tank in which the **metallic aluminum** settled to the bottom. This **metallic aluminum** was easily collected and cast into ingots. (See Figure 3.)

Making MIRRO Utensils

Mirro utensils appeal most strongly to housewives because of Mirro design and finish, and particularly because of the quality of **MIRRO** metal.

Mirro is of pure aluminum, produced completely, from the raw ingot to the finished utensil, right in the Mirro plants.

The ingots are melted and mixed and the slabs cast and rolled in the Mirro rolling mills. The stamping, drawing, spinning, and finishing—all operations necessary to produce Mirro utensils are done in the Mirro factory and in accordance with the Mirro standard of workmanship and quality.

The story of how Mirro utensils are made begins with the virgin aluminum ingot as shown in Figure 3.

This is the form in which aluminum comes into the Mirro plants.

The first step is the melting of the virgin aluminum ingots as shown in Figure 4.

This picture shows the heating furnace in which the ingots are melted under a heat of 1,450 degrees. The dross or refuse metal is skimmed off, as only the pure metal is used in making **MIRRO**. This dross is shown on the floor in the lower left hand corner of the picture.

It is customary to fuse and mix with the virgin ingots the scrap or remains of sheet aluminum from stampings. In mixing Mirro metal, however, the scrap used seldom exceeds 25%, and in all cases is Mirro quality—100% pure aluminum. It is because of this low percentage of scrap used in the mixture, that Mirro possesses such remarkable elasticity and tensile strength.

Before the aluminum can be rolled into sheets, it must be molded into slabs.

Figure 5 illustrates this operation—the casting of the slabs. Each of these slabs weighs 50 pounds.

Figure 6 shows the process of heating the slabs to high temperature preparatory to "breaking down" into plates.

In Figure 7 the heated slabs are being "broken down," or rolled into plates. These slabs are rolled and cross-rolled under eight tons pressure, reducing them to plates $\frac{1}{4}$ inch thick.

Aluminum Goods Manufacturing Company

Makers of Everything in Aluminum

In Figure 8 the plates are being rolled into sheets. These plates are "cold rolled"—they are not heated as was the case of the slabs in Figure 6. These rolling machines are adjustable, and the sheets are rolled down thinner and thinner progressively. These machines are capable of rolling down to 40 gauge, which is equal to 3/1000 of an inch in thickness. It will be interesting to know that the average Mirro utensil is 16 gauge, the equivalent of 1/16 of an inch.

The farthest machine in the picture does the surfacing, by which the metal is given a hard finish.

The sheet is now ready for stamping into a utensil, and the operations from this point on are the most interesting in the making of Mirro cooking utensils.

Just as one would scarcely believe from examining the Mirro Colonial Tea Kettle that the raw material was clay, so it is difficult to conceive how this unique creation, with no dirt-catching crevices, no riveting, no clinching, is manufactured out of a flat sheet of aluminum.

Figure 9 shows the first operation, which is called stamping.

The sheet is fed into this stamping press, the dies meet, and the result is the receptacle as shown in the picture.

Imagine the pliability and ductility of this metal which can be stamped into this form out of a perfectly flat sheet of aluminum.

Stamping is done "cold"—there is no heat applied.

This operation is followed by re-stamping or "drawing." The "drawing" process progressively shapes or designs the utensil. Some utensils are given as many as ten or twelve draws.

The ability of the metal to "draw" perfectly depends upon its purity, hence the care used in melting the ingots and refining away the dross, as was shown in Figure 4.

Figure 10 shows the process of rolling or ironing out the wrinkles, which operation closes the pores of the metal and hardens the surface.

Figure 11 is interesting. Note the Colonial Tea Kettle. It is not a straight side receptacle. Its walls curve inward and the opening has a much smaller circumference than the base.

This picture shows how that is done. It is called the "spinning" operation. A sectional die, called a split chuck, is placed in the receptacle. This is then placed on a spindle, and as it revolves at high speed, the operator shapes it. This is done cold. There is no heat applied. The elasticity of the metal makes this process possible.

Figure 12 shows the operator removing the split chucks—the sectional, combination die.

Figure 13 shows the stamping of the Colonial pattern. This operation not only adds beauty to the Mirro design, but also gives additional strength through the angular structure.

In Figure 14 the workman is welding on the ears for attaching the bail of the Mirro Colonial Tea Kettle, and in Figure 15, he is welding on the spout.

This work is done with an oxygen acetylene blowpipe. The joint is perfect. There are no crevices to catch dirt. The Tea Kettle is in reality one complete piece.

The buffing and polishing is then done, and the **MIRRO** imprint is stamped on the bottom of the utensil. (Figure 16.)

Why MIRRO Excels

Mirro utensils have many exclusive features of convenience. No-burn, ebonized knobs combine comfort with attractiveness. All-steel bails are made to swing to any desired position without their touching the hot utensils.

Hollow metal handles on all saucepans help to make kitchen work easier. All wooden handles are easily removed and replaced. Kettles, boilers, roasters and baking pans have extra-heavy beads.

Because Mirro metal is 100% aluminum—free of oxides and all other impurities—it possesses that extraordinary elasticity and tensile strength necessary to uniform thickness in stamping and long service when in use.

Mirro metal is *unaffected by chemical elements in foods*, is non-corrosive, has great heat conductivity, but will not scorch food, is easily cleaned, and has a beautiful white color that retains a high polish.

The satisfactory service realized in every household where Mirro is used may be traced to the fact that Mirro is *quality-made*. The metal is pure aluminum mixed and rolled in the Mirro plants. Processes and equipment throughout are the most modern, and in many cases exclusively Mirro. The standard of workmanship prevailing is in keeping with the high standard of material and method.



9 **Cold stamping and drawing.** Some Mirro utensils are given twelve draws to insure uniformity of thickness.



10 **Rolling and ironing.** This process closes the pores of the metal and firms out the wrinkles.



11 **Spinning**—the process which gives Mirro utensils their graceful shape.



12 **Removing split chucks from utensils after the spinning is done.**



13 **Stamping the Colonial pattern.** The angles add strength to Mirro Colonial designs.



14 **Welding on the ears.** No rivets or clinching in Mirro—no dirt catching crevices.



15 **Welding on the spout.** Mirro utensils are perfectly smooth, both inside and out.

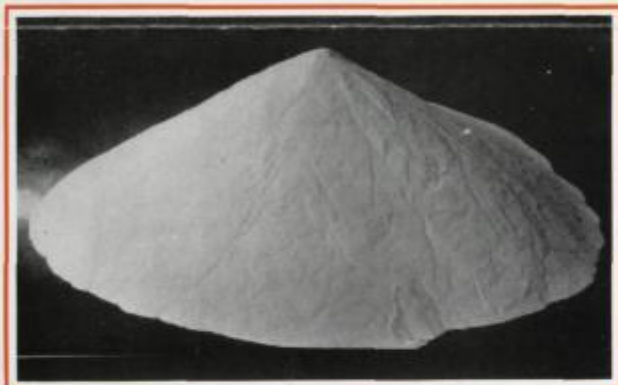


16 **After buffing and polishing**, the Mirro trade mark is put on so you can always identify Mirro.

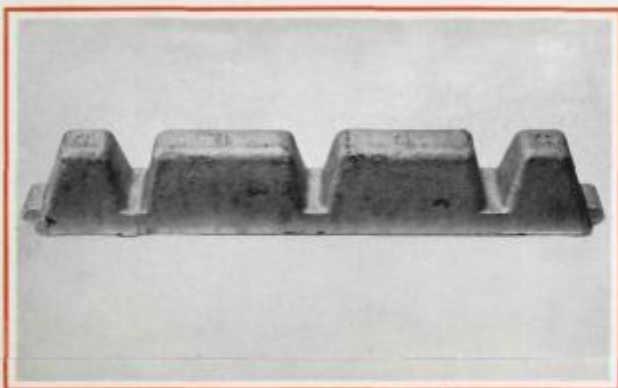
Making the *MIRRO* Colonial Tea Kettle



1 BAUXITE—the clay which is the basis of all aluminum.



2 Alumina powder, chemically extracted from Bauxite.



3 Virgin ingot of solid aluminum.



4 Heating furnace in which ingots are melted and all dross skimmed off. Only the pure metal is used in making Mirro.



5 After leaving the heating furnace, the pure aluminum is cast into fifty pound slabs.



6 Slabs are then heated to high temperature preparatory to breaking down into plates.



MIRRO is of pure aluminum, produced completely, from the raw ingot to the finished utensil, right in the Mirro plants. The ingots are melted and mixed and the slabs cast and rolled in the Mirro rolling mills. The stamping, drawing, spinning and finishing—all operations necessary to produce Mirro utensils are done in the Mirro factory and in accordance with the Mirro standard of high-grade workmanship and quality.



7 Slabs are rolled and cross-rolled under eight tons pressure reducing them to plates one-quarter inch thick.



8 Plates are then cold-rolled into sheets. The farthest machine gives each sheet its hard, smooth Mirro surface.



9 Cold stamping and drawing. Some Mirro utensils are given twelve draws to insure uniformity of thickness.



10 Rolling and ironing. This process closes the pores of the metal and irons out the wrinkles.



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MIRRO Colonial

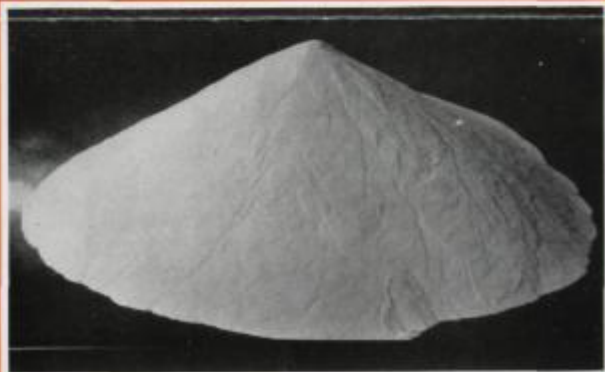


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